

The Analysis of Determinants Affecting Patient Waiting Time Perception: The Outpatient Pharmacy Installation of Hospital X Bekasi City Indonesia

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Abstract.

Waiting time in pharmacy services is one of the key indicators of hospital service quality that influences patient satisfaction and perception. Perceived waiting time is not solely determined by the actual duration of service but is also affected by operational and psychological factors experienced by patients during the waiting process. This study aims to analyze the influence of service process efficiency, pharmacists' communication, waiting room comfort, and drug availability on patients' perceived waiting time at the Outpatient Pharmacy Installation of RS X, Bekasi City Indonesia. This study employed a quantitative approach with a cross-sectional design. The population consisted of outpatients who redeemed prescriptions at the pharmacy installation, and samples were selected using an accidental sampling technique. Data were collected through a structured questionnaire that had been tested for validity and reliability. Multiple linear regression analysis was used to determine both partial and simultaneous effects among variables. The results indicate that service process efficiency, pharmacists' communication, waiting room comfort, and drug availability have a significant partial effect on patients' perceived waiting time ($p < 0.05$). Simultaneously, all four variables also significantly influence perceived waiting time. Service process efficiency was identified as the most dominant factor affecting patients' perceptions. These findings suggest that improving pharmacy service quality requires a comprehensive strategy, including workflow optimization, enhancement of pharmacists' communication skills, improvement of waiting room facilities, and strengthening drug inventory management to create a better patient service experience.

Keywords: *Perceived waiting time; pharmacy services; service efficiency; pharmacist communication; waiting room comfort and drug availability.*

I. INTRODUCTION

Hospitals are healthcare facilities that provide comprehensive individual health services through promotive, preventive, curative, rehabilitative, and/or palliative care by offering inpatient, outpatient, and emergency services (Republic of Indonesia, 2023). In the modern healthcare system, hospitals play a strategic role in ensuring patient safety while continuously maintaining service quality. Public demand for healthcare services continues to increase alongside the rising prevalence of infectious and degenerative diseases, requiring hospitals to deliver services that are both effective and efficient [1]. In addition to medical services, pharmaceutical services constitute a crucial component in determining the success of patient therapy and the overall quality of care (Puspitasari, Aslani, & Krass, 2020). Therefore, improving service quality has become a primary priority in hospital management to maintain patient trust and satisfaction. Outpatient services represent one of the hospital units with the highest volume of patient visits. These services include observation, diagnosis, treatment, rehabilitation, and other healthcare services without requiring hospital admission (Decree of the Minister of Health No. 1165/MENKES/SK/X/2007). The high number of outpatient visits positions this unit as the primary face of the hospital in shaping perceptions of service quality. Hospitals are required to ensure that outpatient services are delivered safely, promptly, and affordably to maintain patient satisfaction (Ayuareiny, Indrawati, Prapanca, & Caputra, 2025).

Within the outpatient service flow, the pharmacy installation becomes the final point that significantly determines the overall patient experience. The pharmacy installation is not merely a supporting unit but an integral part of the healthcare system that directly contributes to patient safety and therapeutic

effectiveness (Pinem, Ginting, & Chiuman, 2025). Outpatient pharmacy services have their own complexity as they involve prescription verification, compounding, packaging, dispensing, and providing medication counseling to patients. The efficiency and accuracy of these processes greatly determine patient waiting time. Prolonged waiting times frequently become a source of complaints and reflect suboptimal service management. Therefore, managing waiting time is a crucial performance indicator in hospital pharmacy installations. At Hospital X in Bekasi City, the outpatient pharmacy installation faces significant operational pressure due to the high volume of patient visits and prescriptions processed each month. This heavy workload has the potential to increase the risk of service delays, particularly during periods of peak visits. Managerially, the hospital has established waiting time standards in accordance with internal performance indicators, namely ≤ 45 minutes for compounded prescriptions and ≤ 15 minutes for non-compounded prescriptions. However, fluctuations in waiting time achievements indicate inconsistencies in service process efficiency. This condition aligns with previous studies stating that prescription service waiting times often fail to meet minimum service standards due to operational and human resource factors [2][3].

