THE EFFECTIVENESS OF THE ONLINE REGISTRATION SYSTEM FOR OUTPATIENTS ON THE QUEUE SYSTEM AT XYZ HOSPITAL

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Abstract

This study aims to evaluate the impact of the online outpatient registration system on the queuing process at XYZ Hospital Bandung. A quantitative approach was applied, with data collected through questionnaires distributed to 100 JKN Mobile users at the hospital. The findings indicate that the system's effectiveness contributed 61.9% to improvements in the queuing process, showing generally positive outcomes. However, challenges remain in using the JKN Mobile application at XYZ Hospital Bandung, including: (1) limited understanding of the application among BPJS Kesehatan patients, and (2) insufficient information and promotion from the hospital regarding the application's use. To address these issues, it is recommended that XYZ Hospital Bandung: (1) collaborate with BPJS Kesehatan to conduct an educational campaign highlighting the JKN Mobile app's benefits and features, and (2) consistently implement the online registration system for outpatient services.

Keywords: *Registration, Online, JKN, Queue*

Introduction

Current technological developments have a great impact on various aspects of activities, especially in the work field, where their existence really supports work activities in terms of time efficiency and performance productivity. The ever-increasing pace of advancements in technology has led to various sectors of agencies, including health agencies, utilizing this technology for the benefit and success of their work. A hospital is a healthcare facility which, according to the (Government Regulation No. 47 of 2021) on the Administration of the Hospital Sector, is a healthcare institution that provides comprehensive individual healthcare services through inpatient, outpatient and emergency services.

Medical records (Permenkes No. 24 of 2022:4) According to Article 1, medical records are documents containing patient identity data, examinations, treatments, procedures and other services provided to patients. According to the Director

General of Yanmed (2006:22) (Widiyana & Gunawan, 2022), registration is a process of registering patients who seek treatment at a polyclinic or are treated within the framework of a hospital service procedure system. When registering according to (Permenkes RI No. 24 of 2022 on Medical Records), patient registration within the meaning of Article 13, paragraph (1)(a) is a registration activity in the form of entering identity and social data for emergency outpatient care and inpatients. The first set of hospital activities is when patients visit the hospital for treatment or to consult a doctor. However, the large number of patient visits often leads to the queue of patients building up at registration, which affects the quality of patient care provided by hospital registration staff. Outpatient Registration Place Services (TPPRJ) are administrative services that collect the initial information of outpatients when they visit the hospital in the registration area. Therefore, the registration officer must also participate in maintaining the confidentiality of the patient's medical records and be accurate, timely and relevant in making decisions about patient data.

Implementation of medical records according to (Permenkes RI, 2013) on the implementation of the work of medical record clerks in Article 15, which states that one form of medical record and health information services performed by medical record clerks are manual medical record services and computerized registration services. In this era of technological advancement, many health authorities have implemented online registration systems. The aim of implementing this online registration system is to simplify the registration process for patients. The effectiveness of the online registration system allows patients to register or make appointments with doctors through digital platforms such as websites or mobile applications. Patients can register anytime and anywhere without having to physically visit the hospital, so it is expected to reduce waiting times and queues for patients when registering at the polyclinic.

Likewise, in XYZ Hospital which has implemented an effective online registration system, where XYZ Hospital has 2 (two) effective online registration systems namely including the JKN Mobile Application which has been running since July 2022 and through online registration through the XYZ Hospital website Application which has been running since September 23, 2022. XYZ Hospital Application is a new reform of online registration via SMS which has actually been running for a long time and has been replaced by a mobile application but its users are still less effective. Because for registration at the registration counter, patients are still required to provide a queue number. The JKN Mobile Application itself was first launched on November 15, 2017 by the National Health Insurance Organizing Agency. The aim of implementing online registration using the Mobile JKN Application is to

increase the efficiency of outpatient services and minimize queues for patients. However, based on the observations of several medical record officers in the field of outpatient registration, some obstacles still exist in the implementation of the use of the Mobile JKN application.

According to (Suhadi et al., 2022), the use of JKN mobile application has an impact on the ease of access to BPJS services. The conveniences provided by the use of JKN mobile application include easy registration and modification of member information, easy inquiry of information about participant and family data, easy inquiry of billing and contribution payment information, and easy filing of complaints and requests for JKN information. Given the above background, the author is interested in studying the phenomenon of using JKN mobile services in depth, entitled “The Impact of the Effectiveness of Online Outpatient Registration System on Queueing System in XYZ Hospital Bandung”.

Methodology

The research method used in this research is a quantitative method with a descriptive approach. According to (Sugiyono, 2017:14), quantitative research methods can be interpreted as research methods based on the philosophy of positivism and used to study specific populations or samples. Sampling techniques are generally conducted randomly, data collection is done using research tools and analytics and is quantitative in nature / statistics with the aim of testing predetermined hypotheses

The data collection techniques used are:

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1. Observation

According to (Sugiyono, 2019), observation as a data collection technique has specific characteristics compared to other techniques namely interviews and questionnaires. In this case, the author made observations from April 3, 2023 to June 9, 2023 at XYZ Hospital Bandung.

