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Service Quality Analysis with Pivotal-Core-Peripheral (PCP) Model (Case Study: Restu Ibu Hospital Balikpapan)

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A B S T R A C T

Restu Ibu Hospital in Balikpapan is a private healthcare provider offering various clinics, including a neurology clinic. This study aims to measure the quality of service at Restu Ibu Hospital from the perspective of BPJS patients at the neurology clinic using the Pivotal Core Peripheral (PCP) model. Additionally, the study provides suggestions for improving service quality where it falls short of patient expectations. The PCP model assesses service quality through three main attributes: Pivotal, Core, and Peripheral. The research findings indicate that the Pivotal attribute has the lowest score of 0.103, meaning that the service meets patient expectations. The Core attribute has a score of 0.349, also indicating that the service meets patient expectations. Meanwhile, the Peripheral attribute has the highest score of 0.503, suggesting that this aspect of service exceeds patient expectations. Overall, the average score for PCP attributes is 0.318, indicating that all attributes are within the range of patient expectations. Patient satisfaction scores for the neurology clinic and the hospital overall are 3.61 and 3.52, respectively, reflecting a general satisfaction with the services at Restu Ibu Hospital. However, there are still two areas under the Pivotal attribute that fall below patient expectations: waiting time at the pharmacy, with a score of -0.68, and waiting time at registration, with a score of -0.59. Suggested improvements include enhancing the queue management system by providing information on the remaining queue, educating patients on using the application for easier registration, increasing human resources, and improving facilities for patient comfort.

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1. INTRODUCTION

Quality of care is critical in the healthcare industry, affecting not only customer satisfaction but also patient well-being and safety. Quality healthcare includes easy access, effective communication, safe care, ethical behavior, and the use of the latest technology. Healthcare providers that excel in these areas tend to gain greater trust from the public, build strong relationships with patients, and enhance

their reputation in the industry. Hospitals are key institutions in the provision of health services that meet patients' needs for healing and recovery. Ismainar (2013) in Tambuwun et al. (2020) emphasized that competition between hospitals is getting tighter, and safe and satisfying services are a major factor in hospital selection by patients.

Restu Ibu Balikpapan Hospital, which was established in 1976, is a private health facility that provides various medical services. based on restuibu.co.id page, the hospital offers various services such as emergency services, registration, hospitalization, medical support, administration, and general services. Based on observation and interview on February 15, 2024 with Dr. Michael Mamesa, Head of Marketing and Public Relations of Restu Ibu Hospital Balikpapan, it was found that the main complaints of patients include poor attitude of the staff, as well as problems in pharmacy and registration services caused by long waiting times, although these events are rare.

To explore this issue, a preliminary study was conducted through analyzing Google and social media reviews from the last year. The results showed that 50% of patients complained of unsatisfactory service, especially for BPJS users; 35% considered waiting times too long; and 15% reported a lack of responsiveness from medical staff. Based on the initial survey results from the hospital and patients, the researcher will continue a more in-depth study on service quality, especially for BPJS users. This research aims to obtain more accurate data and clearer information about the services provided by Restu Ibu Hospital Balikpapan. The main focus of the research is to find out how the quality of services provided by Restu Ibu Balikpapan Hospital, as well as to propose improvements on services that have not met the patient's expectations.

In this study, service quality will be measured using Pivotal Core Peripheral (PCP) attribute model developed by Philip & Hazlett (1997). The PCP model, which is a development of the SERVQUAL method, consists of three main parts based on their level of importance, namely pivotal, core, and peripheral attributes. Pivotal attributes refer to the main elements that influence consumers' decisions to choose these services (Philip & Hazlett, 1997). Core attributes are related to the way or process consumers receive services, which are referred to from SERVQUAL dimensions such as reliability, responsiveness, assurance, and empathy (Philip & Hazlett, 1997). Peripheral attributes include additional services provided, which refer to the physical evidence dimension in SERVQUAL (Philip & Hazlett, 1997). The PCP model uses one scale, perception, to facilitate respondents' ratings, and at the end of the questionnaire, respondents are asked to rate overall satisfaction. To obtain comprehensive data, the views of both parties, namely consumers and service providers, are needed, considering that each industry has its own uniqueness (Philip & Hazlett, 1997). Therefore, based on the explanation above, this study will use the Pivotal Core Peripheral (PCP) model to measure the quality of service at RS Restu Ibu Balikpapan in order to improve the quality of service at RS Restu Ibu Balikpapan through service improvement and enhancement in the future.

