

Evaluation of the Effectiveness E-Government System in the Semarang City Land Office (Importance Performance Analysis Method Approach)

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Abstract

This study aims to identify and analyze the dimensional factors of the system evaluation model from system quality, information quality, and service quality to user satisfaction with the Lentera system as a representation of e-government implemented at the Semarang City Land Office. This research tries to do three main identifications, namely whether there is a gap between the assessment of the importance and performance of the Lentera system from the user on each variable attribute that describes user satisfaction. Second, how it is the distribution of each attribute of each variable in the IPA quadrant matrix. Third, how to analyze the recommendations of each attribute of each variable as a form of system evaluation so that improvements to the Lentera system can be made in the future. The data analysis technique used in this research is quantitative research, and the research analysis method uses the importance performance analysis (IPA) approach. By using the Lentera system user as the research sample, 112 respondents were obtained as observation data. The results showed that all the attributes of each variable of system quality, information quality and service quality resulted in a negative gap between performance assessment and importance on the Lentera system, which means that the level of user satisfaction is quite low when using the Lentera system. This is also shown from the distribution of each attribute on each variable in the IPA quadrant matrix, which indicates some attributes need to be improved and some attributes are sufficient to be maintained because they already have a fairly good performance. Overall, this study shows the evaluation of the Lentera system related to the assessment of the importance and performance of system users. From the results of this evaluation, recommendations can be made that the quality of the system, the quality of information, and the quality of services need to be improved on some of its attributes.

Keywords

IPA; system quality; information quality; service quality; e-government; user satisfaction



I. Introduction

Government institutions have the main goal of providing services to the community by providing the best service and making it easier for the community as service users. This is expected to meet the needs of the community, and good service with high quality can facilitate the survival of the community. Technological developments that have entered the digital era and globalization 4.0, to achieve good public services in the end the government must also be able to accompany these developments. There are many government institutions around the world that use the digital revolution such as e-government, whether to convey various information on their websites, and database storage, or to provide online-based government services that can be accessed and used by all citizens as users.

(Park & Samijadi, 2021). Development is a systematic and continuous effort made to realize something that is aspired. Development is a change towards improvement. Changes towards improvement require the mobilization of all human resources and reason to realize what is aspired. In addition, development is also very dependent on the availability of natural resource wealth. The availability of natural resources is one of the keys to economic growth in an area. (Shah, M. et al. 2020)

The Ministry of Agrarian Affairs and Spatial Planning / National Land Agency (ATR/BPN), is one of the government institutions that is in the process of digital transformation in the implementation of its public services. The implementation of e-government in ATR/BPN is stated in the Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency No. 5 of 2017, and until 2019 the implementation is still being developed (R&D ATR/BPN, 2019). The Ministry of ATR/BPN targets in 2020 to start using electronic services, which will be implemented gradually in all Land Offices in Indonesia. This electronic service will allow the public not to come to the Land Office. The existence of an electronic system also greatly supports the operation of services during the COVID-19 outbreak in 2020 which has its own challenges due to limited interaction and social distancing. This will later become one of the components for increasing “ease of doing business”.

The Semarang City Land Office is one of the organizations under the auspices of the Ministry of ATR/BPN. The objectives and vision and mission that are prepared must be in line with the head office of the Ministry of ATR/BPN, including the implementation of e-government as one of the strategies to achieve good governance. The Semarang City Land Office has become one of the pioneering organizations for e-government implementation, as has been implemented, including the Trusted Convenient Electronic Counter (Lentera) application, public complaint application (E-Lapor), PPAT administration report application (LOOP), and touch my land application. Some of these online services are a service system that is used to provide facilities for service recipients so that they do not need to come to the Semarang City Land office. As an agency that serves the community, the Semarang City Land Office believes that a digital-based system is needed to facilitate the process of regulating and processing data properly which aims to improve service quality. Lentera is one of the e-government digital service innovations that was made independently by the Semarang City Land Office, and as an initial changing process of system-based registration services as an effort towards electronic services.

