




Importance-Performance Analysis on Smart Village Implementation in Tikusan Village, Bojonegoro Regency

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Abstract. Tikusan Village Government providing digital-based public services as the initiative of the Village Head, when the COVID-19 pandemic hit in 2020. One of the strong reasons for implementing digital-based public services is the policy of the central government which requires social distancing. This policy affects the public service process which usually must be done face to face, then this policy forces people at Tikusan Village to stay at home. The purpose of this study was to analyze the relationship between the quality of human resources of village officials and digital literacy of village officials on the implementation of Smart Village principles through the Importance-Performance Analysis (IPA) method using the Smart Village concept as the research dimension. This research uses a cross-sectional design that is used to study the relationship between independent variables and dependent variables by taking measurements at the same time (point time approach). We used questionnaires distributed offline and online to get responses from respondents. The results showed that a large part of the community had felt good public services. Through the Importance-Performance Indicator, the results found that many people have felt the good public services in Tikusan Village and this must be maintained. There are also things that the community considers not too important, so the community hopes that it is better to just eat what must be maintained.

Keywords: Importance, Performance, Smart Village.

1 Introduction

Advances in information and communication technology in the current era have changed the order of social life [1]. Technological developments have now become a benchmark for the progress of a country. The government as the most important actor in the development of a country and in order to respond to the industrial revolution 4.0 must encourage the application of information and communication technology in the implementation of governance, because the application of technology in the management of community life is considered to facilitate and improve services that are fast, effective, and efficient [2]. In government, the massive implementation of technology began when the emergence of Presidential Instruction Number 3 of 2003 concerning the implementation of Electronic Government. As Saputro has stated,

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systems, services, and the quality of information have a positive effect on user satisfaction. User satisfaction and organizational goals are the main things that must be achieved by every government agency in terms of service delivery in order to create satisfaction in the community. The implementation of Electronic Government in the Village Government can be the main locomotive that can push the village towards progress so that the village can also advance the Indonesian economy because Indonesia's territory is mostly rural [3].

The Tikusan Village Government innovates in utilizing technology by conducting digital-based public services at the initiation of the Village Head, the background of which began during the COVID-19 pandemic that hit in 2020. One of the strong reasons for implementing digital-based public services is the policy of the central government which requires the implementation of social distancing. This policy certainly greatly affects the public service process which usually has to be done face-to-face, because of this policy, it forces people to stay at home. Of course this makes it very difficult for the village community when they want to take care of correspondence or get services to take care of interests in the village government due to distance restrictions. Based on these problems, the Tikusan Village Government is trying to find solutions to overcome them, so the Smart Village concept is found in the public service process in Tikusan Village. This solution comes from the human resources of village officials in it. Human Resources (HR) is one of the important assets for an organization in achieving goals and carrying out its vision and mission. Especially for organizations engaged in services, the role of HR is vital in determining the success of the organization because almost all of its activities are operated by humans [4].

The Big Indonesian Dictionary defines literacy in terms of one's ability to read, write and process information [5]. Bawden argues that the ability to acquire, interpret, and expand knowledge is intrinsic to digital literacy, which in turn comes from computer literacy and information literacy [6]. Digital Literacy is the skill or knowledge to use digital media, communication tools or networks in managing, finding, obtaining, and utilizing them wisely and not violating the law to build communication in everyday life [7]. Digital Literacy can also be interpreted as a person's ability to carry out skills on digital tools so that he can select information, think rationally, communicate well, without ignoring the safety of digital media in the existing socio-cultural context. In determining the quality of digital literacy, indicators are needed that influence it. Indicators in the quality of digital literacy are divided into 3 main indicators, namely digital competence, digital usage and digital transformation [8].

Smart Village is a village concept that has components or benchmarks of a smart city concept but in a smaller scope, namely a village which certainly aims to realize better public services and governance for the progress of the village towards its citizens. The development of smart villages in the process requires an analysis of the various values, characters and norms that exist in society [9]. Smart villages are not only applied to facilitate access for its citizens, but also to integrate between villages with other villages that are able to play an important role in achieving goals. Therefore, public services with the implementation of the smart village program will be transparent, effective, efficient, and fair for the entire community [10]. In organizing village government affairs, community elements become the basis and orientation of village

government policies that will be made. In this case, the village government has functions including the functions of governance, development, community development and community empowerment [11].