2. Interview

According to (Sugiyono, 2019:203), interviews are used as a data collection technique when the researcher wants to conduct a preliminary study to find problems that need to be researched and also when the researcher wants to get more in-depth information about the respondents. The number of respondents is few/small. The author conducted an interview with a source namely the registration officer.

3. Questionnaire (Questionnaire)

According to (Sugiyono, 2019:204), a questionnaire is a data collection technique that is conducted by presenting a series of questions or written statements to the respondents to answer. In this research, the author distributed 16 questionnaire items to the respondents.

4. Literature Study

According to (Nazir, 2013), data collection techniques include conducting review studies on books, literature, notes and reports related to the problem being solved. In this research, the author used books and materials related to the problems being studied to support the research findings. The literature study mentioned here uses the information contained in the literature to compare the theory with the results of on-site observations and contribute to solving this research problem. For this research, 100 sample data from patients using the JKN mobile application in XYZ Hospital Bandung were used. According to (Sugiyono, 2013) to determine the research sample size using the Slovin formula (Riduwan, 2013; Sari et al., 2019). The data processing/analysis method for measuring the level of effectiveness/success in using the JKN mobile application is to use a Likert scale with a success rate table.

Effectiveness = (Total score obtained)/(Ideal score)×100%

Table 1. Level of Success/Effectiveness

Rasio Efektivitas	Tingkat Capaian
0 – 20 %	Sangat tidak efektiv
21 – 40 %	Tidak efektiv
41 – 60 %	Cukup efektiv
61 – 80 %	Efektiv
81 – 100 %	Sangat efektiv

Source : (Utami & Samopa, 2013)

Results and Discussion

1. Effectiveness Flow of Online Registration System for Outpatients Using JKN Mobile Application

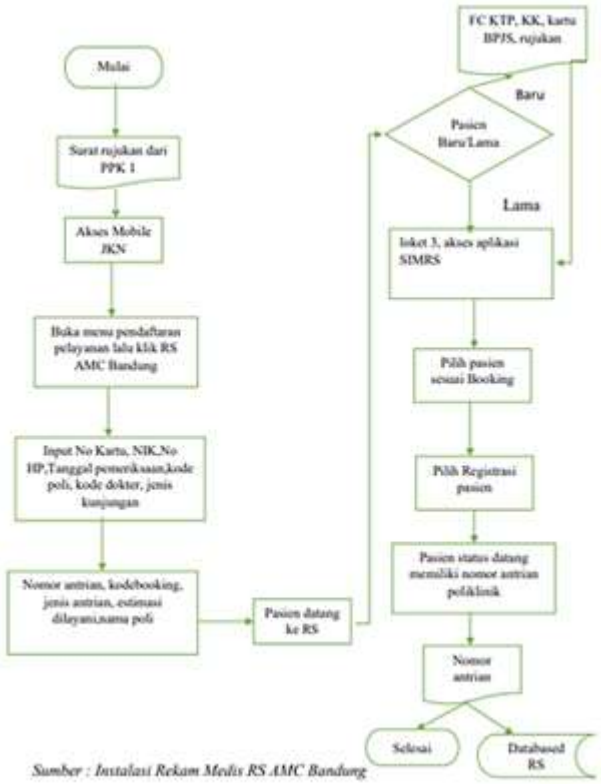

Figure 1. Flowchart of the Effectiveness of the Online Registration System for Outpatients Using the JKN Mobile Application

Effectiveness Procedure of Online Registration System for Outpatients Using JKN Mobile Application at XYZ Hospital Bandung.

A. The patient already has a referral from Health Facility 1.

B. Patients register through JKN Mobile, with the condition that registration must be done a maximum of 24 hours before the day of check-up/treatment.

C. Patients register on JKN mobile phone, which includes selecting XYZ Hospital as the destination health facility for treatment, then selecting the polyclinic according to the disease and filling in the complaint of the disease.

D. The patient is given a queue number, the office hours and the name of the doctor at the specified polyclinic.

e. When the check-up/treatment appointment is reached, the patient comes to the hospital.

F. After the patient arrives at the hospital, the patient immediately approaches the special officer for online registration through JKN mobile, namely the officer at counter 3, and then shows the counter officer the proof of registration in the form of a queue number for the polyclinic.

G. The counter staff will enquire about the new patient requirements in the form of photocopy of KTP, BPJS card, referral family card/control letter and queue number on the patient's mobile JKN.

H. The reception staff will enter the patient's identity completely and correctly into SIMRS using the patient's ID card.

i. The counter staff will instruct the patients to press the check-in button on the JKN mobile.