E-government is one of the transformations in government organizations both in terms of administration and bureaucracy. Several studies reveal the factors that influence the successful adoption and implementation of e-government, such as factors from the technology side, user factors both internal to the organization and the community, the level of public trust, and so on. (Budi et al., 2020; Husin et al., 2017; Sabani, 2020). The successful adoption and implementation of Lentera at the Semarang City Land Office, within a certain period of time also requires evaluation, both in terms of effectiveness such as easy to use, efficient in bureaucracy, and also in administration, so that it is hoped that the community as users will get satisfaction from the Lentera application. Carrying out an e-government evaluation will lead to monitoring changes in the e-government environment and also to assess the effectiveness of implementing e-government programs to improve service delivery procedures to the public. Santa et al. (2019) states that effectiveness is a continuation of the successful implementation of a system as described in the model DeLone & McLean (2003). System evaluation model (IS model successful) developed by DeLone & McLean (2003) using six dimensional factors as a measure of the success of system implementation such as, system quality, information quality, service quality, user

satisfaction, the impact of individual use, and the impact of organizational use. The Semarang City Land Office needs to evaluate the effectiveness of the Lentera system that has been implemented in order to improve services to the community and future system users. This study will evaluate the Lentera system using an analytical approach to the IPA method, but by implementing the evaluation model developed by DeLone & McLean (2003). This research is important, because the Lentera system as a representation of e-government is one of the strategies of the Semarang City Land office in implementing two-way communication between the community and the government without face-to-face with the aim of improving the quality of public services. New technological innovations can affect an organization and have an impact on the competitiveness, efficiency, and value of an organization.

II. Review of Literature

The implementation of the Lentera system starts from the implementation of e-government which is an internet-based use of government organizations in order to provide various information and also transaction services for the community as service users. (Venkatesh et al., 2016). The e-government system is a technological innovation that is a key strategy to shape public value by bringing innovation through services, legal regulations, and policies in government organizations. (Santa et al., 2019). E-government is one of the transformations in government organizations both in terms of administration and bureaucracy. Several studies reveal the factors that influence the successful adoption and implementation of e-government, such as factors from the technology side, user factors both internal to the organization and the community, the level of public trust, and so on. (Budi et al., 2020; Husin et al., 2017; Sabani, 2020). The Lentera System, which is part of e-government, is a form of service provided by the Semarang City Land Office. The service of a given system certainly cannot be separated from the satisfaction of the users of the system. User satisfaction is an overall evaluation of the experience felt by users of the system and what is the potential impact of using the information system (Venkatesh et al., 2016).

III. Research Method

This research was conducted at the Semarang City Land Office with the Lentera system as the object of research which is the implementation of the e-government system. The population in this study were all users of the Lentera system and the selection of many samples using the slovin formula. With a population of 500 Lentera user accounts, and the use of a margin of error of 0.1, then the minimum number of samples was obtained as 83 respondents. Data collection techniques was used by distributing questionnaires to Lentera users, and obtained as many as 112 respondents who provided feedback to be used as research observation data. Questionnaires that were distributed beforehand through pilot testing of all instruments contained in the form of statements in each variable. The pilot test was carried out by testing the validity and reliability of a small sample, and if it passed the test, the questionnaire was then distributed to the respondents according to the sample criteria. The data analysis technique also uses validity and reliability tests, and the data that has been collected from 112 respondents shows valid and reliable results for all the instruments used. The method of analysis uses the importance performance analysis (IPA) approach which is a quantitative research to measure how one perceives one's perception of a characteristic of a thing or product. (Warner et al., 2016).

IV. Result and Discussion

4.1 Lentera System Analysis of System Quality Variable

The system quality variable has 7 attribute items or statements, each of which has an answer rating of importance and performance. All attributes have passed the validity and reliability tests, so that further gap analysis and mapping of the IPA matrix quadrants can be carried out. Gap analysis is an analysis of the difference in the value of each performance and importance value of the system quality variable. The difference is calculated from the average performance value minus the average importance value. The results show that of the 7 attribute items on the system quality variable, there is a negative gap, and this indicates that the performance assessment on the Lentera system for system quality is still lower than its importance rating (Table 2). The negative gap results also indicate that the level of user satisfaction with the system quality of the Lentera system is quite low.

Table 1. System Quality Variable of Lentera System

Sistem Quality	Attribute	Statement
KS_1	Ease of use	The Lentera app system is very easy to use
KS_2	Flexible use of the system	I can use the Lentera application system at any time during the registration process
KS_3	Information reliability	The Lentera application system provides easy access to information
KS_4	Instruction clarity	The Lentera application system provides clear instructions in the registration process
KS_5	System performance speed	The Lentera application system is very helpful & cuts down on registration administration processing time
KS_6	Good system performance	The Lentera application system operates well when used and there are no bugs or errors that interfere with the use of the application system
KS_7	Appropriate display design	The Lentera web system has a suitable design so that it gives an attractive appearance