Based on the above understanding, the indicators of smart village success are divided into several main elements, namely smart governance, smart people, smart living, smart mobility, smart economy, and smart environment. These indicators will determine the success of smart village implementation if managed and maintained properly. For example, in the context of smart living, there is an increase in the quality of life of citizens by providing safe and healthy living conditions by providing ease of use of various social services [12]. In practice, the utilization of technology in public agencies is still not optimal. Indonesian people still tend to adapt to advances in technology, information and communication. This is shown by the uneven implementation of smart villages in all villages in Indonesia. This problem is certainly closely related to the availability of human resources capable of managing and utilizing technology as well as the ability of the community to access existing digital information [13].

Based on this situation, researchers are interested in researching the implementation of smart villages in Tikusan village. To identify this, researchers used Importance-Performance Analysis (IPA). The data used were obtained by various methods including literature studies related to research aspects, observational studies on the object of research, and distributing questionnaires to village officials and the Tikusan village community.

2 Methods

2.1 Questionnaire Survey and Data Collection

Both offline and online surveys were conducted for this research. The development of the questionnaire in this study refers to the Smart Villlage theory, which consists of six indicators, namely smart governance, smart people, smart living, smart mobility, smart economy and smart environment. Based on data obtained from the 2022 Tikusan Village Government Statement Report, it can be seen that the total population of Tikusan Village is 1736 people. Sampling in this study used probability sampling techniques with the type of simple random sampling technique, namely sampling techniques carried out by taking samples randomly without paying attention to strata but researchers must know the size of the population to be taken. The number of samples to be taken in this study can be calculated using the Slovin formula with a 90% confidence level and an $e=10\%$ value. The following is the slovin formula used in determining the research sample:

$$n = \frac{N}{1 + Ne^2}$$

n = Number of samples

N = Population

e = Percentage of allowance for inaccuracy (10%)

By using this formula, it can be seen that the number of samples from this study is:

$$n = \frac{1}{1 + 1736(0,1)^2} = 94,55 \approx 95 \text{ people}$$

The sample in the research will go through a screening stage to ensure that the data obtained is valid and usable. In problem-solving research, a sample of at least 100 to 200 respondents is required. The sample of this study amounted to 101 respondents who were taken according to the population of the number of people in Tikusan Village, Bojonegoro Regency. To determine the sample, researchers used the following criteria:

1. Village officials who are responsible for implementing smart villages,
2. Tikusan Village residents who receive services from the Village Government.

2.2 Importance-Performance Analysis (IPA)

Importance Performance Analysis (IPA) or Quadrant Analysis is a descriptive analysis technique used in identifying important performance factors in meeting the satisfaction of service users/consumers by an organization. IPA is a method that allows an easy assessment of the difference between the importance and performance of any service. In this study, IPA was used to examine the importance and performance of Smart Village implementation in Tikusan Village. In general, the quadrant diagram model can be shown in Figure 1.

The interpretation of each quadrant in Figure 1 can be explained as follows:

1. Quadrant I (Maintain Achievement)

Quadrant I shows aspects that are considered important by consumers whose results have been carried out well so as to provide satisfaction to consumers. Therefore, the performance of this aspect must be maintained by the service provider.

2. Quadrant II (Top Priority)

Quadrant II shows aspects that are considered influential on the satisfaction felt by consumers. In addition, quadrant II also shows aspects that are considered important by consumers but the results do not meet consumer desires. As a result, there is dissatisfaction or disappointment felt by consumers. This is a special concern for service providers so that their performance can be improved.

3. Quadrant III (Low Priority)

Quadrant III shows aspects that are not considered a priority for consumers and are also implemented by service providers without leaving a better or worse impression, in the sense of mediocrity. Aspects in quadrant III are not the main focus for service providers even though they do not bring satisfaction to consumers because this aspect is not the main aspect.

4. Quadrant IV (Excessive)

Quadrant IV shows aspects that are considered less important by consumers but are done very well by service providers.