2. LITERATURE REVIEW

2.1 Service

According to Kotler & Keller (2012) as cited in Tjiptono (2019), a service is "any act or performance that can be offered by one party to another that is essentially intangible (having no physical presence) and does not result in the ownership of anything."

2.2 Service Quality

According to Tjiptono & Chandra (2016), service quality significantly contributes to the creation of differentiation, positioning, and competitive strategy for every marketing organization, whether manufacturing companies or service providers. There are five main dimensions according to Parasuraman et al. (1988) as cited in Tjiptono & Chandra (2016): (1) Reliability. This dimension relates to the company's ability to provide accurate services from the first time and to deliver the service within the agreed timeframe. (2) Responsiveness. This pertains to the willingness and ability of employees to assist customers and respond to their requests, including providing information on when the service will be delivered and delivering the service promptly. (3) Assurance

This involves the behavior of employees in instilling customer confidence in the company and creating a sense of security for customers. (4) Empathy. This concerns the company's understanding of customer issues and acting in the customers' best interests, as well as providing personal attention to customers and having convenient operating hours. (5) Tangibles. This relates to the attractiveness of physical facilities, equipment, and materials used by the company, as well as the appearance of employees. According to Philip & Hazlett (1997), service quality is a global assessment based on long-term attitudes, meaning that to evaluate service quality, consumers need to visit or use the service repeatedly to assess the quality of services in that industry.

2.3 Customer Satisfaction

Customer satisfaction, according to Mowen (1995) as cited in Tjiptono (2019), is defined as the overall attitude toward a product or service after acquisition (its use). According to Philip & Hazlett (1997), customer satisfaction is a temporary assessment made based on a specific service encounter. They also state that evaluating customer satisfaction can be done after a single encounter. In the industry, especially in services, customer satisfaction is closely related to the level of service quality, in the process of which there is direct interaction between the system, operator and the customer themselves, where in the process the customer can directly feel the quality of the service which at the same time can provide an assessment of the quality of the service that is taking place without going through other process stages (Trimarjoko dkk, 2020). This differs from measuring service quality, where the criteria for evaluation are based on individuals who have used the service repeatedly.

2.4 Pivotal-Core-Peripheral (PCP) Model

The P-C-P (Pivotal-Core-Peripheral) Attributes model developed by Philip & Hazlett (1997) is an approach for assessing service quality that simplifies the SERVQUAL method by integrating perceptions and expectations into a single questionnaire using a Likert scale. This model classifies service quality into three main levels: (1) Pivotal Attributes. These are the top-level attributes that reflect consumer expectations from the service and significantly influence their decision to choose a particular organization. Pivotal attributes relate to the ultimate outcome of the core service. (2) Core Attributes. These involve essential elements within the organization, such as people, processes, and structure, which directly interact with consumers to meet their needs. (3) Core attributes include dimensions like reliability, responsiveness, assurance, and empathy from the SERVQUAL model and play a crucial role in the success of service delivery. (4) Peripheral Attributes. These are supplementary components that enhance the core service, including facilities and additional services designed to improve and extend the overall customer experience. Peripheral attributes support and enrich the core service by providing extra elements that boost customer satisfaction. In this PCP model, the theory prioritizes measuring service quality first, which will then assess customer satisfaction (Philip & Hazlett, 1997).

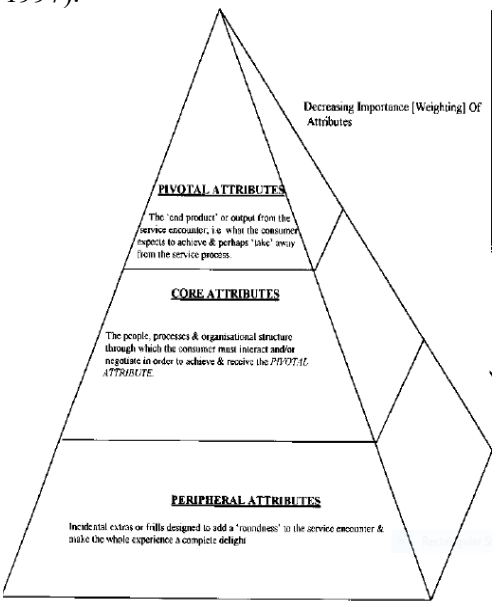

Figure 1. PCP attribute framework

2.5 Sampling Techniques

The sampling technique used in this study is non-probability sampling, specifically purposive sampling. This technique involves using specific criteria and considerations predetermined by the researcher before the research process begins (Darwin et al., 2021). The criteria for respondents selected as samples in this study are patients using BPJS for outpatient services at the Neurology Clinic of RS Restu Ibu Balikpapan who have visited RS

Restu Ibu Balikpapan at least twice within the past year up to the present.

