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Evaluation of Public Satisfaction with OpenSID-Based E-Government Services at the Village Level Using the Customer Satisfaction Index and e-GovQual Dimensions

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Abstract

E-Government is an important innovation in improving the efficiency, transparency, and quality of public services, including public services at the village government level. However, the implementation of e-government in Purworejo, Pungging District, Mojokerto Regency still faces various problems, such as low digital literacy and limited user support features. This condition is in line with the findings of the UN e-Government Survey 2024 which stated that approximately 22.4% of the global population is still lagging behind in accessing digital services due to infrastructure and literacy gaps, especially in developing regions. This study aims to analyze the level of public satisfaction with e-government services in the OpenSID-based village service system using the Customer Satisfaction Index (CSI) method. This study used a quantitative approach by collecting data through questionnaires from 273 respondents. Satisfaction measurements were carried out based on six dimensions of e-Government Quality (e-GovQual): Ease of Use, Trust, Functionality of the Interaction Environment, Reliability, Content and Appearance of Information, and Citizen Support. The results showed a CSI value of 70%, which is included in the satisfied category. The Trust dimension obtained the highest score of 0.65, followed by Reliability, Functionality of the Interaction Environment and Ease of Use at 0.60 and Content and Appearance of Information at 0.58. In contrast, the Citizen Support dimension had the lowest score of 0.46 and is an aspect that requires attention and improvement. This study provides an empirical contribution in the evaluation of e-government services at the village level by identifying priority service dimensions, especially Citizen Support, as a basis for improving the quality of digital public services and demonstrating the effectiveness of integrating the e-GovQual model and Customer Satisfaction Index in the context of village government.

Keywords: customer satisfaction index, e-Government, e-GovQual, public satisfaction, OpenSID.

1. Introduction

The development of information technology has driven changes in the government system. One aspect undergoing the most significant transformation is the public service process. In the government sector, the use of information technology is known as e-government or electronic government. E-government is a form of service delivery and management of government information that utilizes internet-based technology so that the public is able to access public services flexibly without the constraints of space and time (Lesmana, 2025). The implementation of e-government aims to transform service processes that were previously carried out manually into electronic-based services in an effort to increase the efficiency, transparency, and quality of public services (Ayomi, Sarkol, Hurulean, & Itrantoy, 2025). This is because conventional public service processes are often considered inefficient, require a long time, and involve complex bureaucratic procedures that lack transparency. Therefore, through the implementation of e-government, the government is expected to provide services and information more quickly and easily

accessible, and support the realization of good governance through increased accountability and information transparency (Ayomi, Sarkol, Hurulean, & Itrantoy, 2025; Kristian, Nuradhawati, & Ristala, 2024; Muliawaty & Hendryawan, 2020; Novitasari, Razaq, Kamilah, & Samudra, 2024). Thus, e-government is not only seen as the utilization of technology, but also as part of the transformation of the public service system that is oriented towards the needs of the community.

In Indonesia, e-government development began with the issuance of Presidential Instruction Number 6 of 2001 concerning Telematics and was reinforced by Presidential Instruction Number 3 of 2003 concerning the National Policy and Strategy for e-Government Development (Irma, Ginting, Agusmidah, & Leviza, 2023). This policy encourages government agencies at various levels to implement digital-based services in a planned and sustainable manner. However, in practice, e-government implementation in Indonesia is still dominated by the provision of static information through websites, without being followed by optimization of interactive services and a comprehensive transformation of service processes. Several studies have stated that e-government implementation at the regional level still faces various obstacles, such as low utilization rates by work units, limited system maintenance, and frequent access disruptions that hinder the public from obtaining data and information services (Novitasari, Razaq, Kamilah, & Samudra, 2024; Sinaga & Arianto, 2025). Furthermore, despite the availability of digital platforms, the services provided in some regions are not fully interactive and responsive to the needs of the community as service users. This condition shows that the use of e-government has not fully reflected significant changes in the interaction patterns and service relations between the government and the public (Zein, Prasutra, & Septiani, 2024).

The challenges of e-government implementation in Indonesia are also reflected in the results of global e-government rankings, which indicate that the quality and equity of digital services are still suboptimal. According to the UN e-Government Survey 2024, Indonesia ranks 64th globally, indicating persistent gaps in the quality and equity of digital services, particularly in non-urban areas (Kementerian Pendayagunaan Aparatur Negara dan Reformasi Birokrasi - Republik Indonesia, 2024). This situation is reinforced by various e-government evaluations at the regional level, which show that most local governments are still in the "poor" category in implementing digital services (Andayani, et al., 2024). These findings indicate that the success of e-government is not solely determined by national policies but is highly dependent on the quality of implementation at each level of government. In Indonesia's hierarchical government system, villages are the government units closest to the community and are at the forefront of providing public administration services. Therefore, if e-government implementation at the central and regional levels still faces various limitations, these challenges have the potential to become even more complex at the village level. On the other hand, the need for e-government services is not limited to urban communities. The majority of Indonesia's population still lives in rural areas and relies heavily on government administration services, particularly population administration, which in practice often begins and is served at the village level. This situation emphasizes that the quality of e-government implementation in villages is a crucial aspect in ensuring equitable access to digital public services for all levels of society.