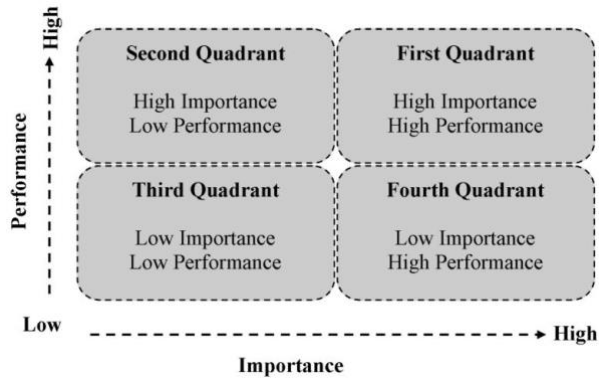


Fig. 1. Importance Performance Analysis Chart [14]

2.3 Statistical Analysis

Normality Test

In this study, the normality test was carried out through statistical analysis. At this statistical analysis stage, the average reality and expectations of each question on the existing variables will be tested. After knowing the results of this test, namely whether the data used is normally distributed or not and determining the results whether the data can be used for further tests or not. At this stage, the Kolmogorov-Smirnov test for samples of more than 50 respondents or Shapiro-Wilk for samples of less than 50 respondents is carried out to determine whether the existing data is normally distributed or not. The results of this test are determined from the resulting significance value. If the significance value > 0.05 , it can be concluded that the data is normally distributed or parametric data. Conversely, if the significance value < 0.05 , it can be concluded that the data is not normally distributed or non-parametric data for further analysis using the Wilcoxon Test.

Wilcoxon Test

This test is conducted to identify whether or not there is a significant difference between the reality and expectations under study. Through the Wilcoxon test, researchers can determine the results of the hypothesis, namely whether H_0 is rejected or accepted. If there is a significant difference in the results obtained, then H_0 is rejected. However, if there is an insignificant difference in the results obtained, then H_0 is accepted. If the two data being compared are normal distributed, the next step is to conduct a paired t-test. But if at least one of the data compared in the previous test is not normally distributed either from expectations or reality, the Wilcoxon test is carried out.

Gap Analysis and Level of Conformity (CLi)

Gap analysis is conducted to explain the level of customer satisfaction. In conducting this analysis, the mean of expectations is compared with the reality by consumers from the dimensions of smart village implementation, namely smart governance, smart people, smart living, smart mobility, smart economy and smart environment. In the calculation, the highest satisfaction occurs when reality exceeds expectations. That is, satisfaction occurs when the service provided is a maximum of (4) while the minimum expectation is (1). In calculating the gap, the formula is used:

$$\text{Gap} = \text{Reality} - \text{Expectation}$$

Meanwhile, in calculating the level of conformity (Tki), the formulation is used:

$$\text{Tki} = (\text{Reality} / \text{Expectation}) \times 100\%$$

The gap score indicates the gap between reality and expectations. This means that there is a mismatch between customer expectations and the reality obtained by the customer. If the gap score or gap score is positive (+), then reality can meet customer expectations, otherwise if the gap score is negative (-) then customer expectations have not been met [15].

3 Results and Discussion

3.1 Result

From the results of data collection conducted offline and online, 101 respondents were obtained. The demographic characteristics of respondents can be seen in table 1.

Table 1. Demographic characteristics of respondents

Characteristics	Number of Respondents	Percentage (%)
Gender		
Male	72	71,3
Female	29	28,7
Age		
Less than 19 years old	5	5
19-24 years	18	17,8
25-40 years	29	28,7
41-56 years	42	41,6
57-75 years	7	6,9
76 years and above	1	1
Education		
Elementary/junior high/high school/equivalent	65	64,4
Diploma	5	5
Bachelor	28	27,7
Master	3	3

Normality Test

Before data processing is carried out, a normality test must first be carried out as a condition before conducting a mean difference test between Expectations and Reality. The hypothesis is described as follows:

H0: Data is Normally Distributed

H1: Data is not normally distributed

Table 2. One-Sample Kolmogorov-Smirnov Test

		Importance	Performance
N		101	101
Normal	Mean	4,4183	4,0949
Parameters ^{a,b}	Std. Deviation	0,45582	0,54557
Most Extreme	Absolute	0,136	0,122
Differences	Positive	0,118	0,122
	Negative	-0,136	-0,076
Test Statistic		0,136	0,122
Asymp. Sig. (2-tailed)		.000 ^c	.001 ^c

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

With the use of a significance value of 5%, Table 2 shows that the asymptotic value (p-value) <0.05 , so it can be concluded that the normality test result is H0 Rejected, which means that the data is not normally distributed.