The issue of waiting time is not only viewed from the actual duration recorded administratively but also from patients' perceptions of how long they wait. Waiting time refers to the duration spent by patients from registration until receiving services, and its length is often considered an indicator of hospital service efficiency. However, there is a distinction between actual waiting time and perceived waiting time, where perceived waiting time is the result of patients' subjective interpretation influenced by psychological and environmental factors [4]. Thus, even when objectively meeting established standards, waiting time may still be perceived by patients as longer than it actually is. Queue psychology studies explain that the perception of waiting time is strongly influenced by emotional conditions and the service environment. state that perceived waiting time has a reciprocal relationship with emotions, in which longer perceived time may trigger negative emotions, and negative emotional states may make time feel longer [5]. Factors such as staff communication, clarity of information, and waiting room conditions are important determinants in shaping this perception. When patients receive clear explanations regarding estimated waiting times, uncertainty decreases, and time feels shorter compared to waiting without adequate information.

Several previous studies have shown that service process efficiency, waiting room comfort, and effective communication significantly influence perceived waiting time and patient satisfaction [1][4]. In addition, medication availability is an important factor because discrepancies between prescriptions and formularies or limited stock may prolong the service process [3]. Research by Amiruddin et al. also found that the availability of human resources and medications significantly affects prescription service waiting time [6]. This indicates that operational and psychological factors interact in shaping patients' waiting experiences. Based on the above explanation, it can be concluded that waiting time issues in pharmacy installations should not be analyzed solely from the perspective of actual duration but must also be examined from the standpoint of patient perception. This study aims to analyze the determinants influencing patients' perceived waiting time at the Outpatient Pharmacy Installation of Hospital X in Bekasi City in 2025, by examining the effects of service process efficiency, pharmacy staff communication, waiting room comfort, and medication availability. Through this approach, hospital management is expected to obtain an empirical basis for formulating service quality improvement strategies that focus not only on speed but also on patients' psychological experiences comprehensively.

II. METHODS

This study employed a quantitative approach with an analytical survey design. The quantitative approach was selected because the study aims to examine the relationships and effects among variables objectively through statistical analysis. According to Sugiyono, quantitative research is a method based on the philosophy of positivism and is used to investigate specific populations or samples by employing research instruments for data collection and statistical techniques for data analysis [7]. An analytical survey design was chosen because this study not only describes phenomena but also analyzes causal relationships between independent and dependent variables. Through this approach, the researcher is able to empirically measure the influence of service process efficiency, pharmacy staff communication, waiting room comfort,

and medication availability on patients' perceived waiting time. The research design used was cross-sectional, meaning that data were collected at a single point in time without longitudinal follow-up. This design was selected because the variables under study are current in nature and their relationships were intended to be examined within a specific period in accordance with the operational conditions of the Outpatient Pharmacy Installation at Hospital X in Bekasi City. The cross-sectional analytical survey method enables researchers to identify the relationship between determinant factors and perceived waiting time simultaneously within one observation period [8].

Thus, this study provides an objective overview of existing conditions while also testing hypotheses regarding both partial and simultaneous effects among variables. The population in this study consisted of all outpatients who redeemed prescriptions at the Pharmacy Installation of Hospital X in Bekasi City during the reference period of September 2025, totaling 11,698 patients. The sample size was determined by considering the minimum requirements for quantitative research and the needs of multiple linear regression analysis, resulting in a minimum sample of 100 respondents. The sampling technique used was purposive sampling, with inclusion criteria including outpatients who received compounded or non-compounded medications, were aged ≥ 18 years, were able to communicate effectively, and were willing to participate as research respondents. This technique was selected to ensure that respondents genuinely represented experiences related to perceived waiting time in the pharmacy installation. The research instrument used was a structured questionnaire with a 1–5 Likert scale to measure respondents' perceptions of each variable.