As the government unit closest to the community, villages play a strategic role in ensuring that e-government implementation delivers tangible benefits to service users. As stipulated in Law No. 6 of 2014 concerning Villages, e-government is an effort to improve the quality of life and livelihoods of the community in order to achieve optimal village community welfare (Fianto, Hastuti, Assajdah, & Reza, 2021). Therefore, village development can be supported through the implementation of the e-Government concept to improve the performance and quality of services in village government (Amalia, Risanti, Winata, & Kurniawan, 2022). In this context, Purworejo Village, Pungging District, Mojokerto Regency, is one of the villages that has implemented the OpenSID application as a digital administrative service system. This application is used to support various services, such as submitting letters, managing population data, and providing village information. However, its implementation still faces several obstacles, including low digital literacy among the community, limited socialization of system use, and a tendency for the community to prefer direct assistance from village officials rather than utilizing the system independently. This situation indicates that the existence of e-government systems does not fully guarantee optimal utilization and user satisfaction. Furthermore, empirical studies describing public satisfaction with e-government services at the village level are still limited, particularly regarding the use of the OpenSID application.

These issues demonstrate the need for measurable, user-based evaluations to assess the quality of e-government services at the village level. This is due to the existence of digital systems that do not necessarily reflect the level of utilization, satisfaction, and suitability of services to the expectations of the community as the primary users. Therefore, an evaluation approach is needed that can objectively measure

user perceptions by comparing the level of expectations and perceived service performance. One approach that can be used is the Customer Satisfaction Index (CSI), which measures the overall level of user satisfaction based on the level of importance and level of service performance (Amri, Subagio, & Kusnadi, 2020). In service quality research, several models have been widely used, such as Servqual, the DeLone and McLean Information System Success Model, and End-User Computing Satisfaction (EUCS). However, these models are generally developed for the context of general services or organizational information systems, so they do not fully represent the characteristics of digital-based public services, particularly e-government. Therefore, to ensure that satisfaction measurements are more relevant to the characteristics of e-government services, this study used the service quality dimensions developed in the e-Government Quality (e-GovQual) model as the basis for developing the research instrument (Papadomichelaki & Mentzas, 2012). The e-GovQual model includes the dimensions of Ease of Use, Trust, Functionality of the Interaction Environment, Reliability, Content and Appearance of Information, and Citizen Support (Hakim, Rahayu, Ahman, & Wibowo4, 2023). The integration of the CSI method with the e-GovQual dimensions allows for a systematic, structured, and appropriate evaluation of public satisfaction within the context of e-government services at the village level.

The research related to e-government in Indonesia has generally focused more on examining causal relationships between variables, such as the effect of system quality on user satisfaction or user intention, using correlation or regression approaches. Furthermore, most e-government research is still focused on the provincial, city, or district government levels, while studies at the village government level are relatively limited. In fact, villages are the first gateway for communities to access public services, particularly population administration services, so the quality of services at the village level plays a crucial role in shaping public perceptions of the overall success of e-government implementation. Based on these conditions, this study focuses on analyzing public satisfaction with e-government services in the OpenSID-based village service system in Purworejo Village using the CSI method with attributes developed from the e-GovQual dimensions. This study aims to measure the level of public satisfaction with OpenSID-based village e-government services. Specifically, this study aims to apply the CSI method in evaluating village digital public services, determine service aspects that need to be prioritized for improvement, and formulate implications for improving the quality of digital public services at the village level.

2. Literature Review

The literature review in this study was designed to identify research developments related to evaluating the quality of e-government services and the approaches used to measure user satisfaction with e-government services. This chapter discusses relevant previous research, the application of the CSI method, and the use of the e-GovQual model in the context of digital government services. Through this review, it is hoped that an overview of the research position and the theoretical basis supporting the selection of the methods and models used will be obtained.

2.1. Quality of E-Government Services

E-government is the use of information and communication technology by the government in the provision of public services with the aim of increasing efficiency, transparency, and quality of service to the public (Fianto, Hastuti, Assajdah, & Reza, 2021; Purnomo, Suljatmiko, & Ulfiandi, 2025). The implementation of e-government is expected to be able to integrate technology in the administration and public service processes so as to overcome various inefficiencies that often occur in traditional manual and paper-based government systems. In addition, e-government also aims to improve interaction patterns between the government and the public, particularly through Government to Citizen (G2C) services, so that public services become more accessible, faster, and responsive to citizen needs (Listiarti, Pratiwi, & Trimulyani, 2024; Rifdan, Haerul, Sakawati, & Yamin, 2024). Therefore, the implementation of e-government not only emphasizes the availability of digital systems, but also the extent to which these systems can be used and their benefits are felt by the public as the main users. In the context of public services, the quality of e-government services is an important aspect because it is directly related to satisfaction, trust, and the level of service utilization by the public.

