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Analysis of Website Service Quality of Sistem Perizinan Online Kota Tasikmalaya (SIPENTAS) Using the Modified Webqual 4.0 and Importance Performance Analysis (IPA) Methods

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***Abstract*— Sistem Perizinan Online Kota Tasikmalaya (SIPENTAS) is a web-based service designed to simplify public licensing processes and support the implementation of digital government services. Its presence is expected to enhance efficiency, effectiveness, and transparency in local government services. However, until now, no comprehensive evaluation has been conducted to assess the website's quality from the users' perspective. As a result, there is no clear understanding of the extent to which SIPENTAS meets user needs, expectations, and usability standards. This study aims to analyze the quality of the SIPENTAS website using the Modified WebQual 4.0 framework, which consists of four key dimensions: Usability Quality, Information Quality, Interaction Quality, and Interface Quality. In addition, the research employs the Importance Performance Analysis (IPA) method to compare users' perceived performance and importance levels, enabling the identification of attributes that require improvement. Quadrant mapping in IPA is further utilized to determine the priority level of each indicator in enhancing service quality. The results of the study show that the overall quality of SIPENTAS falls into the "good" category. This is indicated by an average conformity level of 87.35% between performance and user expectations, as well as an average gap score of –0.58. Nevertheless, IPA quadrant analysis identifies six indicators that require immediate improvement, particularly within the Usability Quality and Interface Quality dimensions. Therefore, while SIPENTAS demonstrates generally good service quality, enhancements to these priority indicators are essential to optimize website performance, improve user experience, and ensure the delivery of more responsive and user-oriented digital licensing services.**

***Keywords*— Analysis; IPA; Service Quality; Webqual 4.0 Modified**

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I. INTRODUCTION

The application of information technology is one of the key factors in improving the efficiency and effectiveness of public services [1][2]. To utilize information technology, the government issued a policy related to E-Government as stated in Presidential Instruction Number 3 of 2003 concerning E-Government Development Policies and Strategies[3]. E-Government is implemented to improve the quality and accessibility of public services through an online system that makes it easier for the public to access various government services [4][5][6].

The Tasikmalaya City Government, through the Capital Investment and One-Stop Integrated Services Agency (DPMPTSP), has developed the Tasikmalaya City Online Licensing System (SIPENTAS) to modernize public services through technology. This digital platform is designed to make it easier for the public to process various types of permits without having to come directly to the service office. Various permits can be processed through SIPENTAS, such as health worker practice permits, route permits, and advertising permits. The presence of this system is expected to increase efficiency, transparency, and accountability in the licensing process, in line with the local government's vision of strengthening digital-based public services.

However, interviews conducted by researchers indicate that SIPENTAS still faces several obstacles in its implementation. Several users reported system bugs that disrupted the smooth process of data input and document upload. Furthermore, the absence or delay of notifications during account registration often confused users and hampered the progress of the process. The interface, which was considered unattractive, and several cases where user input data was not read by the operating system, also contributed to obstacles that reduced the comfort and effectiveness of using the SIPENTAS platform. Furthermore, to date, no systematic evaluation of the quality of the SIPENTAS website has been conducted based on user perceptions and experiences. Yet, understanding the level of satisfaction, ease of use, and system reliability is crucial to ensuring the platform can evolve to meet community needs [7][8][9]. Such an evaluation can also serve as a basis for designing more targeted improvements, both in technical aspects, interface design, and system communication

mechanisms. With this evaluative study, the city government is expected to improve the quality of SIPENTAS as a responsive, user-friendly, and sustainable online licensing service.