Wilcoxon Test

The Wilcoxon test is one way to test two paired samples. The Wilcoxon test is performed when the results of the normality test are not met or the data is not normally distributed. When viewed from the results of the normality test in Table 2, it is found that the results of the normality test are H0 Rejected so that the data is not normally distributed, so the Wilcoxon sign test nonparametric approach is used to see whether or not there is a difference between the expected value and the reality value.

Table 3. Ranks

		N	Mean Rank	Sum of Ranks
Performance -	Negative Ranks	61 ^a	39,67	2420,00
Importance	Positive Ranks	11 ^b	18,91	208,00
	Ties	29 ^c		
	Total	101		

- a. Importance > Performance
- b. Importance < Performance
- c. Importance = Performance

Table 4. Test Statistic^a

	Performance - Importance
Z	-6.216b
Asymp. Sig. (2-tailed)	0,000

- a. Wilcoxon Signed Ranks Test
- b. Based on positive ranks.

Based on the results of the Wilcoxon Test conducted with SPSS for Mac 26, the results of Asymp. Sig. (2-tailed) 0.00 which is <0.05 so that H0 is rejected and H1 is accepted. With the following hypothesis:

- H0: there is a difference between the value of reality and expectations
- H1: no difference is found from the value of reality and expectations

So it was found that there was a significant difference between expectations and reality in the application of smart villages in Tikusan Village.

Gap Analysis and Level of Conformity (CLi)

Based on the results of the Gap Score calculation in Table 5, it shows that all dimensions tested are negative, so it can be interpreted that the reality of all dimensions still cannot exceed the expectations of the community. The dimension with the largest gap value is the Smart Environment dimension with a score of -0.5 followed by the Smart Governance dimension with a score of -0.38 and the Smart Economy dimension with a score of -0.36.

As for the Conformance Level (CLi) of the five dimensions, it can be seen in Table 5 that the Smart Mobility dimension is the one that gets the largest CLi score with a score of 96.14 followed by the Smart Living dimension with a CLi score of 93.5% and the Smart People dimension with a CLi score of 92.83%.

Table 5. Mean of the five dimensions for importance and performance of Tikusan Village Smart Village

Dimensions	Mean Performance	Mean Importance	Gap	CLi (%)
Smart Governance	3,97	4,34	-0,38	91,36
Smart People	4,08	4,40	-0,32	92,83
Smart Living	4,17	4,46	-0,29	93,5
Smart Mobility	4,35	4,53	-0,18	96,14
Smart Economy	3,96	4,31	-0,36	91,78
Smart Environment	3,95	4,45	-0,5	88,73

Table 6. Mean performance and importance scores for Tikusan Village Smart Village attributes

Dimensions	Atributes	Mean Performance	Mean Importance	Gap	CLi (%)
Smart Governance	Online services availability	3,94	4,32	-0,38	91,20
	Open government	3,99	4,36	-0,37	91,51
Smart People	Human Resource Capacity	4,11	4,43	-0,32	92,78
	Community engagement	4,05	4,36	-0,31	92,89
Smart Living	Security technology	4,37	4,53	-0,16	96,47
	Environmental safety system	4,17	4,46	-0,29	93,50
Smart Mobility	Road connectivity	4,44	4,51	-0,07	98,45
	Safety driving	4,26	4,54	-0,28	93,83
Smart Economy	Economic awareness	3,96	4,26	-0,3	92,96
	Digital business environment	3,95	4,36	-0,41	90,60
Smart Environment	Green space availability	4,11	4,51	-0,4	91,13
	Green Environmentment	3,79	4,39	-0,6	86,33