Table 2. Gap Analysis Test Results of System Quality Lentera web system

System Quality	Performance Average	Importance Average	Gap
KS_5	3.85	4.15	-0.30
KS_6	3.71	4.01	-0.30
KS_3	3.88	4.15	-0.28
KS_2	3.96	4.19	-0.22
KS_1	4.02	4.21	-0.20
KS_4	3.96	4.13	-0.17
KS_7	3.87	4.01	-0.14

The biggest gap value is -0.30 on items 5 and 6. This means that the lowest level of satisfaction is found in the Lentera web system, the speed of system performance and the performance of the Lentera web system when operating. While the lowest gap value is in item 7 with a value of -0.14 which is about the design of the Lentera web system display. This indicates that what users expect from Lentera's web system design is not too far from what is currently available, even though Lentera's current performance is still below user expectations. Performance expectations are how users believe that using the system will help to achieve results in job performance and it becomes one of the strong factors of the user's intention to use the system and provide satisfaction in using information system technology (Batara et al., 2017).

Next step is quadrant mapping using a Cartesian diagram for each attribute on the system quality variable in the Lentera system. The Cartesian diagram uses 4 quadrants which are formed using the midpoint of the intersection of the average value between the Lentera importance and performance web system. From Figure 2 it can be seen that in quadrant I there are two Lentera system items, namely items 3 and 5. This indicates that the Lentera system has easy access to information and the speed of system performance is considered important by users, but the performance resulting from the Lentera system is still considered low by users. So this must be a top priority that needs to be fixed by the Lentera system service provider, which in this case is the Semarang City Land Office. Meanwhile, in quadrant II, there are three Lentera system items, namely items 1, 2, and 4. This means that the ease of use of the Lentera system, flexible use of the system, and clarity of the Lentera system instructions when used are considered important by users, and so far they are considered to have had fairly performance. Although it has a fairly good performance, if it is connected to the level of satisfaction based on gap analysis, the resulting performance is still not in line with users' expectations. So that this fairly good performance must be maintained, even if it should be further improved so that users feel more satisfied in using Lentera. In quadrant III there are two Lentera system items, namely items 6 and 7, and none of the Lentera system is included in the quadrant IV category. This shows that the performance of the Lentera system is operating well, such as there are no bugs or errors when used, and the design of the existing Lentera system is not considered very important and the resulting performance may be mediocre or not too perceived by the user.

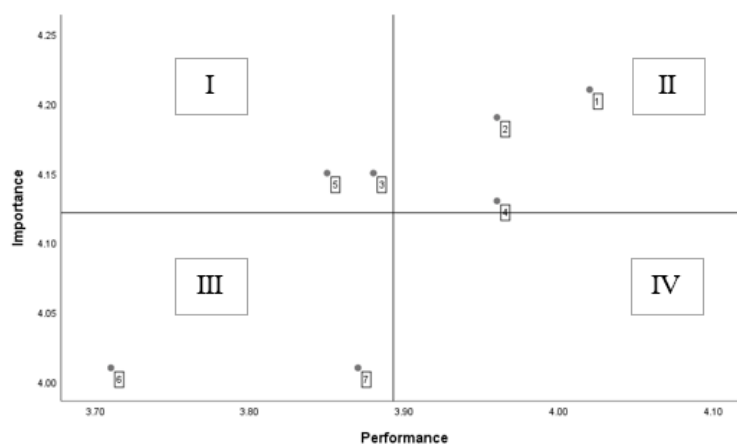


Figure 1. System Quality Variable of Lentera System Quadrant Diagram

This is in line with research by Shia et al., (2016) that having an appropriate design so as to provide an attractive appearance is considered to have a low level of importance (expectations) but an institution or company must have good performance. This Lentera system may not be considered very important because users rarely face bugs or errors when using it. The current Lentera design may also not be a problem for users because it may be considered sufficient. So that in evaluating the Lentera system, the Lentera system is included in low priority in terms of improving the performance of the Lentera. Even so, this does not mean that the Lentera system items 6 and 7 are to be ignored, at least it is maintained like the current Lentera performance so as not to disappoint users in the future. In this variable, because there is no Lentera system that is included in quadrant IV, it means that there is no Lentera system from the quality of the Lentera system which is really considered unimportant but has excessive performance or its performance is considered very good.