Evaluating website quality from the user's perspective is very important to determine the extent to which the website meets user expectations and needs [10][11][12]. Without proper evaluation, it is difficult to identify the strengths and weaknesses of the services provided, as well as areas that need improvement [13]. The Webqual 4.0 method is an effective tool for measuring website quality based on user perception [14][15]. Several previous studies that utilized Webqual 4.0 to measure website quality evaluated the quality of the Disdukcapil website using Webqual 4.0, with results showing a significant influence on user satisfaction [16]. In addition, study [17] analyzed the quality of the MyBest e-learning website, with results showing that each variable had a satisfaction value in the satisfied category. Research [18] analyzed the quality of the KPU website using Webqual 4.0 and IPA, with the result that the service on the website was close to satisfactory and the gap obtained was that the website did not meet user expectations, with priority given to improving the quality of information. Based on the studies conducted, the use of Webqual 4.0 and IPA does not only measure quality and satisfaction levels. Webqual 4.0 and IPA are interrelated because IPA analyzes the gap between all attributes in Webqual 4.0, which works by comparing the performance of what is currently felt and what is expected[19][20].

This study was conducted using the modified Webqual 4.0 method because it was more suitable for the characteristics and needs of users, namely by adding one variable, namely interface quality, and by utilizing the IPA method to identify service attributes that needed to be improved based on the level of importance and performance perceived by users.

The objectives of this study were to determine the quality level of the SIPENTAS website based on user perceptions, analyze the suitability between performance and user importance, and determine improvement priorities in order to provide more optimal services.

II. The Materials and Method

The research stages to be carried out in the SIPENTAS website quality analysis include several systematic steps as shown in Figure 1.

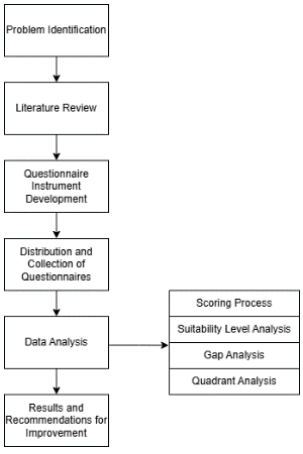

Fig. 1 Research Procedures

A. Problem Identification

At this stage, interviews were conducted with DPMPTSP and website developers to confirm that service quality evaluations had never been conducted before.

B. Literature Review

A literature review was conducted to find theories and methods relevant to this study. The literature review included research on service quality, website quality evaluation models, and data analysis methods to be used [21][22].

C. Questionnaire Instrument Development

The questionnaire instrument was developed based on the modified Webqual 4.0 measurement, which covers three main dimensions, namely usability quality, information quality, interaction quality, and the addition of interface quality measurement. The research instrument was developed based on the Modified Webqual 4.0 method as shown in table 1[23].

TABLE 1
Research Instrument

Variable	Indicator	Statement
Usability Quality	USB1	SIPENTAS is easy to learn and operate
	USB2	User interaction with the SIPENTAS website is clear and understandable
	USB3	SIPENTAS is easy to navigate
	USB4	SIPENTAS is easy to use
	USB5	SIPENTAS has an attractive appearance
	USB6	SIPENTAS has an appearance that is appropriate for a licensing service
	USB7	SIPENTAS contains competency values (the website's ability to demonstrate performance)
	USB8	SIPENTAS creates a positive experience for users
Information Quality	IFM1	SIPENTAS provides accurate information
	IFM2	SIPENTAS provides reliable information
	IFM3	SIPENTAS provides the latest or up-to-date information
	IFM4	SIPENTAS provides relevant information
	IFM5	SIPENTAS provides easy-to-understand information
	IFM6	SIPENTAS provides detailed information
	IFM7	SIPENTAS presents information in the right format
Interaction Quality	ITR1	SIPENTAS provides a sense of security when submitting permit applications
	ITR2	SIPENTAS provides a sense of security regarding personal information
	ITR3	SIPENTAS provides space for personalization
	ITR4	SIPENTAS provides space for community
	ITR5	SIPENTAS makes it easy to communicate with administrators
	ITR6	SIPENTAS provides confidence that the services received are as promised
Interface Quality	ITF1	SIPENTAS has a display that uses appropriate images
	ITF2	SIPENTAS has a display that uses appropriate fonts
	ITF3	SIPENTAS has a display that uses appropriate colors
	ITF4	SIPENTAS uses an appropriate page design
	ITF5	The SIPENTAS website link works well
	ITF6	SIPENTAS has fast download speeds
	ITF7	SIPENTAS reflects the identity of licensing services