The dependent variable was Perceived Waiting Time (Y), while the independent variables consisted of Service Process Efficiency (X1), Pharmacy Staff Communication (X2), Waiting Room Comfort (X3), and Medication Availability (X4). Each variable was operationalized based on the conceptual definitions outlined in the theoretical framework of the study. Before being used for primary data collection, the research instrument was tested for validity and reliability to ensure that each item accurately and consistently measured the intended construct. Validity testing was conducted using the product-moment correlation technique, while reliability testing employed Cronbach's Alpha coefficient, with a minimum threshold of ≥ 0.70 to be considered reliable [7]. Data analysis was conducted in several stages, including descriptive analysis, classical assumption testing, and multiple linear regression analysis. Descriptive analysis was used to describe respondent characteristics and the distribution of responses for each variable. Classical assumption tests were then performed, including tests of normality, multicollinearity, and heteroscedasticity, to ensure that the regression model met statistical requirements. After the assumptions were satisfied, multiple linear regression analysis was conducted to examine partial effects (t-test), simultaneous effects (F-test), and to determine the most dominant variable based on the standardized beta coefficient values. All analyses were performed at a 5% significance level ($\alpha = 0.05$) to test the hypotheses formulated in this study.

III. RESULT AND DISCUSSION

1. The Effect of Service Process Efficiency on Perceived Waiting Time

The coefficient of determination aims to assess the proportional contribution of independent variables simultaneously to the dependent variable. The following are the results of the coefficient of determination test for the compounded and non-compounded medication categories.

Table 1. Coefficient of Determination Test Results for the Compounded Medication Category

<i>R Square</i>	0,898
<i>Adjusted R-Square</i>	0,882

Source: Processed Data by the Researcher, 2026

Based on Table 1 above, it is known that in the compounded medication category, the coefficient of determination is 0.882. It can be concluded that the variables of service process efficiency, pharmacy staff communication, waiting room comfort, and medication availability explain 88.2% of the dependent variable, namely perceived waiting time. Meanwhile, the remaining 11.8% is attributed to other variables not included and not examined in this study.

Table 2. Coefficient of Determination Test Results for the Non-Compounded Medication Category

<i>R Square</i>	0,664
<i>Adjusted R-Square</i>	0,643

Source: Processed Data by the Researcher, 2026

Based on Table 2 above, it is known that in the non-compounded medication category, the coefficient of determination is 0.643. It can be concluded that the variables of service process efficiency, pharmacy staff communication, waiting room comfort, and medication availability explain 64.3% of the dependent variable, namely perceived waiting time. Meanwhile, the remaining 35.7% is attributed to other variables not included and not examined in this study. The results of this study indicate that service process efficiency has a significant effect on patients' perceived waiting time. Efficiency in pharmacy services includes the speed of prescription verification, accuracy in compounding, smooth queue flow, and coordination among staff. When processes operate systematically with minimal obstacles, actual waiting time can be reduced, thereby leading to more positive perceptions.

Sugondo, Faustina, and Bernarto state that operational efficiency is an important indicator of service quality because it directly influences patient experience [1]. With well-organized processes, patients perceive the service as faster and more professional. Smooth procedures also reduce uncertainty during the waiting period. Chien and Lin explain that disruptions or irregularities in service delivery may trigger longer perceived waiting times due to the emergence of negative emotions [5]. These findings are consistent with the study by Sulastri and Lakoan, which found that operational factors such as workload and queue management systems affect prescription service duration [2]. Therefore, optimizing workflow, ensuring proportional task distribution, and monitoring waiting time performance are essential strategies to enhance patients' positive perceptions of pharmacy services.

2. The Effect of Pharmacy Staff Communication on Perceived Waiting Time

Table 3. T-Test (Partial) Results for the Compounded Medication Category

Model		Coefficients ^a				t	Sig.
		Unstandardized Coefficients		Standardized Coefficients			
		B	Std. Error	Beta			
1	(Constant)	-4.028	1.476			-2.730	.011
	X1	.176	.058	.233		3.030	.005
	X2	.195	.050	.341		3.897	.001
	X3	.232	.056	.419		4.138	.000
	X4	.176	.061	.195		2.894	.007

a. Dependent Variable: Y

Source: Processed Data by the Researcher, 2026

Based on Table 3 above, in the compounded medication category, the effect of each variable is as follows:

1. Testing the First Hypothesis (Ha1)

It is known that the calculated t-value is $3.030 > 1.984$ (df: N-2) t-table, and the significance value for the effect of service process efficiency (X1) on perceived waiting time (Y) is $0.011 < 0.05$. Therefore, the first hypothesis in the compounded medication category is accepted. It can be concluded that service process efficiency has a positive and significant effect on the perceived waiting time of patients receiving compounded medications.

