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Evaluation of the Service Quality of the Jaticempaka Village Website, Bekasi City, Using the PIECES Method

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Abstract

The research on Jati Cempaka Village's website, using the PIECES method, indicates a good quality of information services for the community. However, to enhance user satisfaction and improve overall service quality, key recommendations can be made: Firstly, optimize performance to ensure the website is fast, responsive, and accessible across devices. Regular checks and optimizations are crucial for sustained efficiency. Secondly, enrich the content with relevant, accurate information about village services, events, and local news. Incorporate multimedia elements for engagement. Thirdly, maintain economic viability by exploring cost-effective ways to enhance the website. Seek partnerships or grants for support. Fourthly, strengthen security measures to protect user data and the website from cyber threats. Regular software updates and security audits are vital. Fifthly, streamline navigation and user experience. Incorporate user feedback mechanisms for improvements. Lastly, enhance services with interactive features like online forms or chat support for community engagement. Focusing on these aspects will elevate Jati Cempaka Village's website as an effective medium for transparent governance, community engagement, and efficient service delivery.

Keywords: Evaluation, Analyze, Website, PIECES Method

Abstrak

Kemajuan teknologi informasi telah diaplikasikan secara luas oleh instansi pemerintah, termasuk Kelurahan Jati Cempaka Kota Bekasi, melalui pemanfaatan website sebagai salah satu sarana utama penyampaian informasi publik. Tujuan penelitian ini adalah untuk memahami, menganalisis, serta meningkatkan kualitas layanan situs web pemerintah setempat guna mendukung transparansi, partisipasi masyarakat, dan efisiensi pelayanan. Metode penelitian yang digunakan adalah metode PIECES yang mengevaluasi berbagai aspek seperti kinerja, informasi, ekonomi, keamanan, efisiensi, dan layanan pada sistem informasi organisasi. Dalam konteks Kelurahan Jati Cempaka, metode ini membantu dalam menganalisis kualitas layanan situs web secara terstruktur, memberikan panduan konkret untuk perbaikan yang diperlukan. Dari analisis kepuasan pengguna terhadap kualitas website menggunakan metode PIECES, dapat disimpulkan bahwa layanan informasi berbasis website dari Kelurahan Jati Cempaka Kota Bekasi dinilai baik oleh masyarakat. Hasil penelitian ini dapat menjadi panduan bagi pihak berwenang di Kelurahan Jati Cempaka untuk meningkatkan kualitas layanan situs web mereka guna memberikan manfaat lebih baik kepada masyarakat dan pengguna situs tersebut.

Kata Kunci: Evaluasi, Analisis, Situs Web, Metode PIECES

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1. Introduction

The rapid development of technology through the internet requires government agencies and officials to keep up with technological advancements to provide excellent services and maintain effective and disciplined performance. Jaticempaka Sub-district in Bekasi City is one of the agencies that has implemented government activities to develop public services through the internet by utilizing a website to provide, deliver, and publish public information in the administration of its government to realize good governance.

A website is an information page that can be accessed via the internet, and its access can be done from anywhere as long as there is an internet connection (Salamah et al., 2020). As a platform for information and interaction with the community, the sub-district's website allows for feedback through criticisms and suggestions. The community can also learn about the activities carried out through the website, which anyone can access anytime. The existence of the sub-district's website requires an identification of issues to determine how satisfied users are with the quality of the website's services. One of the methods that can be used to assess, evaluate, and correct the information system in an organization or agency is the PIECES method. In short, the PIECES method is a framework used to evaluate the value of applied variables and to assess whether the information system provides quality services (Aditya & Jaya, 2022). The evaluation model can be enhanced by integrating it into a broader framework that includes human and social change variables and adopts an innovation model (Koniyo et al., 2023). The PIECES method also serves as a basis for finding more specific problems. Several elements are typically used to analyze a system, such as performance, information, security, efficiency, and service (Fardela & Aziz, 2023). The results of this research will provide an evaluation overview and information regarding the level of user satisfaction with the information service website of Jaticempaka Sub-district in Bekasi City. Based on these results, the government agency can improve the website system to make it more optimal and effective.