2.6 Likert Scale

The scale used in this PCP model is the one proposed by Webster et al. (1994) as cited in Philip & Hazlett (1997), which is a scale for measuring perceptions in comparison with expectations.

Table 1. Combined measurement scale of expectations and perceptions

Far Below Expectations	Below Expectations	As Expected	Above Expectations	Far Above Expectations
-2	-1	0	1	2

The average scores will be categorized based on the scale ranges (Aurelia et al., 2022). Below is the formula for determining the scale range.

RS =(m-n)/b ……(2.2)
RS = (2 - (-2)) / 5
RS = 0.8

Explanation:
RS = Scale Range
m = Maximum value of the scale points in the questionnaire
n = Minimum value of the scale points in the questionnaire
b =Number of categories in the questionnaire

The range of the scale for patient perception according to Aurelia et al. (2022) and modified in the current study is as follows.

Table 2. The range of the patient perception scale

Interval	Description
(-1,20) – (-2,00)	Far Below Expectations
(-1,19) – (-0,39)	Below Expectations
(-0,38) – 0,42	As Expected
0,43 – 1,23	Above Expectations
1,24– 2,04	Far Above Expectations

The questionnaire instrument in this PCP model also includes a satisfaction measurement scale that is useful for assessing overall satisfaction with the service. Below is the satisfaction scale (Philip & Hazlett, 1997): (1) Very Dissatisfied, (2) Dissatisfied, (3) Neutral, (4) Satisfied, (5) Very Satisfied. The range of the patient satisfaction scale according to Aurelia et al. (2022) and modified in this study is as follows.

Table 3. The range of the patient satisfaction scale

Interval	Description
5,00 – 4,20	Very Satisfied
4,19 – 3,39	Satisfied
3,38 – 2,58	Neutral
2,57 – 1,77	Dissatisfied
1,76 – 0,96	Very Dissatisfied

2.7 Validity Test

Validity test is a test used to measure the extent to which the measuring instrument used in a study measures what is measured so that it is known whether a questionnaire is valid or not. In this study, a questionnaire is declared valid if the r-count result is greater than the r-table (Setyo R et al. 2022).

2.8 Comparison with previous research

Below is a comparison from previous researchers.

Table 4. Differences from previous research

No	Researcher	Title	Difference
1	George Philip, Jonathan Stewart	Assessment of the Service Quality of a Cancer Information Service Using a New P-C-P Attributes Model	The difference is the research object and the scale used.
2	Siti Ustaghfiroh, Jumino	The Influence of Librarian Professionalism on the Quality of Library Information Services at SMA Negeri 1 Kendal, Kendal Regency	The difference in the research objects and the analysis used leads to the influence of other variables on service quality.
3	Ayu Lestari, Dini Zulfani	The Influence of Health Service Quality on Patient Satisfaction at Taman Husada Bontang Regional General Hospital (Case Study: Adult Inpatients)	The difference in the methods or analysis used is Simple Linear Regression Analysis and Product Moment Correlation Coefficient.
4	Sodik Ramadhani, Theresia Amelia, Dharma Widada	Assessing Healthcare *Service Quality* with HEALTHQUAL Method dan IPA (Case Study: Hasanah Clinic Samarinda)	The difference is the research object and the method used, the method used is the HEALTHQUAL method.

3. RESEARCH METHOD

This study uses two types of data, namely primary data and secondary data. Primary data was obtained directly from Restu Ibu Hospital Balikpapan and includes interviews regarding important attributes and questionnaire results. The following is the questionnaire that will be used in the study.