4.2 Information Quality Variable of Lentera System Analysis

The information quality variable has 7 attribute items, each of which has an answer rating of importance and performance. Gap analysis on the information quality variable is carried out in the same way as in the previous variable, namely by looking at the value of the difference between the average performance value and importance on the information quality of the Lentera system. Table 4 shows that all attribute items of information quality produce negative gap values with a range of values between 0.10 and 0.21. The negative gap value is an illustration that the performance assessment of the Lentera system, especially regarding the quality of information, has not been close to what was expected by users, or has not met user satisfaction. In table 4, items 1 and 3 have the largest gap value, which is -0.21. This indicates that the information provided by Lentera and the up-to-date information has not met user expectations, so the level of satisfaction generated is also low. While the smallest gap value is found in item 6, namely regarding the completeness of Lentera information such as the details of each information provided. However, because the gap has a negative value, it means that what is expected by users is still higher than the current performance of Lentera. Although item 6 has the smallest gap, other items besides 1 and 3 have a gap value that is not too far from item 6, so they have the same meaning. The mapping analysis of the IPA quadrant for the information quality variable was carried out in the same way, namely by using 4 quadrants of a Cartesian diagram, and using the same meaning for each quadrant. Quadrants are formed by using the midpoint of the intersection of the average value between the importance and performance values of the 7 items of information quality variables in the Lentera system.

Table 3. Information Quality Variable of Lentera System

Information Quality	Attribute	Question
KI_1	Information provided as needed	The information obtained from the Lentera application system is very complete and in accordance with what is needed
KI_2	Information accuracy	The quality of the information obtained from the Lentera application system is very accurate
KI_3	Information Update	The information provided from the Lentera application system is very up-to-date

Information Quality	Attribute	Question
KI_4	Easy to understand information	The information provided from the Lentera application system is very easy to understand
KI_5	Information can be downloaded and printed as needed	The information available in the Lentera application system can be downloaded and printed as needed
KI_6	Complete information	The information provided from the Lentera system has the right level of detail
KI_7	Format compatibility	The information provided from the Lentera system has a suitable format

Table 4. Gap Analysis Test Results of the Information Quality of Lentera System

Information Quality	<i>Performance Average</i>	<i>Importance Average</i>	<i>Gap</i>
KI_1	3.93	4.14	-0.21
KI_3	3.80	4.01	-0.21
KI_4	3.88	4.04	-0.15
KI_5	3.96	4.09	-0.13
KI_2	3.93	4.04	-0.12
KI_7	3.81	3.92	-0.11
KI_6	3.80	3.90	-0.10

Figure 3 shows the quadrant results for the Lentera system item information quality variable. The results show that from 4 quadrants, 7 items of the Lentera system are only grouped into 2 quadrants, namely quadrant II and quadrant III. There are no Lentera system items that are grouped into quadrants I and IV, meaning that the Lentera system in terms of information quality does not have an assessment that is considered important but has low performance and there is no Lentera system that is considered unimportant but has excessive performance. In quadrant II there are 4 items out of 7 items, namely items 1, 2, 4, and 5. Item 1 is the availability of information needed by the user, meaning that the user assesses that the information available in the Lentera system is important for the user, and so far, users feel that the Lentera system has provided a fairly good performance in providing the availability of information. This is in line with Santa et al., (2019) which states that the information quality is a measure of the output of e-government applications, the success of information quality can be seen from the characteristics of the information, the extent to which the information produced has the attributes of completeness, accuracy and format of information required by users. Item 2 is the accuracy of information, meaning that users feel it is important that the availability of information in the Lentera system must be precise and accurate, and so far, Lentera's performance is considered quite good in the accuracy of the information provided.