D. Distribution and Collection of Questionnaires

The questionnaires were distributed online via Google Forms to SIPENTAS users. The instruments, which were compiled based on the modified Webqual 4.0, were distributed to respondents who had been determined in accordance with the specified targets and numbers.

The population in this study is the community of Tasikmalaya City who applied for permits through SIPENTAS during the period of 2022 - May 2025. Based on the recapitulation data of the number of SIPENTAS permits provided by DPMPTSP from 2022 to May 2025, there were 6,142 permits. This number was determined as the population in this study.

The sample in this study was calculated using the following Slovin formula[24]:

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

Explanation:
n = Number of samples
N = Total population
e = Margin of error

The margin of error in this study is 10%.

$$n = \frac{6.142}{1 + 6.142(0,1)^2}$$
$$n = 98,39$$

The sampling technique used was non-probability sampling, which is a sampling technique where not all members of the population have an equal chance of being selected. This study combined two non-probability sampling methods, namely purposive and snowball sampling.

E. Data Analysis

The collected data will be processed and analyzed through several stages to evaluate the quality of SIPENTAS using the IPA method as follows [25]:

1. Scoring Process

   The data from the questionnaire was processed by assigning a score to each respondent's answer according to the Likert scale used. These scores were then added up and averaged to obtain a value for each attribute measured.

2. Suitability Level Analysis

   The suitability level analysis is used to determine the comparison of performance scores with importance scores.

3. Gap Analysis

   Gap analysis is used to identify gaps between each attribute of perceived performance quality and expected quality (importance). Gap analysis is conducted by finding the difference between the average performance value and the expected importance per attribute.

4. Quadrant Analysis

   Quadrant analysis is used to determine user responses to attributes mapped based on the level of importance and performance of the attributes.

F. Results and Recommendations for Improvement

This stage presents the results based on the data analysis conducted using the IPA method. The main findings from the analysis are the identification of service features that meet user expectations and aspects that still need improvement. Based on these findings, recommendations are provided as suggestions for SIPENTAS managers to improve service quality based on the research results.

III. Results and Discussion

A. Scoring Process

The results of the average score calculation for the performance level and importance of each indicator are listed in table 2.

TABLE 2
Scoring Process

Indicator	Performance		Importance	
	Total	Avg	Total	Avg
USB1	361	3,68	471	4,81
USB2	375	3,83	469	4,79
USB3	353	3,60	472	4,82
USB4	370	3,78	468	4,78
USB5	353	3,60	446	4,55
USB6	394	4,02	457	4,66
USB7	373	3,81	440	4,49
USB8	396	4,04	449	4,58
IFM1	431	4,40	457	4,66
IFM2	456	4,65	465	4,74
IFM3	413	4,21	465	4,74
IFM4	462	4,71	466	4,76
IFM5	414	4,22	460	4,69
IFM6	424	4,33	461	4,70
IFM7	382	3,90	443	4,52
ITR1	420	4,29	468	4,78
ITR2	436	4,45	456	4,65
ITR3	381	3,89	446	4,55
ITR4	324	3,31	420	4,29
ITR5	373	3,81	447	4,56
ITR6	430	4,39	457	4,66
ITF1	397	4,05	448	4,57
ITF2	393	4,01	430	4,39
ITF3	386	3,94	433	4,42
ITF4	359	3,66	452	4,61
ITF5	417	4,26	454	4,63
ITF6	420	4,29	452	4,61
ITF7	385	3,93	463	4,72
Average Total Score		**4,05**		**4,63**

Based on table 2, it shows that the average performance score is 4.05, while the importance score is 4.63. This means that user expectations are higher than the performance experienced by users.