2. Testing the Second Hypothesis (Ha2)

It is known that the calculated t-value is $3.897 > 1.984$ (df: N-2) t-table, and the significance value for the effect of pharmacy staff communication (X2) on perceived waiting time (Y) is $0.005 < 0.05$. Therefore, the second hypothesis in the compounded medication category is accepted. It can be concluded that pharmacy staff communication has a positive and significant effect on the perceived waiting time of patients receiving compounded medications.

3. Testing the Third Hypothesis (Ha3)

It is known that the calculated t-value is $4.138 > 1.984$ (df: N-2) t-table, and the significance value for the effect of waiting room comfort (X3) on perceived waiting time (Y) is $0.000 < 0.05$. Therefore, the third

hypothesis in the compounded medication category is accepted. It can be concluded that waiting room comfort has a positive and significant effect on the perceived waiting time of patients receiving compounded medications.

4. Testing the Fourth Hypothesis (Ha4)

It is known that the calculated t-value is $2.894 > 1.984$ (df: N-2) t-table, and the significance value for the effect of medication availability (X4) on perceived waiting time (Y) is $0.007 < 0.05$. Therefore, the fourth hypothesis in the compounded medication category is accepted. It can be concluded that medication availability has a positive and significant effect on the perceived waiting time of patients receiving compounded medications.

The results of the t-test for patients receiving non-compounded medications can be seen in the following table:

Table 4. T-Test (Partial) Results for the Non-Compounded Medication Category

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.192	1.701		-.113	.911
	X1	.212	.065	.284	3.257	.002
	X2	.098	.038	.200	2.590	.012
	X3	.154	.036	.363	4.254	.000
	X4	.313	.072	.350	4.371	.000

a. Dependent Variable: Y

Source: Processed Data by the Researcher, 2026

Based on Table 4 above, in the non-compounded medication category, the effect of each variable is as follows:

1. Testing the First Hypothesis (Hb1)

It is known that the calculated t-value is $3.257 > 1.984$ (df: N-2) t-table, and the significance value for the effect of service process efficiency (X1) on perceived waiting time (Y) is $0.002 < 0.05$. Therefore, the first hypothesis in the non-compounded medication category is accepted. It can be concluded that service process efficiency has a positive and significant effect on the perceived waiting time of patients receiving non-compounded medications.

2. Testing the Second Hypothesis (Hb2)

It is known that the calculated t-value is $2.590 > 1.984$ (df: N-2) t-table, and the significance value for the effect of pharmacy staff communication (X2) on perceived waiting time (Y) is $0.012 < 0.05$. Therefore, the second hypothesis in the non-compounded medication category is accepted. It can be concluded that pharmacy staff communication has a positive and significant effect on the perceived waiting time of patients receiving non-compounded medications.

3. Testing the Third Hypothesis (Hb3)

It is known that the calculated t-value is $4.254 > 1.984$ (df: N-2) t-table, and the significance value for the effect of waiting room comfort (X3) on perceived waiting time (Y) is $0.000 < 0.05$. Therefore, the third hypothesis in the non-compounded medication category is accepted. It can be concluded that waiting room comfort has a positive and significant effect on the perceived waiting time of patients receiving non-compounded medications.

4. Testing the Fourth Hypothesis (Hb4)

It is known that the calculated t-value is $4.371 > 1.984$ (df: N-2) t-table, and the significance value for the effect of medication availability (X4) on perceived waiting time (Y) is $0.000 < 0.05$. Therefore, the fourth hypothesis in the non-compounded medication category is accepted. It can be concluded that medication availability has a positive and significant effect on the perceived waiting time of patients receiving non-compounded medications.