Previous research indicates that the implementation of e-government in Indonesia has not yet been optimal in supporting the provision of public services (Zein, Prasutra, & Septiani, 2024). This condition indicates that in practice, established policies do not fully reflect real conditions on the ground. However, this condition does not occur evenly across regions, because various factors influence the gap in e-government implementation between regions, such as the readiness of information technology infrastructure, human resource competency, policy support, and the level of digital literacy of the community

(Kristian, Nuradhawati, & Ristala, 2024). Even at lower levels of government, such as sub-districts and villages, the quality of e-government services generally does not reach optimal levels in meeting the needs, expectations, and satisfaction of service users (Amalia, Risanti, Winata, & Kurniawan, 2022; Ayomi, Sarkol, Hurulean, & Itrantoy, 2025; Watrianthos, Nasution, & Syaifullah, 2019). Therefore, evaluating the quality of e-government services is an important aspect, especially at the village government level, which is the government unit closest to the community and has its own characteristics and challenges in providing digital public services.

The quality of e-Government services at the village government level is becoming increasingly crucial because villages are the first gateway to implementing public services due to their direct interaction with the community (Watrianthos, Nasution, & Syaifullah, 2019). However, the implementation of e-government at the village level still faces various challenges that differ from urban areas, such as limited digital literacy, limited technological infrastructure, minimal assistance in system use that impacts the sustainability of village information system management, and differences in service needs. These conditions mean that the existence of an e-government system does not necessarily reflect a real increase in service quality. Therefore, measuring the quality of e-government services needs to be done by considering the perspective of the community as users, not only from the technical or administrative side.

2.2. The e-GovQual Model for E-Government Evaluation

Several previous studies have discussed the evaluation of e-government implementation using various approaches to assess public satisfaction with e-government services. The e-GovQual model is one approach widely used in evaluating the quality of e-government services because it is specifically designed to measure the characteristics of digital government services through service quality dimensions. Initially, e-government service quality assessments adapted the Servqual model used in conventional service assessments. However, the direct application of the Servqual model was deemed less effective in the context of digital-based services, as the characteristics of e-services require adjustments to the measurement dimensions (Lesmana, 2025). Therefore, the e-GovQual model was developed as a specific framework for assessing the quality of e-government services.

The e-GovQual model is designed to measure public perception of the quality of government services provided through digital platforms by emphasizing the match between expectations and user experience (Listiarti, Pratiwi, & Trimulyani, 2024; Sahara, Khotimah, & Sasirangan, 2022). Therefore, this model focuses more on public acceptance as end users (Amalia, Risanti, Winata, & Kurniawan, 2022; Jangku, 2024). As is known, one indicator of e-government success is when the public is satisfied with the services provided by the government. Therefore, this model is expected to assist government institutions in providing quality services that are in accordance with public needs. The e-GovQual model includes dimensions of Ease of Use, Trust, Functionality of the Interaction Environment, Reliability, Content and Appearance of Information, and Citizen Support, which can be used as measurement attributes (Ananda & Hapsari, 2024). These dimensions are designed to evaluate the quality of e-government services comprehensively through user experience in interacting with the service, so that it is more relevant to the characteristics of digital public services.

Previous research indicates that the quality of e-government services is influenced by the ease of use of the system, service reliability, clarity and completeness of information, and service support for users (Jangku, 2024). However, most of this research still focuses on e-government services in urban areas or at the district or provincial government levels (Lesmana, 2025). Studies that prioritize rural communities as the primary subjects in evaluating e-government service quality are still relatively limited. This situation indicates a research gap that needs to be filled through more contextual studies at the village government level. Furthermore, e-government research in Indonesia is still dominated by approaches to analyzing relationships between variables. For example, several studies examine the effect of service quality on user satisfaction using correlation and regression methods (Rifdan, Haerul, Sakawati, & Yamin, 2024; Purnomo, Suljatmiko, & Ulfiandi, 2025). Although this approach is useful for understanding the relationships between variables, it still does not directly reflect the public's perception of service quality, so quantitative user satisfaction-based evaluations are still relatively rare.

The e-GovQual model can also be combined with other methods, such as Importance–Performance Analysis (IPA). This approach is considered capable of providing a more structured picture of service attributes that need improvement (Ananda & Hapsari, 2024; Jangku, 2024; Sahara, Khotimah, & Sasirangan, 2022). However, the use of the e-GovQual model combined with a comprehensive index-based satisfaction measurement method is still relatively limited.

2.3. Customer Satisfaction Index (CSI) in E-Government Evaluation

Fig. 1. Research phases.

The Customer Satisfaction Index (CSI) is a model implemented by the American government to evaluate the performance of government websites through a customer satisfaction index (Sahara, Khotimah, & Sasirangan, 2022). Furthermore, the CSI method has also been implemented in South Korea, specifically in public service facilities at the Yeosu Ferry Terminal (Nha & Kim, 2025). These findings indicate that the CSI method is not only relevant for public service contexts in developed countries but has also been used effectively in Asian countries. Several previous studies have discussed the evaluation of e-government implementation using a user satisfaction approach. Several studies adopted the CSI method to measure public satisfaction with digital-based public services because this method measures user satisfaction based on a comparison between the level of importance/expectation and the level of perceived service performance. Therefore, this method can provide a quantitative overview of the overall level of satisfaction. The CSI method was chosen because it can present measurement results in an easy-to-understand index and helps identify service aspects that need to be prioritized for improvement. In addition, CSI has the advantage of combining the assessment of the level of importance and performance of each service indicator, so that it can produce an overall satisfaction index (Pratama & Santi, 2025).