B. Suitability Level Analysis

Suitability analysis is carried out by calculating the comparison results of the performance score with the importance score. The suitability level calculation results are then used as a basis for determining the priority of improvements for factors that influence website service quality. The suitability level calculation results are shown in table 3.

TABLE 3
Suitability Level Analysis

Indicator	Performance Score	Importance Score	Level of Suitability
USB1	361	471	76,65%
USB2	375	469	79,96%
USB3	353	472	74,79%
USB4	370	468	79,06%
USB5	353	446	79,15%
USB6	394	457	86,21%
USB7	373	440	84,77%

USB8	396	449	88,20%
IFM1	431	457	94,31%
IFM2	456	465	98,06%
IFM3	413	465	88,82%
IFM4	462	466	99,14%
IFM5	414	460	90,00%
IFM6	424	461	91,97%
IFM7	382	443	86,23%
ITR1	420	468	89,74%
ITR2	436	456	95,61%
ITR3	381	446	85,43%
ITR4	324	420	77,14%
ITR5	373	447	83,45%
ITR6	430	457	94,09%
ITF1	397	448	91,40%
ITF2	393	430	89.15%
ITF3	386	433	79,42%
ITF4	359	452	91,85%
ITF5	417	454	92,92%
ITF6	420	452	83,15%
ITF7	385	463	91,40%
Average Level of Suitability			**87,35%**

Based on table 3, the analysis results show a suitability value of 87.35%. This means that the performance of the SIPENTAS service has met most of the users' expectations.

C. *Gap Analysis*

A gap analysis was conducted to determine the extent of the difference between the level of performance and the level of importance of users regarding the quality of the SIPENTAS website service. Through this analysis, it can be determined which aspects have met user expectations and which aspects still need improvement. The results of the gap analysis are shown in table 4.

TABLE 4
GAP ANALYSIS

Indicator	Performance Score	Importance Score	Gap Level
USB1	3,68	4,81	-1,13
USB2	3,83	4,79	-0,96
USB3	3,60	4,82	-1,22
USB4	3,78	4,78	-1,00
USB5	3,60	4,55	-0,95
USB6	4,02	4,66	-0,64
USB7	3,81	4,49	-0,68
USB8	4,04	4,58	-0,54
IFM1	4,40	4,66	-0,26
IFM2	4,65	4,74	-0,09
IFM3	4,21	4,74	-0,53
IFM4	4,71	4,76	-0,05
IFM5	4,22	4,69	-0,47
IFM6	4,33	4,70	-0,37
IFM7	3,90	4,52	-0,62
ITR1	4,29	4,78	-0,49
ITR2	4,45	4,65	-0,20
ITR3	3,89	4,55	-0,66
ITR4	3,31	4,29	-0,98
ITR5	3,81	4,56	-0,75
ITR6	4,39	4,66	-0,27
ITF1	4,05	4,57	-0,52
ITF2	4,01	4,39	-0,38
ITF3	3,94	4,42	-0,48
ITF4	3,66	4,61	-0,95
ITF5	4,26	4,63	-0,37
ITF6	4,29	4,61	-0,32
ITF7	3,93	4,72	-0,79
Average Gap Level			**-0,58**

Based on table 4, the gap value obtained is -0.58. This means that overall, the indicators have not met user expectations because their performance has not exceeded expectations, resulting in a negative value.

D. *Quadrant Analysis*

Quadrant analysis was conducted to map each service attribute based on the average performance (X) and importance (Y) values obtained from the user evaluation data. This analytical approach allows researchers to visually classify the condition of each service quality indicator and understand how well SIPENTAS meets user expectations. The main objective of this analysis is to determine which attributes require immediate improvement, which ones should be maintained, and how these attributes influence the overall level of user satisfaction. By linking performance and importance, the analysis provides a clearer picture of perceived service gaps and helps identify areas where the system may not yet fully support user needs.