Table 5. Perception questionnaire

No	Attribute	Statements
1	Pivotal	Clarity of BPJS service procedures at Restu Ibu Hospital
2		Waiting time for patients during registration
3		Waiting time for patients in the examination queue (Neurology Clinic)
4		Waiting time for patients when collecting medication at the Pharmacy
5		Restu Ibu Hospital does not discriminate between BPJS patients and general patient
6		Doctor's competence in diagnosing patient illnesses
7		Doctor's competence in providing treatment for patient illnesses
8		Clarity of information provided by doctors regarding diagnosis and treatment to patients
9	Core	Clarity of information signage at Restu Ibu Hospital
10		Timeliness of doctors' arrival schedules
11		Clarity of information regarding the proper use of medications provided by pharmacy staff
12		Speed of Restu Ibu Hospital in addressing patient complaints
13		Speed of security personnel in assisting patients during registration
14		Clarity of information provided by registration staff
15		Speed of registration staff in responding to patient complaints
16		Politeness and friendliness of security personnel towards patients
17		Politeness and friendliness of registration staff towards each patient
18		Politeness and friendliness of nurses towards each patient
19		Politeness and friendliness of pharmacy staff towards each patient
20		Patient trust in doctors during examinations
21		Patience of registration staff in serving patients
22		Patience of doctors in serving patients
23	Peripheral	Ease of finding parking at Restu Ibu Hospital
24		Safety of parking facilities at Restu Ibu Hospital
25		Cleanliness of the examination room in the Neurology Clinic at Restu Ibu Hospital
26		Cleanliness of the hospital environment at Restu Ibu Hospital

Table 3 above presents the statements included in the patient perception questionnaire. However, in research utilizing the PCP model, it is important to inquire about patient satisfaction with the services provided. Below are two questions that will be used to assess this satisfaction.

27. What is the overall level of patient satisfaction with the BPJS outpatient services at the neurology polyclinic at Restu Ibu Hospital?
28. What is the overall level of patient satisfaction with BPJS services at Restu Ibu Hospital?

Secondary data were obtained from indirect sources, such as the number of patients over the past year, company profile, and organizational structure. The sample size is determined based on the population of neurology clinic patients, which totals 28,131 in a year. Using the Slovin formula and a significance level of 0.1, the sample size is calculated as follows:

$$S = \frac{N}{N \cdot d^2 + 1}$$

$$S = \frac{28131}{28131 \cdot (0.1)^2 + 1}$$

$$S = 28131/282{,}31$$

$$S = 99{,}64 \text{ responden}$$

$$S \approx 100 \text{ responden.}$$

The flowchart of this study is presented below (Figure 2).

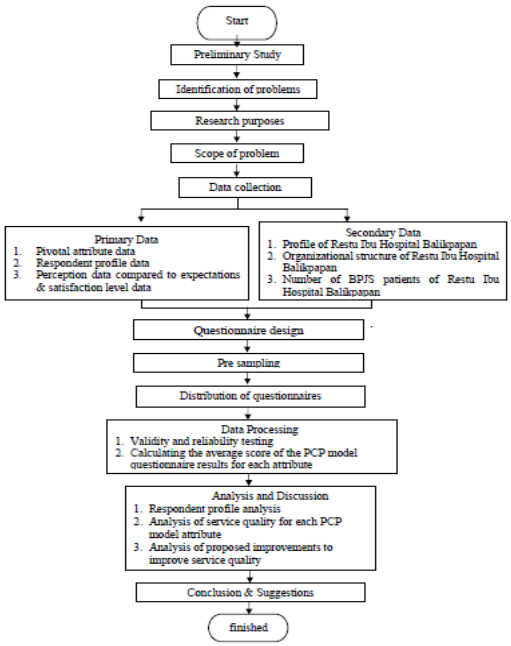

Figure 2. Research flow chart

4. RESULT AND DISCUSSION

Selanjutnya, analisis hasil kuesioner akan dilakukan dalam tiga tahap. Pertama, analisis validitas dan reliabilitas akan dilakukan untuk memastikan kuesioner valid dan reliabel. Kedua, berdasarkan hasil kuesioner yang diperoleh akan dihitung rata-rata untuk setiap atribut untuk mengidentifikasi layanan yang belum memenuhi harapan pasien. Ketiga, rekomendasi perbaikan akan diajukan untuk meningkatkan kualitas layanan di RS Restu Ibu Balikpapan.

4.1Validity and reliability test of perception

At this stage, validity and reliability tests will be

conducted on the patient perception questionnaire. The following are the test results.