The CSI method is also known to be highly efficient because it can measure satisfaction while simultaneously identifying service aspects that require attention for improvement. This method can provide a clear picture of user satisfaction, enabling organizations to routinely evaluate and improve the services provided, making it a strategic tool for continuous improvement (Amri, Subagio, & Kusnadi, 2020). Therefore, integrating the CSI method with the e-GovQual dimension allows for a systematic and structured evaluation of public satisfaction, while adapting it to the context of e-government services at the village level. This approach is expected to provide a more contextual perspective on the experiences of rural communities in utilizing digital public services. Furthermore, this approach is expected to provide a more objective picture of service quality and serve as a basis for improving digital public services that are oriented towards community needs.

Based on the literature review described above, it can be concluded that evaluation of e-government service quality generally focuses on the dimensions of ease of use, system reliability, information quality, trustworthiness, and service support for users, as summarized in the e-GovQual model. On the other hand, the CSI method has proven effective in providing a quantitative overview of the overall level of user satisfaction through an index-based approach. However, most previous studies have focused on analyzing the relationships between variables or applied them to the context of urban areas and higher levels of government. Therefore, this study integrates the e-GovQual dimensions with the CSI method as an evaluation framework to describe the level of public satisfaction with e-government services at the village level descriptively and contextually.

3. Methods

In this study, the method used includes a series of steps required to collect and process data to achieve the research objectives. There are at least five steps involved: research design, instrument development, instrument testing, data collection, data processing and analysis, and conclusion drawing. A more detailed explanation of the research phases is shown in Fig. 1.

3.1. Research Design

This study uses a descriptive quantitative approach to measure public satisfaction with e-government services at the village level. This approach was chosen because the study focuses on measuring public perceptions in a structured and measurable manner through numerical data obtained from questionnaires. The descriptive design was used to describe the level of service user satisfaction factually and systematically without examining causal relationships between variables, given that the focus of the study was to obtain an empirical picture of public satisfaction levels as a basis for evaluating the quality of existing e-government services.

The object of the study was the OpenSID application-based e-government service implemented in Purworejo Village, Pungging District, Mojokerto Regency, while the subjects were village residents who had used this digital administration service.

3.2. Research Instrument Development

The research instrument used was a questionnaire developed based on the e-government service quality dimensions of the e-GovQual model. The e-GovQual model was chosen because it is specifically

designed to evaluate the quality of digital government services from a user perspective. The e-GovQual dimensions used in this study include (Yuhefizar, Utami, & Sudiman, 2024):

1) Ease of Use: How easy it is for Purworejo Village residents to use the OpenSID application.
2) Trust: The level of trust among Purworejo Village residents in the OpenSID application services.
3) Functionality of the Interaction Environment: The OpenSID application's ability to facilitate interactions between the village government and the Purworejo Village community, particularly in the delivery and collection of information.
4) Reliability: The OpenSID application's reliability in providing services consistently, accurately, and timely without experiencing system disruptions.
5) Content and Appearance of Information: The quality of the information presented in the OpenSID application, including its completeness, clarity, and visual appearance, is easy for Purworejo Village residents to understand.
6) Citizen Support: The availability and quality of support provided by the village government through the OpenSID application, such as technical assistance, responsiveness to complaints, and ease of access to services.

Each dimension is translated into some statements reflecting the e-government service attributes in the OpenSID application. Measurements were conducted using a five-point Likert scale, ranging from strongly disagree (1) to strongly agree (5) for assessing service performance, and an importance scale to measure respondents' expectations. The 5-point Likert scale was chosen because it aligns with the research objective, which focuses on measuring individual opinions and perceptions of social phenomena (Satria & Imam, 2024). Furthermore, similar research has also used a 5-point Likert scale because it provides better data quality than scales with a larger number of categories.

3.3. Instrument Testing

Before being used in primary data collection, the questionnaire instrument was first tested to ensure validity and reliability. Validity testing was conducted to determine the extent to which each question item accurately measured the research variable. Validity was assessed using Pearson Product-Moment correlation, comparing the calculated r value with the table r value. Each question item was declared valid if its correlation coefficient (calculated r) value was greater than the table r value, in accordance with instrument testing standards in social research. The table r value was determined based on the number of respondents and the significance level used in the study (Ramadhan, Siroj, & Afgani, 2024).

Meanwhile, reliability testing was conducted to measure the consistency of the research instrument. Reliability was tested using Cronbach's Alpha, with the stipulation that an instrument is considered reliable if its Cronbach's Alpha value is greater than 0.60, indicating an acceptable level of reliability (Ramadhan, Siroj, & Afgani, 2024). Each question item that met these requirements had a good level of reliability and consistently measured the research variable. Instruments that met the validity and reliability criteria were then used in the data collection stage.