Through the Importance Performance Analysis (IPA) method, each indicator is positioned into one of four quadrants within a Cartesian diagram. These quadrants represent distinct strategic implications: indicators that must be prioritized for improvement, attributes that should be maintained due to high performance and high importance, features that receive excessive attention despite being perceived as less important, and aspects that can be considered lower priority due to low importance and low performance. By analyzing the distribution of SIPENTAS indicators across these quadrants, decision-makers can formulate targeted strategies for system enhancement, ensuring that development efforts are focused on aspects that have the greatest impact on user satisfaction and service effectiveness.

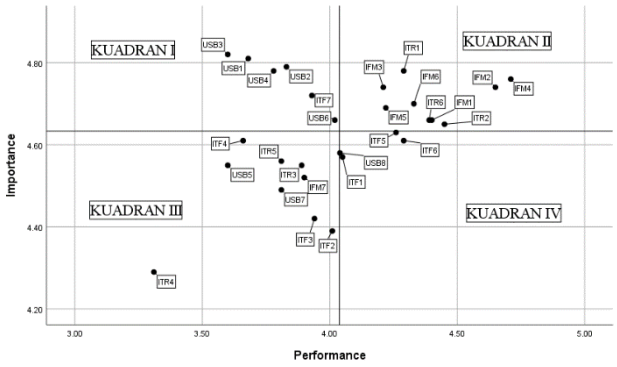

Fig. 2 Quadrant IPA

Based on Figure 2, the results of attribute mapping using the IPA method can be summarized as follows:

1. Quadrant I (Top Priority) describes attributes that are very important to users but whose performance is still low. Therefore, attributes in this quadrant are a top priority for evaluation and improvement because they have a significant impact on user satisfaction. The attributes included in Quadrant I are USB, USB2, USB3, USB4, USB6, and ITF7.
2. Quadrant II (Maintain Performance) describes attributes that have the same compatibility between website performance and user expectations, therefore

their quality needs to be maintained because they have a relatively high satisfaction value. Attributes included in quadrant II are IFM1, IFM2, IFM3, IFM4, IFM5, IFM6, ITR1, ITR2, and ITR6.

3. Quadrant III (Low Priority) describes attributes with low levels of importance and performance, so this quadrant is not a top priority for improvement because its impact on user satisfaction is relatively small. Attributes included in quadrant III are USB5, USB7, IFM7, ITR3, ITR4, ITR5, ITF2, ITF3, and ITF4.
4. Quadrant IV (Excessive) describes attributes that are considered less important by users but have high performance. Attributes included in quadrant IV are UBS8, ITF1, ITF5, and ITF6.

E. Results and Recommendations for Improvement

The results and recommendations for improvement based on the IPA quadrant analysis show that attributes in quadrant I (high priority) are recommended to be the focus of SIPENTAS service development and quality improvement. There are 6 indicators that require priority improvement to enhance the quality of the website service, as listed in table 5.

TABLE 5
RESULT AND RECOMMENDATIONS FOR IMPROVEMENT

Indicator	Statements	Recommendations
USB1	SIPENTAS is easy to learn and operate	Provide interactive guides or video tutorials on the SIPENTAS homepage so that new users can clearly understand the licensing process
USB2	User interaction with the SIPENTAS website is clear and understandable	Use simple, non-technical language in all instructions and system notifications
USB3	SIPENTAS is easy to navigate	Simplify the navigation structure by reorganizing the main menu and submenus to make them easier to understand and less confusing, and add a quick search feature to find the type of license
USB4	SIPENTAS is easy to use	Provide a data editing feature after data is entered so that users do not have to repeat the registration process
USB6	SIPENTAS has an appearance that is appropriate for a licensing service	Update the interface to a more modern, professional look and use icons that match the identity of the Tasikmalaya City licensing service
ITF7	SIPENTAS reflects the identity of licensing services	Use the official colors and logo of the Tasikmalaya City DPMPTSP consistently on all pages to strengthen the institutional image