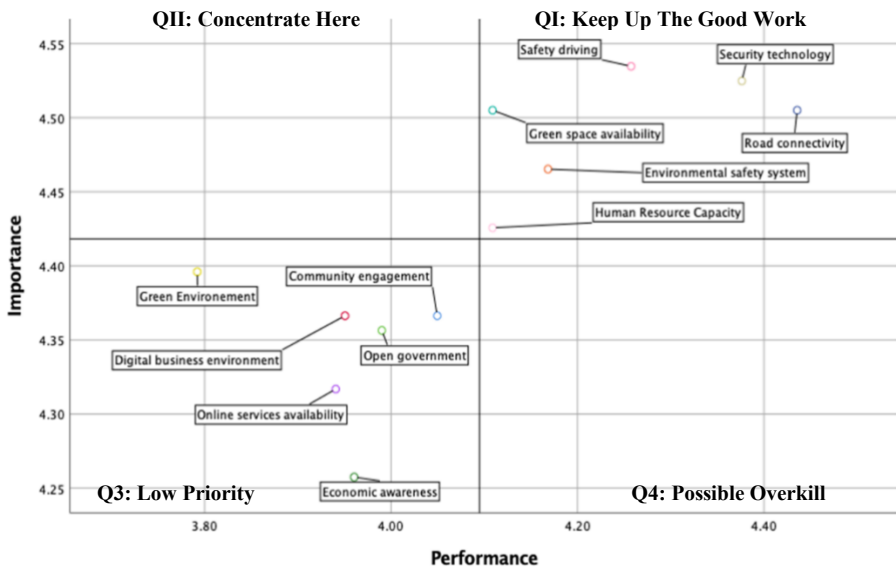


Fig. 2. Importance-Performance Analysis (IPA) On Implementation Smart Village at Tikusan

The dimensions that must be of concern to the Tikusan Village government are the Smart Environment dimension and the Smart Governance dimension because they get the lowest score among other dimensions. To find out in detail about the service components that are of concern to consumers, it can be seen in table 6. From table 7, it can be seen that all gaps for the attributes of Smart Village implementation in Tikusan Village get negative values. The attribute with the largest gap score is Green Environment which gets a gap score of -0.6. This shows that there is still a lack of infrastructure in waste management in Tikusan Village. Then the second attribute that needs attention is the Digital business Environment which gets a gap score of -0.41. This also shows that there is still a lack of improvement in a good business environment to increase the trick power of investors to Tikusan Village. While the highest mean performance is found in the Road Connectivity attribute with an average score of 4.44.

The CLi value for each attribute can also be seen in table 6, the Road Connectivity indicator is the attribute that gets the highest score with a CLi value of 98.45%. This shows that the roads in Tikusan Village are interconnected and in good condition. This condition certainly makes the people of Tikusan Village able to easily carry out mobility in carrying out their daily activities, both for social and business activities.

3.2 Discussion

Based on the meaning of each quadrant as described in Figure 1, then the results of the calculation of the average Importance and Performance of each attribute in Table 6 are displayed in a Cartesian diagram which can be seen in Figure 2. Judging from the visualization of the Cartesian diagram of the relationship between each Importance and Performance indicator that has been assessed by respondents, the attributes Safety Driving, Security Technology, Green Space Availability, Road Connectivity, Environmental Safety System, and Human Resource Capacity are in quadrant I. These attributes can be interpreted as factors that are considered important by the community and have been implemented quite well and should be maintained so that public satisfaction with public services can be met and the implementation of the Smart Village concept can continue to run well.

While the attributes Community Engagement, Green Environment, Digital Business, Environment, Open Government, Online Service Availability, and Economic Awareness are in quadrant III, which means that these attributes do not really need to be questioned because the public considers that these attributes are not too important so that even though they are not satisfying the public, they are not too questioned.

Conclusion

Villages as the smallest unit in organizing public services for the community certainly have a big role in the progress of a country. So that the concept of smart cities adopted to villages is important considering that technological advances are currently developing rapidly. So that the village government, in this case the Tikusan Village government, should take the right steps to deal with current technological advances,

and it is certainly a hope for the people of Tikusan Village to get satisfying services and make it easier for the people of Tikusan Village.

Through a survey conducted on 101 respondents in Tikusan Village, both from employees and the community, most of them have felt good public services. Through the Importance-Performance Indicator, the results found that there are many attributes found in QI and QIII, which means that many people already feel the good public services in Tikusan Village and this must be maintained. there are also things that the community considers not too important, so the community hopes that it is better to prioritize what must be maintained only.

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