3.4. Data Collection

In this stage, the questionnaire, which met the criteria for validity and reliability, was then used in the data collection process. Data collection was conducted by distributing questionnaires to residents of Purworejo Village who had used OpenSID-based administrative services. Questionnaires were distributed both in person and online to facilitate respondent participation. Prior to distributing the questionnaire, the required sample size was determined. The sample represents the population being studied and is selected to represent the characteristics of that population, so that the research results can be generalized.

The population in this study was all residents of Purworejo Village who had the potential to or had previously used village e-Government services through the OpenSID application. The sample size was determined using Slovin's formula, as the research population was known, allowing the sample size to be calculated in a practical and proportional manner (Wahyudi, et al., 2023). The Slovin formula used is shown in Eq. (1),

$$n = \frac{N}{1+N(e)^2} \quad (1)$$

The sample size (n) was determined based on the population size (N) and the margin of error (e), as shown in Eq. (1). The resulting sample size is considered representative of the research population and sufficient for further analysis.

3.5. Data Analysis

Data analysis in this study was conducted using the CSI method. The CSI method is used to measure

Table 1
User satisfaction level criteria (Amri, Subagio, & Kusnadi, 2020).

No	CSI Value (%)	Description (CSI)
1	0 – 25	Poor
2	26 – 50	Sufficient
3	51 – 75	Good
4	76 – 100	Very Good

and analyze the level of community satisfaction by considering the level of importance (expectations) and performance (perceptions) felt by the Purworejo Village community regarding E-Government services through the OpenSID application. The CSI calculation stages include (Nha & Kim, 2025):

1) Determining the Mean Importance Score (MIS) namely the average importance value of each attribute as in Eq. (2),

$$MIS = \frac{\sum_{i=1}^{n} Y_i}{n} \quad (2)$$

Y_i represents the importance value of attribute Y for respondent i, as defined in Eq. (2), with n denoting the total sample size of respondents in the study.

2) Determining the Mean Satisfaction Score (MSS) namely the average satisfaction value of each attribute as in Eq. (3),

$$MSS = \frac{\sum_{i=1}^{n} X_i}{n} \quad (3)$$

X_i represents the importance value of attribute X for respondent i, as defined in Eq. (3), with n denoting the total sample size of respondents in the study.

3) Calculate the Weight Factor (WF) for each attribute in Eq. (4),

$$WF = \frac{MIS_i}{\sum_{i=1}^{p} MIS_i} \times 100\% \quad (4)$$

MIS_i represents the average importance value for item i, as defined in Eq. (4), and $\sum_{i=1}^{p} MIS_i$ denotes the total average importance from item 1 to p.

4) Calculate the Weight Score (WS) for each attribute in Eq. (5),

$$WS_i = WF_i \times MSS \quad (5)$$

The WF_i values represent the weighted factor z used in the analysis calculations in this study. WF_i represents the weighted factor for item i, as defined in Eq. (5).

5) Calculate the Customer Satisfaction Index (CSI) in Eq. (6),

$$CSI = \frac{\sum_{i=1}^{p} WS_i}{HS} \times 100\% \quad (6)$$

$\sum_{i=1}^{p} WS_i$ denotes the total average importance from item 1 to p, and HS represents the maximum scale used, as defined in Eq. (6).

The results of the CSI calculation were then used to determine the level of public satisfaction with the OpenSID application service and to identify service attributes that need to be prioritized for improvement. The level of public satisfaction based on the CSI value can be seen in Table 1.

In general, this research process includes the following stages: problem identification and literature review, questionnaire development based on the e-GovQual model, instrument validity and reliability testing, respondent data collection, data analysis using the CSI method, compilation of results and discussion, and finally, concluding. With these methodological stages, this research is expected to provide a systematic overview of the level of public satisfaction with e-government services at the village level and identify service aspects that require priority improvement.

4. Results and Discussion

4.1. Respondent Characteristics

This study involved respondents from the Purworejo Village community who use OpenSID as a village e-government service. The criteria for respondents in this study included being a Purworejo Village resident, at least 17 years old or possessing an ID card, having previously used OpenSID-based village administration services, and being willing to complete a research questionnaire. This criterion was established to ensure

Table 2
The result of validity tests.

Dimension	Variabels	r Value	r Table	Result
Citizen Support	User Guide	0.64	0.119	Valid
	Help with Problems	0.69	0.119	Valid
	Instruction Understanding	0.6	0.119	Valid
	Admin Support	0.84	0.119	Valid
Content and Appearance of Information	Size & Layout	0.91	0.119	Valid
	Visual Appearance	0.95	0.119	Valid
	Ease of Understanding	0.95	0.119	Valid
	Content Completeness	0.95	0.119	Valid
Ease of Use	Ease of Use	0.91	0.119	Valid
	Information Search	0.98	0.119	Valid
	Menu Navigation	0.98	0.119	Valid
	Initial Screen Guide	0.99	0.119	Valid
Functionality of the Interaction Environment	Information Relevance	0.99	0.119	Valid
	System Response	0.99	0.119	Valid
	System Interactivity	0.99	0.119	Valid
	Two-Way Interaction	0.99	0.119	Valid
Reliability	Service Consistency	0.97	0.119	Valid
	Minimal Errors	0.99	0.119	Valid
	Information Accuracy	0.96	0.119	Valid
	System Reliability	0.91	0.119	Valid
Trust	Data Security	0.95	0.119	Valid
	Data Trustworthiness	0.95	0.119	Valid
	Data Transparency	0.97	0.119	Valid
	Data Input Convenience	0.97	0.119	Valid

Table 3
The results of MIS and MSS.