Based on the evaluation of the quality of SIPENTAS services using usability and interface quality indicators, several aspects were identified that still need improvement to enhance the user experience. In the USB1 indicator (ease of learning), most users considered SIPENTAS to be quite easy to operate, but obstacles still arise in the initial stages of use, especially for new users who are not familiar with the online licensing process. This condition indicates the need for more comprehensive information support on the main page, for example, in the form of an interactive guide or video tutorial that can explain the steps for submitting a permit more clearly.

Furthermore, in indicators USB2 (interaction clarity) and USB3 (ease of navigation), it was found that the use of technical language and a less systematic menu structure can hinder users from understanding system instructions. Users reported that some terms were difficult to understand, and the placement of submenus was inconsistent, making it difficult to find the type of permit. These findings indicate the importance of simplifying the language in each instruction and improving the navigation structure, including the addition of a quick search feature that can help speed up the process of identifying required services.

In the USB4 (ease of use) indicator, the primary user complaint was the lack of a data editing feature after information was entered. This forced users to repeat the entire process if an input error occurred, increasing time and workload. Providing a data editing feature is an important recommendation to improve the efficiency and effectiveness of system use. Meanwhile, in the USB6 (appearance suitability) indicator, users assessed that the SIPENTAS interface was still lacking modernity and did not reflect the image of a professional licensing service. This was reinforced by the assessment results for the ITF7 indicator, which showed that the consistency of the visual identity of the Tasikmalaya City DPMPTSP was not fully reflected in the website interface. Therefore, a design update with the use of official colors, logos, and more representative icons is urgently needed to strengthen the institutional identity and increase the platform's credibility.

Overall, the evaluation results indicate that while SIPENTAS has facilitated the online permit application process, several technical and design aspects still require improvement. Improvements in navigation, display, instruction language, and the addition of functional features such as data editing will contribute significantly to improving service quality. Implementation of the formulated recommendations is expected to support the Tasikmalaya City DPMPTSP in providing digital permit services that are more responsive, user-friendly, and compliant with information technology-based public service standards. If these improvements are implemented, SIPENTAS has the potential to become a permit platform that is not only efficient but also trusted and relied upon by the public.

IV. CONCLUSION

The quality of the SIPENTAS website service using the modified Webqual 4.0 method was rated as good based on user perception. This is shown by the measurement results, where the average user gave a “Agree” rating for each variable. The results of the level of conformity for each variable show that the usability quality variable is 81.10%, information quality is 92.65%, interaction quality is 87.58%, and interface quality is 88.07%. The total average calculation of the level of conformity between the interests and performance of respondents that have been fulfilled is 87.35.

The gap analysis results show that there is a negative gap value, which means that the performance of SIPENTAS is not yet optimal because it does not meet user expectations. The overall average value in the gap analysis is -0.58. The grouping of attributes in the IPA quadrant results in priorities that need to be improved by service providers, namely USB1, USB2, USB3, USB4, USB6, and ITF7.

For future research, it is recommended that SIPENTAS evaluation be conducted using more diverse methods, such as combining WebQual 4.0 with SUS, TAM, or UEQ to obtain a more comprehensive picture of user experience and acceptance. Future research could also employ advanced statistical analysis, such as SEM or regression, to identify the dominant factors influencing user satisfaction. Furthermore, the number and diversity of respondents, including business owners, healthcare workers, and internal operators, should be expanded to provide more representative results. Future studies are also encouraged to conduct technical system tests, such as speed, stability, bug, and security tests, and compare SIPENTAS with other regional licensing systems to gain comparative insights. Finally, user-based approaches such as UCD, FGDs, usability testing, and the involvement of DPMPTSP operators can provide a more comprehensive understanding of user needs and system operational challenges.

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