In the research titled "Evaluation of the Use of Information Systems Through the GO PPU Application at the Civil Registration Agency of North Penajam Paser Regency using the PIECES method," the analysis results of the satisfaction level of the GO PPU application reached an average of 3.98, indicating that users are satisfied with the service (Ilda et al., 2022). Furthermore, in the research titled "Evaluation of the Use of E-Puskesmas Information System at the Pademangan District Health Center Using the PIECES Method," the analysis using the PIECES method showed that the e-Puskesmas system is very helpful and plays a crucial role in the Registration Counter. However, the Health Center needs to collaborate with the e-Puskesmas development team to quickly resolve these challenges (Muliansah & Budihartanti, 2020). Meanwhile, in the research titled "Analysis of the Utilization of the Village Information System Website in Dukung Village, Ibun District, Bandung Regency," it was found that using the PIECES method analysis can determine the satisfaction of the community in using the Village Information System Website in Dukuh Village, located in Ibun District, based on the indicators of Performance, Information, Economy, Control, Efficiency, and Service (Rusdianto & Firmansyah, 2022).

2. Methods

A well-directed and well-conducted research is sure to yield accurate conclusions. A framework or research stages are necessary to ensure the success of a research. The stages for conducting research can be explained as follows:

1. Problem Identification
   In this stage, the researcher will search for and identify the problem of user satisfaction with the quality of the Sub-district's website as an information medium.
2. Literature Review
   In this stage, the researcher gathers data and information from written sources such as scholarly articles, journals, books, document archives, or literature relevant to the research subject.

3. Population and Sample
   In this stage, the population and sample collection is carried out. The population in this study is the community of users of the Jaticempaka Sub-district's website. The method used to select the sample is through random sampling.
4. Questionnaire Preparation
   In the next stage, the researcher will create a questionnaire as a data collection tool. This questionnaire will manage a list of statements covering the aspects of the PIECES method variables.
5. Data Collection
   In this stage, data collection is done through distributing and completing the previously distributed questionnaires. The data will be collected and stored in Microsoft Excel for further processing.
6. Data Analysis
   The collected data will then be analyzed using a descriptive approach with the PIECES method. This method is used to evaluate various aspects of the information system.
7. Results and Discussion
   The next stage involves presenting the results of the data analysis and interpreting the data to generate new information that can be used to gain a more comprehensive understanding of the subject under study.
8. Final Conclusion
   The final stage summarizes the results and discussions, resulting in a conclusion after analyzing the collected research data.

Data Collection Method

This data collection method allows researchers to gain a more comprehensive and in-depth understanding of the studied phenomenon. In short, a questionnaire or survey is one of the data collection methods commonly used in research. This method involves presenting a series of questions related to the research issue to the respondents(Prawiyogi et al., 2021)

According to Sugiyono, population is a generalization area consisting of objects/subjects with specific qualities and characteristics determined by the researcher to be studied and conclusions drawn from (Sugiyono, 2013). To ensure the success of the research related to the utilization and quality of the website and for ease of data acquisition, the researcher involved individuals who have visited the Jaticempaka Sub-district's website in Bekasi City in the year 2023 as the research population. The total population in this study is 120 individuals. Based on the calculation of the sample size using the Slovin formula, the Slovin formula is used to calculate the minimum sample size in cases where the population's behavior is not known with certainty (Wibowo, 2021). Therefore, the sample of respondents in this study is 55 individuals out of the entire population who have visited the Jaticempaka Sub-district's website in Bekasi City.

Data Analysis Method

The data collection technique was carried out by distributing questionnaires to individuals who visited the Jaticempaka Sub-district's website in Bekasi City in 2023 using Google Forms. Therefore, the sincerity of the respondents in answering the questionnaire is crucial in this study. After collecting the questionnaire data using a Likert scale, the Likert scale is an assessment technique with a five to seven-point scale to evaluate items based on the level of agreement or disagreement with the respondents. In this scale, respondents will respond to statements about their attitudes toward the research object (Hardani et al., 2020). The data will then be tested for its validity and reliability, and the criteria for respondents to receive a score for their answers are as follows:

Table 1. Likert Scale Score

Skor Likert	Answer Choices
1	Strongly Disagree (STS)
2	Disagree (TS)
3	Enough (C)
4	Agree (S)
5	Strongly Agree (SS)

PIECES Questionnaire Statement

A questionnaire is a data collection instrument that provides a list of statements along with several answer choices that will be provided to respondents. The following is a questionnaire statement based on the PIECES method variables:

A. Performance Variable Indicators

Table 2. Statement of Performance Variables

No	Statement	SS	S	C	TS	STS
1	The access speed to the Jaticempaka Village website Bekasi City, is quite fast.					
2	The Jaticempaka District Website, Bekasi City, displays the content clearly.					
3	The website does not experience errors when accessed.					
4	The visual appearance and design of the website are very attractive.					
5	The menu features provided by the website function well.					