Variables	Question Number	Mean Importance Score (MIS)			Mean Satisfaction Score (MSS)		
		Total	Mean Importance Score	MIS Score	Total	Mean Satisfaction Score	Total MSS Score
Citizen Support	1	1015	3.72	14.78	575	2.11	2.76
	2	988	3.66		965	3.53	
	3	1022	3.74		567	2.08	
	4	1001	3.67		904	3.31	
Content and	5	996	3.56	14.69	984	3.60	3.60
Appearance of	6	1010	3.70		982	3.60	
Information	7	1004	3.68		975	3.57	
	8	1001	3.67		993	3.64	
Ease of Use	9	1013	3.71	14.75	987	3.62	3.61
	10	1003	3.67		988	3.62	
	11	1008	3.79		981	3.59	
	12	1002	3.67		987	3.62	
Functionality of the	13	1017	3.73	14.77	991	3.63	3.60
Interaction Environment	14	1002	3.67		985	3.61	
	15	1010	3.70		982	3.60	
	16	1003	3.67		971	3.56	
Reliability	17	1014	3.71	14.84	984	3.6	3.63
	18	1020	3.74		995	3.64	
	19	1010	3.70		993	3.64	
	20	1008	3.69		992	3.63	

that respondents had direct experience using the village e-government system, ensuring that the data obtained was deemed relevant and representative of service users' perceptions.

The number of respondents used was 273. This number was calculated using the Slovin formula, with a population of 856 people and a margin of error of 5%. Respondents came from three hamlets: Purworejo, Saradan, and Mojodadi. The distribution of respondents showed relatively even participation, with Saradan having the largest number of respondents (36.63%), followed by Purworejo (35.53%) and

Table 4
The Results of WF and WS.

Variable	Weight Factor (WF)	Weight Score (WS)
Citizen Support	0.17	0.46
Content and Appearance of Information	0.16	0.59
Ease of Use	0.17	0.60
Functionality of the Interaction Environment	0.17	0.60
Reliability	0.17	0.60
Trust	0.17	0.65

Mojodadi (27.84%). The distribution of respondents, which covers the entire village, indicates that the data obtained represents the overall condition of e-government service users in Purworejo Village.

Respondent area information indicates that the distribution of respondents covers all hamlets in Purworejo Village. This demonstrates that the research sample is representative and reflects the conditions of the village community as a whole. This data also provides a basis for analyzing geographic satisfaction and identifying areas requiring priority service quality improvements.

4.2. Results of Instrument Testing

Instrument testing was conducted to ensure that the questionnaire used in this study accurately measured the research objectives and maintained consistency in its measurements. This testing was conducted using validity and reliability tests using Microsoft Excel software. The instrument testing process involved 30 respondents outside the main research sample, but still represented the characteristics of the respondents identified in the study. The results of this testing served as a reference for determining the questionnaire's suitability for subsequent data analysis.

4.2.1 Validity testing

The validity test aims to determine the extent to which each question in the questionnaire represents the variables being studied. The test results indicate that all calculated r values are above the table r. Thus, all questions are declared valid and suitable for use as data collection instruments in this study. These results also indicate that the instrument is of sufficient quality and can be used for further analysis. For more details, is shown in Table 2.

4.2.2 Reliability testing

Reliability tests are carried out to determine the level of consistency and reliability of the data obtained. from the research questionnaire. The test results showed that the Cronbach's Alpha value of 0.67 exceeded the reference value of 0.6. Thus, all measured variables can be declared reliable, and the measurement instrument is deemed consistent and suitable for further data analysis.

4.3. Analysis of Public Satisfaction Using the CSI Method

The public satisfaction analysis in this study was conducted using the CSI method through several calculation stages: Mean Importance Score (MIS), Mean Satisfaction Score (MSS), Weight Factor (WF), and Weight Score (WS). These stages are used to describe the level of importance, perceived performance, and contribution of each service attribute in shaping the overall level of public satisfaction.

The MIS score reflects the level of public importance or expectations regarding e-government service attributes. Meanwhile, the MSS describes the level of service performance perceived by users. The assessment results indicate that the public generally places system reliability, ease of use, and clarity of information as attributes of high importance, in line with the characteristics of village administration service needs. The MIS and MSS scores are shown in Table 3.

Based on the MIS score, the Weighted Score (WF) is calculated to determine the relative weight of each service attribute. This WF score is then multiplied by the MSS score to obtain the WS. This step aims to determine the contribution of each service attribute to the overall level of public satisfaction, thus clearly identifying attributes with high importance and low performance. The WF and WS scores are shown in Table 4.