J. The counter staff will print the BPJS Guarantee SEP and Polyclinic Queue Number and then match the printed queue number with that on the JKN mobile.

k. The counter staff will inform the Polyclinic Queue Number to the concerned patient.

l. The counter staff will instruct the patient to wait at the specified Polyclinic.

2. The Influence of the Effectiveness of the Online Registration System for Outpatients on the Queue System at XYZ Hospital, Bandung

2.1. Validity and Reliability Test

To calculate the authenticity or validity of a statement, a significance value is needed. However, previously the test in this research was a two-way test and to determine the rtable value, in the initial stage of this research, 100 samples were used with a = 5%, for df = N-2, in this case df = 100 – 2 = 98, where the significance value is 95% and a is 5%. The following validity test uses IBM SPSS Statistics 25. The validity test is conducted to determine whether the questions in the questionnaire are suitable for use. A question is considered valid if the value of rcount > rtable, if the value of rcount < rtable = invalid. The validity test was conducted on 100 respondents who met the criteria determined using the Slovin formula.Table 2 Number, Educational Background, and Length of Service of Inpatient Administration Staff in Each Process

Table 2. Validity Test of the Online Registration System Effectiveness Variable (X)

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
X1	20.19	5.893	.503	.846
X2	20.35	5.745	.679	.819
X3	20.48	5.383	.741	.805
X4	20.58	5.115	.606	.831
X5	20.57	5.258	.620	.826
X6	20.53	5.080	.690	.811

Table 3. Validity Test of Queue System Variables (Y)

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Y1	36.07	15.096	.663	.905
Y2	36.04	14.645	.720	.902
Y3	36.18	14.917	.660	.905
Y4	36.33	14.163	.722	.902
Y5	36.19	14.822	.650	.906
Y6	36.19	15.590	.662	.905
Y7	36.16	15.368	.675	.905
Y8	36.03	16.171	.562	.911
Y9	36.22	14.901	.742	.900
Y10	36.12	14.854	.785	.898

From the results of validity test in Tables 2 and 3 of the billing items, the significance value for the variable effectiveness of online registration system and the variable

queuing system is declared valid. It can be concluded that the statements of these two variables are valid for this research.

Reliability refers to the stability of measurement. A tool is considered reliable if it is used repeatedly with the same value. The reliability test in this research was conducted at Rs XYZ Bandung. The test technique used is Cronbach's Alpha test.

Table 4. Variable Reliability Test

Reliability Statistics

Cronbach's Alpha	N of Items
.935	16

Based on Table 4, the calculated r for the total of all 16 statement items in Cronbach's Alpha is 0.935, which means it is greater than the r table value of 0.197. It can be concluded that all statement items in this questionnaire can be used because they are reliable.

2.2. Correlation Test

Table 5. Results of Correlation Test of Variables

Correlations

		Efektivitas Sistem Pendaftaran Online	Sistem Antrian
Efektivitas Sistem Pendaftaran Online	Pearson Correlation	1	.787**
	Sig. (2-tailed)		.000
	N	100	100
Sistem Antrian	Pearson Correlation	.787**	1
	Sig. (2-tailed)	.000	
	N	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation test aims to determine the degree of closeness of the relationship between variables, which is expressed by the correlation coefficient (r), and to

determine whether the nature of the relationship between the independent variable (X) and the dependent variable (Y) is positive or negative. The basis for this can be the following decisions:

● If the significance value is <0.05, then it is correlated.

● If the significance value is >0.05, then it is uncorrelated.

Based on the results of the correlation test in the table above, the significance value of the variable “Online Registration System Effectiveness” was found to be 0.000, and the significance value of the variable “Queue System” was found to be 0.000. So, it can be seen that there is a relationship/correlation between these two variables. Since the correlation value of the effectiveness variable of the online registration system is 0.787 and the queuing system variable is 0.787, the relationship between these two variables is positive, that is, the higher the effectiveness of the online registration system, the higher the queuing system minimization strategy. To find out the degree of relationship between these two variables, you can refer to the following guidelines for the degree of relationship.

● Pearson correlation value 0.00 / 0.20 = no correlation.

● Pearson correlation value 0.21 / 0.40 = weak correlation.

● Pearson correlation value 0.41 / 0.60 = moderate correlation.

● Pearson correlation value 0.61 / 0.80 = strong correlation.

● Pearson correlation value 0.81/1.00 = perfect correlation.

From this, it can be concluded that the relationship/correlation between the effectiveness variable of online registration system (X) and the variable of queuing system (Y) with a significance value of 0.787 is within the Pearson correlation value interval of 0.61/0.80, which means that the variable (X) is related with the variable (Y) in this study with the degree of relationship, namely strong correlation.