B. Indicator Variable Information

Table 3. Information Variable Statement

No.	Statement	SS	S	C	TS	STS
6	The Jaticempaka Village website, Bekasi City, provides clear information about the services and programs implemented by the village.					
7	The Jaticempaka Village website, Bekasi City, provides relevant information about events and activities carried out by the village.					
8	The Kelurahan website provides complete information about the structure and duties of the village office.					
9	The Jaticempaka Village website always provides the latest information.					
10	The Jaticempaka Village website provides information that is easy to understand					

C. Economic Variable Indicators

Table 4. Statement of Economic Variables

No	Statement	SS	S	C	TS	STS
11	The costs incurred to access and utilize the Jaticempaka Village website are very economical.					
12	Ease of access to the Village website without requiring additional fees					
13	The Jaticempaka Village website makes it easier for users to obtain information in terms of costs.					

D. Indicator Variable Controls

Table 5. Control Variable Statement

No	Statement	SS	S	C	TS	STS
14	The subdistrict website provides good navigation to find the desired information.					
15	The subdistrict website provides very flexible display settings and user preferences.					
16	The website is free from advertising interference.					
17	Jaticempaka Village guarantees data security for every user of the Jaticempaka Village website.					

E. Efficiency Variable Indicator

Table 6. Efficiency Variable Statement

No	Statement	SS	S	C	TS	STS
18	The Village website makes it easy to find the service menu and information you need					
19	The subdistrict website provides the required information very effectively.					
20	The Jaticempaka Village website, Bekasi City, makes it easier for users to search for information in terms of time.					
21	The existence of the Jaticempaka Village website, Bekasi City, makes it easier for users and the community to fulfill their needs in terms of energy.					

F. Services Variable Indicator

Table 7. Services Variable Statement

No	Statement	SS	S	C	TS	STS
22	The Jaticempaka Village website provides satisfaction to you as a website visitor who needs information.					
23	The Jaticempaka Village website makes it easy to find and contact the contact services provided					
24	The contact service menu provided by the Jaticempaka Village website provides a fast and responsive response.					
25	The menu provided by the Jaticempaka Village website, Bekasi City, is complete.					

3. Results

Based on the results of analysis and data collection using a structured questionnaire that had been distributed previously, which was carried out on user assessments of the performance quality of the Jaticempaka Village information service website, Bekasi City, using the PIECES method (Performance, Information, Economy, Controls, Efficiency, Services) as a method for testing, correcting website service information system, the following analysis results are obtained:

Table 8. Classification of Respondents Based on Gender

Gender	Number of Respondents	Percentage
Woman	26 people	52,7%
Man	29 people	47,3%
Total	55 people	**100%**

Table 9. Classification of Respondents Based on Gender

Respondent's Age	Number of Respondents	Percentage
17-25 Years	20 people	36,4%
26-35 Years	28 people	50,9%
36-45 Years	3 people	5,5%
45-50 Years	1 person	1,8%
>50 Years	3 people	5,5%
Total	**55 people**	**100%**

Results of Data Instrument Test Processing

Data instrument testing is carried out to evaluate the validity of the questionnaire that has been distributed to ensure that the data obtained is suitable for research or not. By carrying out systematic data processing, the information in the data can be extracted more efficiently and accurately, thereby supporting a more informed decision-making process. The data instruments tested in this research are the validity and reliability tests based on the PIECES variable. The following are the results and discussion of each PIECES variable:

Validity test

Table 10. Validity Test Results

Variable	Indicator	R Count	R Table	Sig level.	Information
Performance	P1	0.761	0.2656	0,050	Valid
	P2	0.756	0.2656	0,050	Valid
	P3	0.698	0.2656	0,050	Valid
	P4	0.729	0.2656	0,050	Valid
	P5	0.749	0.2656	0,050	Valid
Information	I6	0.499	0.2656	0,050	Valid
	I7	0.811	0.2656	0,050	Valid
	I8	0.750	0.2656	0,050	Valid
	I9	0.825	0.2656	0,050	Valid
	I10	0.559	0.2656	0,050	Valid
Economy	E11	0.788	0.2656	0,050	Valid
	E12	0.762	0.2656	0,050	Valid
	E13	0.861	0.2656	0,050	Valid
Controls	C14	0.781	0.2656	0,050	Valid
	C15	0.701	0.2656	0,050	Valid
	C16	0.769	0.2656	0,050	Valid
	C17	0.735	0.2656	0,050	Valid
Efficiency	EF18	0.702	0.2656	0,050	Valid
	EF19	0.730	0.2656	0,050	Valid
	EF20	0.834	0.2656	0,050	Valid
	EF21	0.773	0.2656	0,050	Valid
Services	S22	0.576	0.2656	0,050	Valid
	S23	0.892	0.2656	0,050	Valid
	S24	0.900	0.2656	0,050	Valid
	S25	0.855	0.2656	0,050	Valid

The statement instrument is valid if the calculated r-value is greater than the r0 table, the significance value used is less than 0.05, and the r-table for 55 respondents is DF-2= 55-2 = 53, which is 0.2656. Based on Table 3, namely the results of data processing with validity tests

Reliability Test

A reliability test is needed to obtain results from evaluating the consistency of respondents' answers to each question item so that the results remain reliable or not by carrying out repeated tests. The reliability test used in the research used Cronbach Alpha. The following are the results of the reliability test for all PIECES variables:

Table 11. Reliability Test Results

Cronbach's Alpha	N of Items
.800	25

From Table 11, shown above, it is known that the N of Items is 25, which can be explained by the fact that there are 25 statements tested with a Cronbach Alpha value of 0.800 > 0.60, so it can be concluded that all statements in each variable are declared reliable or consistent.

PIECES Method Analysis Results

Based on the evaluation results of user assessments of the quality of the Jaticempaka Village information service website, Bekasi City, the PIECES method was used to measure user satisfaction. Meanwhile, an interval scale was used to determine the results of the average satisfaction value from the questionnaire scores, as proposed by Bilson, 2008. The interval scale is known to use the formula as follows. following (Yogananda, 2022)

$$Rs = \frac{m-n}{b} = \frac{5-1}{5} = 0,8 \tag{1}$$

where
Rs = The scale range sought
m = highest number in the questionnaire
n = lowest number in the questionnaire
b = number of choices available

The interval scale and assessment categories are classified as follows:

Table 12. Interval Scale

Value Scale	Value Quality Predicate
4,2 – 5	Very good
3,4 – 4,19	Good
2,6 – 3,39	Enough
1,8 – 2,59	Bad
1 – 1,79	Very bad

By determining the level of user satisfaction using an interval scale like the table above in analyzing and evaluating the quality of the Jaticempaka Village website information service system, Bekasi City, towards user satisfaction, especially the community. The questionnaire results that have been collected and processed are tabulated and produce the following average user satisfaction values:

a) *Performance*

Table 13. Table of Number of Performance Answer Assessments

Assessment of Respondents' Answers	P1	P2	P3	P4	P5
Strongly Agree (5)	34	31	29	26	34
Agree (4)	17	17	16	19	12
Doubtful (3)	4	7	10	10	9
Disagree (2)	0	0	0	0	0
Strongly Disagree (1)	0	0	0	0	0
Questionnaire Average Score	**4,50**	**4,43**	**4,34**	**4,29**	**4,45**

Rk

$$= \frac{4,50 + 4,43 + 4,34 + 4,29 + 4,45}{5}$$

$$\text{Rk} = \frac{22,01}{5}$$

$$\text{Rk} = 4,40$$

RESULTS = VERY GOOD

b). *information*

Table 14 Table of Number of Assessment Answers Information

Assessment of Respondents' Answers	I6	I7	I8	I9	I10
Strongly Agree (5)	24	17	21	17	28
Agree (4)	24	8	29	13	23
Doubtful (3)	5	8	3	1	2
Disagree (2)	0	14	1	17	0
Strongly Disagree (1)	2	8	1	7	2
Questionnaire Average Score	4,23	3,21	4,23	3,29	4,36