After all the MIS, MSS, WF, and WS calculations have been completed, the next step is to determine the CSI score. The calculation process uses Eq. (6). The accumulated Weight Score results in a CSI score of 70%, which is in the satisfactory category. This value shows that the OpenSID-based e-government services in Purworejo Village have generally been able to meet community expectations, although there are still several aspects of the service that need to be improved in order to achieve a more optimal level of satisfaction.

4.4. Analysis of Each e-GovQual Dimension

Further analysis was conducted by grouping the measurement results based on the e-GovQual

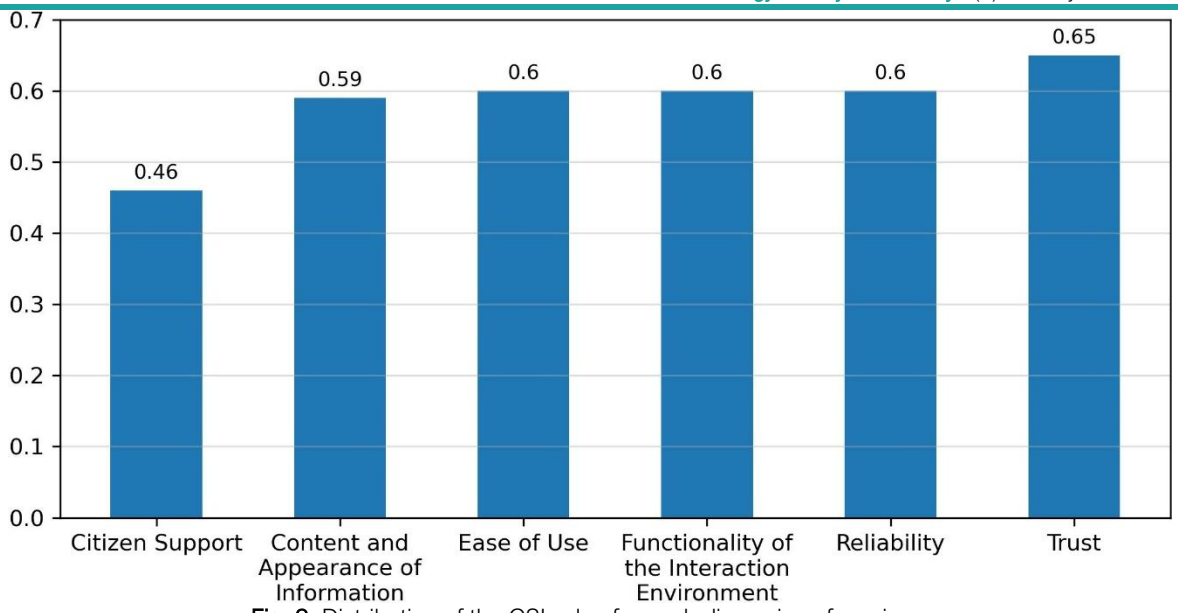

Fig. 2. Distribution of the CSI value for each dimension of services.

model's e-government service quality dimensions: Ease of Use, Trust, Functionality of the Interaction Environment, Reliability, Content and Appearance of Information, and Citizen Support. The analysis revealed that the Trust dimension contributed the highest level of public satisfaction, with a weighted score of 0.65. This finding indicates that the residents of Purworejo Village have a high level of trust in OpenSID-based e-government services, particularly regarding system reliability and the security of digital administration services. Furthermore, the Reliability, Ease of Use, and Functionality of the Interaction Environment dimensions also demonstrated relatively high and balanced weighted scores of 0.60 each. This indicates that the OpenSID system is considered quite stable, easy to use, and capable of supporting service interactions effectively.

Conversely, the Citizen Support dimension received the lowest weighted score of 0.46. The low score for this dimension indicates that aspects of service support for users, such as the availability of user guides, clear instructions, and technical assistance, are still suboptimal. This condition indicates that even though the system is functioning well, the success of e-Government implementation at the village level is also greatly influenced by the quality of assistance and support provided to the community as service users. This finding confirms that e-government success depends not only on the technical aspects of the system, but also on the quality of assistance and support provided to users.

4.5. Discussion

The results of the study indicate that the level of public satisfaction with e-Government services in Purworejo Village is in the satisfied category with a CSI score of 70%. This finding indicates that the implementation of OpenSID has generally been able to meet public expectations in supporting digital village administration services, although there is still room for improvement in service quality. The CSI score in the satisfied category indicates that most user needs have been met, but not yet fully achieved the optimal level of satisfaction. This finding aligns conceptually with several previous studies that state that ease of use, system reliability, and information quality are important factors in shaping user satisfaction of e-government services. These previous studies were used as a conceptual reference in determining the dimensions of user satisfaction, not as a quantitative comparison of CSI scores, considering that to date there has been no research that integrates CSI and e-GovQual in the context of village-level e-government in Indonesia. The distribution of CSI scores for each service dimension is shown in Fig. 2.