The results of this study indicate that pharmacy staff communication has a significant effect on patients' perceived waiting time. Theoretically, clear and informative communication can reduce uncertainty and patient anxiety during the waiting process. Sugondo, Faustina, and Bernarto state that the quality of

communication in healthcare services contributes to increased patient satisfaction by creating transparency and trust [1]. In the context of the pharmacy installation, providing information regarding service flow, estimated prescription completion time, and medication counseling becomes an important element in shaping patient experience. When patients understand the ongoing process, waiting time tends to be perceived as shorter. This finding is consistent with the concept of perceived waiting time, which explains that time perception is strongly influenced by psychological factors, including the clarity of information received by patients [4]. Chien and Lin emphasize that effective communication can suppress negative emotions during the waiting process, making time feel subjectively faster [5]. Therefore, communication is not merely an administrative aspect but also a managerial strategy for improving the quality of service experience. Enhancing pharmacy staff communication competence and ensuring consistent delivery of waiting time estimates can serve as strategic measures to improve patients' perceptions of service duration.

3. The Effect of Waiting Room Comfort on Perceived Waiting Time

The standardized beta coefficient test (standardized coefficients beta) is used to compare the relative influence of each independent variable on the dependent variable in a multiple regression model. The variable with the highest absolute beta value indicates the most dominant influence [9]. The following are the results of the standardized beta coefficient test for the compounded medication category:

Table 5. Standardized Beta Coefficient Test Results for the Compounded Medication Category

Variabes	Standardized Coefficients Beta
Service Process Efficiency (X1)	0,233
Pharmacy Staff Communication (X2)	0,341
Waiting Room Comfort (X3)	0,419
Medication Availability (X4)	0,195

Source: Processed Data by the Researcher, 2026

Based on Table 5 above, the standardized beta coefficients in the compounded medication category are as follows: X1 = 0.233, X2 = 0.341, X3 = 0.419, and X4 = 0.195. It can be observed that the highest standardized beta coefficient is found in variable X3. Therefore, it can be concluded that the most dominant independent variable influencing the dependent variable (perceived waiting time) is waiting room comfort (X3). The following are the results of the standardized beta coefficient test for the non-compounded medication category:

Table 6. Standardized Beta Coefficient Test Results for the Non-Compounded Medication Category

Variables	Standardized Coefficients Beta
Service Process Efficiency (X1)	0,284
Pharmacy Staff Communication (X2)	0,200
Waiting Room Comfort (X3)	0,363
Medication Availability (X4)	0,350

Source: Processed Data by the Researcher, 2026

Based on Table 6 above, the standardized beta coefficients in the non-compounded medication category are as follows: X1 = 0.284, X2 = 0.200, X3 = 0.363, and X4 = 0.350. It can be observed that the highest standardized beta coefficient in the non-compounded medication category is found in variable X3. Therefore, it can be concluded that the most dominant independent variable influencing the dependent variable (perceived waiting time) is waiting room comfort (X3). The results of this study indicate that waiting room comfort has a significant effect on patients' perceived waiting time. The physical environment of healthcare services is included in the tangible dimension of service quality, which directly influences patient experience [1].

A waiting room that is clean, well-ventilated, adequately lit, and equipped with sufficient seating capacity can create a conducive atmosphere during the waiting process. When patients feel physically comfortable, their attention to the length of waiting time decreases, leading to more positive time perceptions. Time spent in a comfortable environment or accompanied by distracting activities tends to feel shorter compared to time spent in uncomfortable conditions [4]. Chien and Lin also explain that an unsupportive environment may trigger negative emotions such as anxiety and frustration, thereby prolonging the subjective perception of time [5]. Therefore, improving waiting room facilities including increasing

seating capacity during peak hours and providing transparent queue information becomes an essential strategy for enhancing patients' positive perceptions of waiting time in the pharmacy installation.

4. The Effect of Medication Availability on Perceived Waiting Time

The F-test is used to determine whether there is a significant simultaneous relationship between the independent variables and the dependent variable. If the significance value is less than 0.05, the independent variables are considered to have a significant simultaneous effect on the dependent variable. The following are the results of the F-test for the compounded medication category in this study:

Table 7. F-Test (Simultaneous) Results for the Compounded Medication Category

F Statistic	59,203
Significance	0,000

Source: Processed Data by the Researcher, 2026

Based on Table 7 for the compounded medication category, the calculated F-value is $59.203 >$ the F-table value of 2.467, and the significance value for the simultaneous effect of service process efficiency (X1), pharmacy staff communication (X2), waiting room comfort (X3), and medication availability (X4) on perceived waiting time (Y) among patients receiving compounded medications is $0.000 < 0.05$. Therefore, the fifth hypothesis (Ha5) is accepted, meaning that there is a positive and significant simultaneous effect of service process efficiency, pharmacy staff communication, waiting room comfort, and medication availability on perceived waiting time. The results of the F-test for the non-compounded medication category can be seen in the following table:

Table 8. F-Test (Simultaneous) Results for the Non-Compounded Medication Category

F Statistic	31,194
Significance	0,000

Source: Processed Data by the Researcher, 2026

Based on Table 8 for the non-compounded medication category, the calculated F-value is $31.194 >$ the F-table value of 2.467, and the significance value for the simultaneous effect of service process efficiency (X1), pharmacy staff communication (X2), waiting room comfort (X3), and medication availability (X4) on perceived waiting time (Y) among patients receiving non-compounded medications is $0.000 < 0.05$. Therefore, the fifth hypothesis (Ha5) is accepted, meaning that there is a positive and significant simultaneous effect of service process efficiency, pharmacy staff communication, waiting room comfort, and medication availability on perceived waiting time. The results of this study indicate that medication availability has a significant effect on patients' perceived waiting time.

Operationally, adequate stock availability enables the service process to run smoothly without additional obstacles such as searching for alternative stock or reconfirming prescriptions. Wirajaya and Rettobjaan state that limited medication stock can prolong service time and reduce patient satisfaction [3]. With a well-managed inventory system, services can be delivered more quickly and consistently, leading to more positive perceptions of waiting time. Uncertainty caused by out-of-stock medications or substitution processes may lengthen the subjective perception of waiting time [4]. Amiruddin et al. also emphasize that resource availability, including medications and pharmacy staff, affects the efficiency of prescription services [6]. Therefore, strengthening inventory control systems, implementing real-time stock monitoring, and ensuring synchronization between physicians' prescriptions and the hospital formulary are strategic measures to maintain service stability and enhance patients' positive experiences.

IV. CONCLUSION

Based on the research findings, it can be concluded that partially all independent variables—service process efficiency, pharmacy staff communication, waiting room comfort, and medication availability—have a significant effect on patients' perceived waiting time at the Outpatient Pharmacy Installation of Hospital X in Bekasi City. Service process efficiency has been proven to reduce actual waiting time and minimize operational obstacles, thereby shaping more positive time perceptions. Pharmacy staff communication also plays an important role in reducing patient uncertainty and anxiety during the waiting period through the delivery of clear and transparent information. Waiting room comfort has been shown to influence patients'

subjective experience in assessing the length of waiting time. A clean, well-organized, and comfortable physical environment can divert patients' attention, making the waiting time feel shorter.

Medication availability is also a crucial factor, as the smoothness of the service process largely depends on stock readiness. When medications are available in accordance with prescriptions, services can proceed more efficiently without additional obstacles that may prolong waiting time. These four variables make a significant contribution to patients' perceived waiting time. This indicates that perceived waiting time is influenced not only by the actual duration of service but also by operational and psychological factors that interact with one another. Therefore, improving the quality of pharmacy services should be carried out comprehensively by considering process efficiency, communication quality, environmental comfort, and medication inventory management in order to enhance overall patient experience and satisfaction.

V. ACKNOWLEDGMENTS

For the management of Hospital X in Bekasi City, it is recommended to optimize pharmacy service processes through periodic evaluations of workflow, adjustment of staff numbers during peak hours, and the implementation of a transparent digital queue management system. In addition, effective communication training for pharmacy staff should be enhanced to ensure that waiting time estimates and medication information are delivered consistently and proactively. Improving waiting room facilities and strengthening the medication inventory control system should also become priorities to minimize service obstacles. For future researchers, it is recommended to include additional variables that may potentially influence perceived waiting time, such as pharmacy staff workload, information technology systems, or patient characteristic factors. A longitudinal research design may also be conducted to examine changes in perceived waiting time over a certain period following service improvement interventions, thereby providing a more comprehensive understanding of the effectiveness of strategies aimed at enhancing the quality of pharmacy services.

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