Table 6. Perception validity test

No	Attribute	RTable	RCount	Results
1	P1	0,195	0.443	Valid
2	P2	0,195	0.202	Valid
3	P3	0,195	0.254	Valid
4	P4	0,195	0.274	Valid
5	P5	0,195	0.427	Valid
6	P6	0,195	0.519	Valid
7	P7	0,195	0.512	Valid
8	P8	0,195	0.698	Valid
9	C1	0,195	0.463	Valid
10	C2	0,195	0.322	Valid
11	C3	0,195	0.450	Valid
12	C4	0,195	0.534	Valid
13	C5	0,195	0.486	Valid
14	C6	0,195	0.399	Valid
15	C7	0,195	0.486	Valid
16	C8	0,195	0.451	Valid
17	C9	0,195	0.476	Valid
18	C10	0,195	0.390	Valid
19	C11	0,195	0.455	Valid
20	C12	0,195	0.430	Valid
21	C13	0,195	0.432	Valid
22	C14	0,195	0.521	Valid
23	PR1	0,195	0.207	Valid
24	PR2	0,195	0.457	Valid
25	PR3	0,195	0.745	Valid
26	PR4	0,195	0.736	Valid

Based on the Table 6, 26 statement attributes in the questionnaire are considered valid. This is because according to Alifah et al. (2020), an instrument is said to be valid if R count > R table. Thus, the data as a whole is able to measure what is intended in the study.

After the validity test is carried out, a reliability test will be carried out on the 26 attributes of the perception questionnaire statements.

Table 7. Perception reliability test

N of items	Cronbach's Alpha
26	0,905

Table 8. Reliability test of the three PCP attributes

Attribute	Cronbach's Alpha	N of items	Conclusion
Pivotal	0,696	8	Reliable
Core	0,856	14	Reliable
Peripheral	0,641	4	Reliable
Total	**0,731**	**26**	**Reliable**

Based on Tables 7 and 8, all statement attributes in this research questionnaire are considered reliable. According to Murti (2011) as quoted in Alifah et al. (2020), the minimum coefficient for a measurement instrument is 0.60 or greater, which indicates a fairly strong relationship.

4.2 Validity and Reliability Test of Satisfaction Level

At this stage, a validity and reliability tests will be conducted on the satisfaction level questionnaire. The following are the test results.

Table 9. Satisfaction level validity test

No	Attribute	RTable	RCount	Results
1	K1	0,195	0,938	Valid
2	K2	0,195	0,945	Valid

Based on Table 6 above, both attributes of the questionnaire regarding the level of satisfaction are considered valid. Thus, both attributes are able to measure what is to be achieved in the study. After the validity test is carried out, a reliability test will be carried out on the 2 attributes of the satisfaction level questions.

Table 10. Satisfaction level reliability test

N of items	Cronbach's Alpha
2	0,872

Based on Table 10 above, it states that both attributes of the satisfaction level question are said to be realible.

4.3 Pivotal Core Peripheral (PCP) measurement model

The average calculation of the PCP questionnaire is divided into two parts: the average perception of patients and the average level of patient satisfaction. The measurement of the PCP model is carried out by calculating the average value of the results of each statement attribute.

4.3.1 Average Value of Patient Perception

The PCP model measurement was carried out by calculating the average value of each attribute statement based on the results of the patient perception questionnaire.

Table 11. Measurement of PCP perception of each statement attribute

No	Attribute	Statement	Average
1	*Pivotal*	P1	0,26
2		P2	**-0,59**
3		P3	-0,22
4		P4	**-0,68**
5		P5	-0,02
6		P6	0,56
7		P7	0,59
8		P8	0,92
9	*Core*	C1	0,25

10		C2	0,15
11		C3	0,10
12		C4	-0,04
13		C5	0,74
14		C6	0,08
15		C7	0
16		C8	0,62
17		C9	0,33
18		C10	0,17
19		C11	0,33
20		C12	0,62
21		C13	0,38
22		C14	1,15
23	*Peripheral*	PR1	-0,36
24		PR2	0,40
25		PR3	0,96
26		PR4	1,01

Table 11 shows the average values for each attribute statement in the perception questionnaire. Based on the scale range presented in Table 2, the services that have average values below patient expectations are the waiting time for patients during registration and at the pharmacy, with average values of -0.59 and 0.68, respectively. Next, the calculation of the average value of the 3 attributes will be carried out.