The Trust, Reliability, Functionality of the Interaction Environment, and Ease of Use dimensions contributed the most to community satisfaction. This indicates that system reliability, ease of use, and trust in services are key factors in e-government acceptance at the village level. This indicates that system reliability, ease of use, and trust in services are important factors in e-government acceptance at the village level. High scores on the Trust dimension indicate that the community feels confident in the digital administrative services provided by the village government, as these services are official and managed directly by village officials who are well-known to the community. Furthermore, a system that is considered relatively easy to use and accessible also strengthens the perception of service reliability, thus positively

impacting user satisfaction. Conversely, the Citizen Support dimension received the lowest score, indicating that user assistance and support are still suboptimal. These findings indicate that although the system is technically sound, the success of e-government implementation at the village level is heavily influenced by the availability of service support, clarity of user manuals, and the community's level of digital literacy. Furthermore, the community's continued reliance on face-to-face services also poses a challenge to the independent use of e-government services. Unlike urban contexts, which generally have higher levels of technological readiness and digital literacy, rural communities still require more intensive outreach and mentoring to optimally utilize digital services. This situation indicates that the approach to e-government implementation at the village level cannot be completely equated with that in urban areas. Although no previous research has combined CSI and e-GovQual specifically for villages, several studies related to CSI in urban public services (Novitasari et al., 2024) and e-GovQual in municipal services (Listiarti et al., 2024) show similar patterns in the Reliability and Trust dimensions. These research results confirm that the success of e-government at the village level is determined not only by the availability of technology, but also by user readiness, service support, and mentoring strategies that are appropriate to the characteristics of rural communities. This also provides a new contribution to the literature on e-government user satisfaction in villages

4.6. Research Implications

This research yields several important implications, both practical and academic. Practically, the results provide a basis for village governments to improve the quality of e-government services, particularly in the Citizen Support dimension. This improvement can be achieved through providing clearer system usage guidelines, outreach activities, and strengthening mentoring and technical assistance services to the community. These efforts are expected to optimize the utilization of e-government services and encourage overall community satisfaction.

Academically, this research strengthens the relevance of using the e-GovQual model combined with the CSI method to evaluate the quality of e-government services at the village level. This approach provides a systematic and contextual quantitative overview of the experiences of rural communities, while filling a gap in e-government research, which has previously focused on urban areas, higher levels of government, and been dominated by cause-and-effect analysis.

However, the results of this study are still contextual and cannot be generalized. Therefore, the application of similar methods to other villages, especially those outside Sidoarjo Regency, is recommended. This is because each region has a different geographical location and different characteristics, making it possible to obtain more diverse findings and enrich the study of e-government implementation at the village level.

5. Conclusions

Based on the results of measuring public satisfaction with OpenSID-based e-government services in Purworejo Village using the CSI method, the CSI score was 70%, which is in the satisfied category. This result indicates that the implemented digital administration services have been able to meet most community expectations, although not yet fully optimal. Analysis based on the e-GovQual dimension shows that the Citizen Support dimension has the lowest satisfaction level compared to other dimensions. This condition indicates weak service support, particularly regarding the availability of user guides and clarity of information for the community, so that users still rely on direct assistance from village officials. In contrast, the Functionality of the Interaction Environment and Reliability dimensions showed relatively good performance, reflecting that the system has been functioning stably and is able to provide administrative services consistently. These findings confirm that improving the quality of e-government at the village level depends not only on system availability but also on strengthening aspects of assistance and support for users so that services can be optimally utilized. Future research is recommended to expand the study object to other villages to obtain a comparative picture of the level of public satisfaction with e-government services at the village level.

In addition to providing an overview of community satisfaction levels with village e-government services, this study demonstrates that a user satisfaction-based measurement approach using the CSI method combined with e-GovQual dimensions is relevant for evaluating e-government service quality at the village level. This approach provides a more contextual perspective on the experiences of rural communities, a practice that has been limited in e-government research, which generally focuses on analyzing cause-and-effect relationships in urban areas. However, the results of this study are contextual and not yet generalizable. Therefore, applying similar methods to other villages with different characteristics is

necessary to obtain more diverse and comprehensive findings. Thus, this study provides an alternative approach to e-government evaluation that not only emphasizes the relationships between variables but also focuses on the experiences and perceptions of communities as service users, particularly in rural areas, which have received relatively little attention in e-government studies.

In terms of scientific contribution, this study introduces a novel approach to e-government evaluation at the village level by integrating the CSI method and e-GovQual dimensions into a single user satisfaction-based measurement framework. Unlike most e-government research in Indonesia, which focuses on causal analysis in urban areas or at higher levels of government, this study places the experiences and perceptions of rural communities as the primary focus of evaluation. This approach not only yields a comprehensive picture of satisfaction levels but also provides a map of digital service dimensions that need to be prioritized for improvement, making it relevant as an alternative for e-government evaluation at the village government level.

6. Declaration of AI and AI assisted technologies in the writing process

During the preparation of this work, the author(s) used ChatGPT for language refinement. After using this tool, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the published article.

7. CRediT Authorship Contribution Statement

Adib Pakarbudi: Conceptualization, Formal analysis, Funding acquisition, Methodology, Project administration, Supervision, Validation, Visualization, Writing – original draft and Writing – review & editing. Krisna Febriansah: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Resources, and Software.

8. Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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10. Data Availability

Data will be made available on request.

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