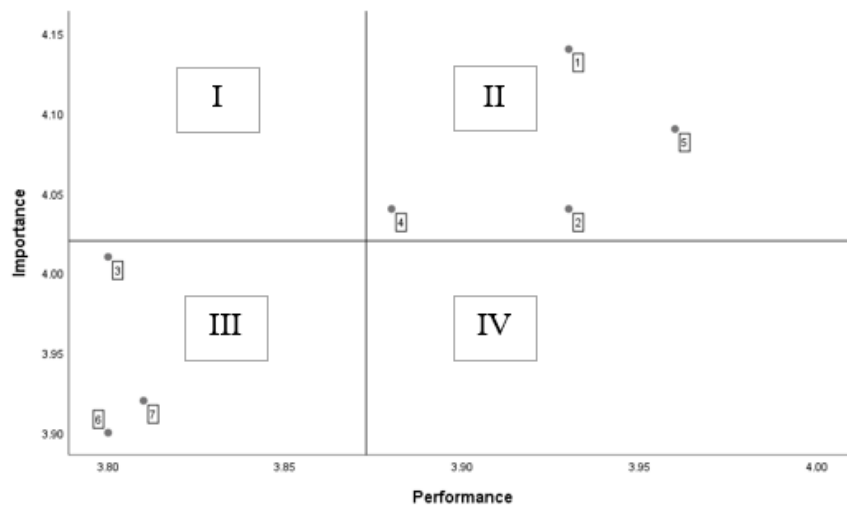


Figure 3. Information Quality Variable of Lentera System Quadrant Diagram

Groups in quadrant III have 3 items included, namely items 3, 6, and 7. Item 3 is the update of information, item 6 is completeness of information, and item 7 is conformity of information format. Items that fall into quadrant III indicate that users feel less important and their performance is also considered not too good. The update of Lentera's information in item 3, it could be that when there is the latest information provided by Lentera, the users have got the information first from other sources. So the information from Lentera becomes irrelevant and is ultimately considered unimportant. This is not in line with the opinion of Veeramootoo et al., (2018) which states that it is very important that the system is flexible in terms of the use of the system and useful features to provide relevant and up-to-date information to meet the information needs of users effectively. Completeness of information in Lentera, including providing detailed information, is also considered not so important. This may be because users are used to using this information, so users feel they already have enough information so that the completeness of the information is slightly ignored and considered unimportant. The suitability of the Lentera information format may also be ignored by the user, and maybe so far because the format provided is considered sufficient by the user so that the user feels normal because it doesn't really affect the process while using Lentera.

4.3 Service Quality Variable of Lentera System Analysis

The third variable is service quality which has 7 items of statement Lentera system from 6 attributes, each of which has an answer rating of importance and performance.

Table 5. Service Quality Variable Lentera System

Kualitas Layanan	Attributes	Statements
KL_1	Service improvement	The Lentera System provides a more modern land registration service
KL_2	Ease of system process	The Lentera system provides an easy process and has standardized services
KL_3	System response speed	The Lentera System responds quickly to user requirements

Kualitas Layanan	Attributes	Statements
KL_4	System response capability	The Lentera System provides a good response if the user has a problem
KL_5	Security guarantee	The Lentera System ensures the security of user data
KL_6	Availability of user communication services	The Lentera system has customer service that can be contacted if there are problems in using the system
KL_7	Availability of user communication services	The Lentera system includes a hotline / telephone number that can be contacted to be able to directly inquire about problems or as a complaint offense

Gap analysis on service quality variables is carried out in the same way as on system and information quality variables, namely by looking at the value of the difference between the average Lentera system performance and importance. Table 4.16 shows that all service quality Lentera system items produce negative gap values with a range of values between 0.02 and 0.29. A negative gap value is an illustration that the performance assessment of the Lentera system, especially regarding service quality, has not approached what users expected, or has not met user satisfaction.

Table 6. Gap Analysis Test Results of Service Quality Lentera System

Information Quality	<i>Performance Average</i>	<i>Importance Average</i>	<i>Gap</i>
KL_3	3.82	4.11	-0.29
KL_4	3.82	4.04	-0.21
KL_6	3.9	4.08	-0.18
KL_7	3.82	3.98	-0.16
KL_2	3.91	4.04	-0.13
KL_1	3.98	4.05	-0.07
KL_5	4.17	4.19	-0.02

Items 3 and 4 have the largest gap values and are above 0.2. Item 3 is the response speed of Lentera and item 4 is Lentera's response ability. With a negative gap value, this indicates that the performance of the Lentera system response is still far from what the user expects. Items 2, 6, and 7 are in the gap value above 0.10 with negative results. This is not in accordance with the opinion Santa et al., (2019) that maintaining or increasing the level of performance of a system is recognized as one of the critical problems facing organizations so that technological innovations such as e-government systems can create significant benefits for businesses and governments that include reducing communication and information costs, maximizing the speed of service processes, and extending outreach. Item 2 is the ease of processing, items 6 and 7 are the availability of communication services for users. This has the same indication, namely that users feel that by using Lentera, the ease of processing and the availability of user communication services are not in line with user expectations. While items 1 and 5 are items that have the lowest gap values at 0.2 and 0.7 even though the results are negative like other Lentera systems. Item

1 is a service improvement and item 5 is a security guarantee, and an indication of the resulting gap value is that the performance of the Lentera system is close to what the user expects. With Lentera providing a more modern service improvement and with Lentera there is a guarantee of security for user data, even though user satisfaction with Lentera's performance has not yet been met. This can happen because personal data is something sensitive, and if it has been uploaded in an application, it needs to be kept confidential and secure. (Sari et al., 2021). Users of government services, especially in the Semarang City Land Office, must really expect data security and ensure that their personal information data is not illegally exposed so that people still doubt the Lentera service in its security system. This is in line with research by Rachmawaty et al., (2021) in the academic field, every student who uses learning expects security and does not worry about his data being exposed illegally.