Table 12. Average perception of each attribute

No	Attribute	Average
1	*Pivotal*	0,103
2	*Core*	0,349
3	*Peripheral*	0,503

Table 12 indicates that the three attributes, based on the service scale at RS Restu Ibu Balikpapan, meet patient expectations. However, based on previous analyses, there are still services that fall short of patient expectations, specifically in the pivotal attributes related to waiting times for patients during registration and at the pharmacy.

4.3.2 The Overall Average Value of Patient Perception

At this stage, an overall average analysis of the PCP attributes will be conducted to determine patients' perceptions of the services at RS Restu Ibu Balikpapan. The overall average results in a score of 0.318, indicating that the services at this hospital fall into the category of "as expected by patients." This is further supported by the results in Table 11, where all three PCP attributes range from "as expected by patients" to "above patients' expectations."

4.3.3.Average Value of Patient Satisfaction Level

The PCP model measurement was done by calculating the average value for two questions from the patient satisfaction questionnaire. The following are the results of calculating the average level of patient satisfaction.

Table 13. Average value of satisfaction level

No	Question	Average
1	How is the overall patient satisfaction level regarding the outpatient neurological services under BPJS at RS Restu Ibu Balikpapan?	3.61
2	What is the overall level of patient satisfaction with BPJS services at RS Restu Ibu Balikpapan?	3.52

Table 13 presents the average scores for both attribute questions in the satisfaction questionnaire. Based on the scale range shown in Table 3, patients feel satisfied with the services at the neurology clinic and overall at RS Restu Ibu Balikpapan.

4.4 Improvement Proposal

Based on the analysis, although overall patients at RS Restu Ibu Balikpapan are satisfied with the services provided, there are two attributes that still require improvement: "waiting time at the pharmacy" and "waiting time at registration." Here are some steps that can be taken for improvement:

1. Improving the Queue System at the Pharmacy

   An efficient queue system is essential to reduce patient waiting times. Here are some options that can be implemented by the hospital:

   a. Manual Queue System: If the queue system is done manually, the queue should be separated for compounded and non-compounded medications. Each category (compounded and non-compounded) can be assigned different queue numbers, and information about the "remaining queue number" can be printed on the queue ticket. This will allow patients to estimate their waiting time.Additionally, the installation of monitors displaying the queue numbers currently being served can help patients monitor their queue more clearly.

   b. Online Queue System: Restu Ibu Hospital can develop a mobile app or website for an online queue system. This app could have a Pop-Up Notification feature to inform patients when their

queue number is approaching. This way, patients don't need to wait for a long time at the hospital and can use their time for other activities. This feature would reduce crowding at the pharmacy and speed up the service process.

With an online queue system, the hospital can also avoid additional costs for adding more queue counters or expanding the pharmacy space. This system is more cost-effective and more practical for both patients and the hospital (Buton & Utami, 2018).

2. Improving the Queue System at Registration Restu Ibu Hospital Balikpapan uses two registration queue systems: manual and application-based. Patients often experience long waiting times at registration due to the high number of BPJS patients, causing congestion. Although there is an application-based registration, many patients prefer manual registration because they have difficulty downloading the app and have limited internet quota. To address this issue, the hospital could add information about the "remaining number of patients in the queue" on the manual queue cards, so that patients can estimate their service time. Additionally, education on using the app should continue by providing step-by-step instructions at the registration counter and offering free Wi-Fi for patients to support the education process.

5. CONCLUSION

Based on the service quality analysis at Restu Ibu Hospital Balikpapan, it can be concluded that there are still some aspects of the service that do not meet patient expectations. The measurement results using the Pivotal, Core, Peripheral (PCP) model show that the waiting time for patients at the pharmacy when picking up medication (-0.68) and at the registration desk (-0.59) still need improvement. To improve the queue system at the pharmacy, both manual and online queue systems can be implemented. The manual queue system can be enhanced by adding information about the remaining queue numbers and displaying the current number being served. Meanwhile, the implementation of an online queue system through an application can reduce congestion and speed up the service process by providing notifications to patients. As for the registration service, further education on using the application is needed, along with providing free Wi-Fi facilities to make it easier for patients. Both systems are expected to improve service efficiency, reduce operational costs, and enhance patient comfort. Future research is expected to measure the quality of services in various other polyclinics at Restu Ibu Hospital Balikpapan to gain a broader perspective. The results of this study can be used as input for the hospital to evaluate and improve the overall quality of services.

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