$$\text{Rk} = \frac{4,23 + 3,21 + 4,23 + 3,29 + 4,36}{5}$$

$$\text{Rk} = \frac{19,32}{5}$$

$$\text{Rk} = 3,86$$

RESULTS = GOOD

c). *economy*

Table 15 Table of Number of Economic Answer Ratings

Assessment of Respondents' Answers	E11	E12	E13
Strongly Agree (5)	32	28	32
Agree (4)	18	21	17
Doubtful (3)	5	6	6
Disagree (2)	0	0	0
Strongly Disagree (1)	0	0	0
Questionnaire Average Score	4,49	4,40	4,47

$$\text{Rk} = \frac{4,49 + 3,40 + 4,47}{3}$$

$$\text{Rk} = \frac{13,36}{3}$$

$$\text{Rk} = 4,45$$

RESULTS = VERY GOOD

d). *Controls*

Table 16 Table of Number of Assessments for Controls Answers

Assessment of Respondents' Answers	C14	C15	C16	C17
Strongly Agree (5)	25	29	31	27
Agree (4)	24	19	17	15
Doubtful (3)	6	7	7	13
Disagree (2)	0	0	0	0
Strongly Disagree (1)	0	0	0	0
Questionnaire Average Score	4,34	4,40	4,43	4,25

$$Rk = \frac{4,34 + 4,40 + 4,43 + 4,25}{4}$$

$$Rk = \frac{17,42}{4}$$

$$Rk = 4,35$$

RESULTS = VERY GOOD

e). *efficiency*

Table 17 Table of Number of Efficiency Answer Ratings

Assessment of Respondents' Answers	EF18	EF19	EF20	EF21
Strongly Agree (5)	28	27	28	26
Agree (4)	20	22	19	17
Doubtful (3)	7	6	8	12
Disagree (2)	0	0	0	0
Strongly Disagree (1)	0	0	0	0
Questionnaire Average Score	**4,38**	**4,38**	**4,36**	**4,23**

$$Rk = \frac{4,38 + 4,38 + 4,36 + 4,23}{4}$$

$$Rk = \frac{17,35}{4}$$

$$Rk = 4,33$$

RESULTS = VERY GOOD

e). *Services*

Table 18 Table of Number of Services Answer Ratings

Assessment of Respondents' Answers	S22	S23	S24	S25
Strongly Agree (5)	16	12	5	7
Agree (4)	28	12	1	1
Doubtful (3)	2	0	9	3
Disagree (2)	9	23	16	26
Strongly Disagree (1)	0	8	24	18
Questionnaire Average Score	**3,92**	**2,94**	**2,03**	**2,16**

$$Rk = \frac{3,92 + 2,94 + 2,03 + 2,16}{4}$$

$$Rk = \frac{11,05}{4}$$

$$Rk = 2,76$$

RESULTS = ENOUGH

f). **Overall Results of PIECES Method Aspects**

Table 19 PIECES Method Summary Table

Aspects of the PIECES Method	Result Value	Quality Level Description
Performance	4,40	Very good
Information	3,86	Good
Economy	4,45	Very good
Controls	4,35	Very good
Efficiency	4,33	Very good
Services	2,76	Enough
Total User Satisfaction Regarding Website Quality	**4,02**	**GOOD**

$$\text{Rk}$$
$$= \frac{4,40 + 3,86 + 4,45 + 4,35 + 4,33 + 2,76}{4}$$
$$\text{Rk} = \frac{24,15}{6}$$
$$\text{Rk} = 4,02$$

RESULTS = GOOD

4. Conclusion

Evaluation of the use of the PIECES method in analyzing website-based information systems, with a focus on various PIECES variables, has produced significant findings. The results of this evaluation show a very high level of effectiveness, making it possible to carry out a more comprehensive evaluation of the quality of the information service. Apart from that, an evaluation of the level of user satisfaction in Jaticempaka Village, Bekasi City, also indicates that this website's information service is in a good category with a score of 4.02, which indicates a satisfactory level of satisfaction.

However, the evaluation also revealed that several aspects still needed to be improved. Two PIECES variables, namely information with a value of 3.86 and services with a value of 2.76, obtained the lowest values, indicating room for improvement in these aspects. Thus, the results of this research provide an understanding that the PIECES method can be used as a powerful analytical tool for website-based information systems and become a basis for evaluation and improvement in the future. By adopting the PIECES approach as a framework, we can answer broader questions regarding user satisfaction, leading to improved information service quality.

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