The IPA quadrant analysis for the service quality variable was carried out in the same way as the previous two variables. By using 4 quadrants of a Cartesian diagram, and using the same meaning for each quadrant.

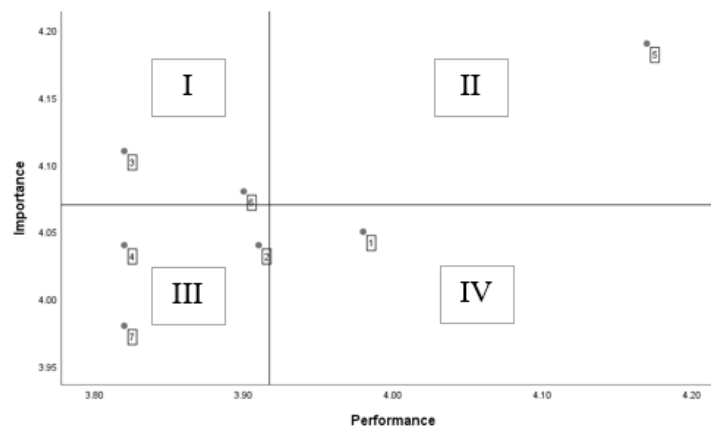


Figure 4. *Quadrant Diagram of Lentera System Service Quality Variable*

The Lentera system quadrant service quality variable is shown in Figure 4. From the 7 Lentera system items, 2 items fall into the quadrant group I, 1 item into the quadrant group II, 3 items into the quadrant group III, and 1 item into the quadrant group IV. In quadrant group I, there are 2 items, namely item 3 and item 6. Item 3 is the speed of system response, which means that users feel the importance of the response speed provided by the Lentera system, the response performance given is considered to be quite low or not too good. While item 6 is the availability of communication services for users such as customer service that can be contacted when users experience problems when using Lentera. The existence of customer service that can be contacted is important according to users, but in terms of performance, Lentera service providers currently do not have facilities to communicate with customer service. So it could be that users give a poor performance assessment for points of communication service availability. If these two points are considered important by users, but the performance produced by Lentera is still quite low, the Semarang City Land Office as a service provider may consider prioritizing as points that must be improved. So in line with DeLone & McLean (2003) which states that service quality is the level of service received by users of e-government systems and the form of services provided by system managers that can affect the level of satisfaction in using e-government systems. In quadrant group II there are only 5 items which are security guarantees.

V. Conclusion

This study aims to identify variables for each attribute in each system quality, information quality, and service quality on the Lentera system which is implemented as an e-government service at the Semarang City Land Office. From the gap analysis conducted on the average value of performance and importance, all the variables of the gap value are negative. This means that the user's assessment of the performance of the Lentera system on the quality of system attributes, information quality and service quality are considered lower than what is expected or considered important by users. Based on the IPA matrix quadrant mapping, each attribute needs to be improved and needs to be maintained by looking at the quadrant location of each item. The most important attribute in the Lentera system of the Semarang City Land Office on the system quality variable is ease of use, on the information quality variable it is the provision of information that is expected as needed, on the service quality variable related to security assurance. The results of the IPA also show that the main priority that must be improved on the Lentera system of the Semarang City Land Office is in terms of the known quality aspects of the system and the speed of system performance, the information quality aspect does not exist, but the performance needs to be maintained between information and needs, accuracy, ease to understand, suitability requirements, and from the aspect of service quality are the speed of the response system and the availability of user communication services. This study has limitations, namely the existence of subjectivity to the assessment of each variable attribute and has not considered empirical testing to statistically prove user satisfaction. Further research can add other variables, apart from the 3 main variables from the evaluation of the system model, such as measuring user satisfaction with separate variables, the intensity of users to continue using the system, and also user trust. Suggestions for improving the Lentera system for the Semarang City Land Office, namely adding more detailed instructions for use and service procedures, increasing the quantity of system memory, maintaining the ease of use of the system, and being able to provide more responsive services such as providing customer service as a forum for user communication.

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