2.3. Simple Linear Regression Test

Table 6. Simple Linear Regression Test Results (Y = 10.060 + 1.227 X)

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig
(Constant)	**10.060**	2.402		4.187	.000
Efektivitas Sistem Pendaftaran Online	**1.227**	.097	.787	12.611	.000

a. Dependent Variable: Sistem Antrian

Based on the results of the simple linear regression test, it shows a constant value of 10.060 and a variable value (X) for the effectiveness of the online registration system of 1.227. The value of the regression coefficient is positive, so it can be said that the direction of influence between variable X and variable Y is positive.

2.4. Hypothesis Testing

To find the t-value in this hypothesis test, use the formula tcount > ttable. , with a significance value <0.05. In this study, a two-way test was used with a sample value of 100 and a/2 = 5%/2 = 0.025. In this research, the author has the following statement (hypothesis):

H0: The effectiveness of the online outpatient registration system does not affect the queuing system in XYZ Hospital Bandung.

Ha: The effectiveness of the online outpatient registration system does affect the queuing system in XYZ Hospital Bandung. Below, the author describes the t-table values and hypothesis t-test which the author processed using SPSS Statistics Version 25.

Table 7. Hypothesis Test Results

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig
(Constant)	**10.060**	2.402		4.187	.000
Efektivitas Sistem Pendaftaran Online	**1.227**	.097	.787	12.611	.000

a. Dependent Variable: Sistem Antrian

It can be concluded that the interpretation of this test is that the t-table value is 1.987 (in the t-table with the formula df= N-2, 100-2= 98), and in Table 4, the t-value is 12.611 in t-column. According to the provisions, if t count > t table, 12.611 > 1.987, then the hypothesis testing in this study is significant and H0 is rejected and Ha is accepted, which means that the effectiveness of the online registration system has a significant impact on the queuing system.

2.5. Test of Determination Coefficient

Table 8. Results of the Determination Coefficient Test

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.787[a]	.619	.615	2.663

a. Predictors: (Constant), Efektivitas Sistem Pendaftaran Online

From these results, it is known that the magnitude of the correlation/relationship (R) is 0.787 and the coefficient of determination r2 in the R-squared column is 0.619, which means that the influence of the independent variable (effectiveness of online registration system) on the dependent variable (queueing system) is 61.9%. Meanwhile, the remaining 38.1% still use the direct registration system by coming to the hospital. From these results, it can be concluded that although the online registration system using JKN mobile application was not entirely successful in overcoming queues in XYZ Hospital Bandung, if its influence is greater, it will also have great potential to be used as a strategy to minimize the queueing system in XYZ Hospital Bandung.

3. Effectiveness of the Online Registration System (X) Using the JKN Mobile Application

The following is a presentation of the score table for the effectiveness variable of the online registration system (X) for outpatients, including 6 statement items distributed to 100 respondents who use the JKN mobile service.

Table 9. Results of the Respondents' Questionnaire on the effectiveness of the online registration system (X)

No		SS	S	RG	TS	STS	F	%
1	Mendaftar online via *Mobile* JKN di RS AMC Bandung sangat memudahkan pasien dalam mengatur waktu kunjungan untuk berobat ke RS AMC Bandung	38	59	1	2	0	100	100%
2	Mendaftar online via *Mobile* JKN, sangat efisien dan sgt waktu hanggat dan tidak memakan waktu lama saat melanggar registrasi pendaftaran di loket RS AMC	22	76	1	1	0	100	100%
3	Saya merasa kecepatan dan ketepatan petugas loket pendaftaran RS AMC saat mengaktivasikan pasien pendaftar via *Mobile* JKN sangat tepat waktu	17	73	9	1	0	100	100%
4	Saya merasa kecermatan petugas dalam sistem pelayanan yang diterapkan di RS AMC memberikan pelayanan dengan tidak membuat atau memberikan kesalahan pada pihak-pihak tertentu.	15	67	15	2	1	100	100%
5	Saya merasa dalam pemberian informasi dan penjelasan tentang pendaftaran via *Mobile* JKN petugas khusus pendaftaran via *Mobile* JKN sangat baik	16	68	14	1	1	100	100%
6	Saya merasa, sikap petugas loket pendaftaran dalam mengaktivasikalkan dan pasien mengenai pendaftaran via *Mobile* JKN sangat tanang dan bijak dalam merespon	16	73	9	0	2	100	100%
	Total	124	416	49	7	4	600	100%

Calculation of the questionnaire score for variable (X), with a total of 6 statements:

T x Pn

Information:

T: Total number of questionnaires selected

Pn: Selection of Likert score numbers.

A. Total score for those who answered SS: 124 x 5 = 620

B. Total score for those who answered S = 416 x 4= 1,664

C. Total score for those who answered RG: 49 x 3 = 147

D. Total score for those who answered TS: 14 x 2 = 14

e. Total score for those who answered STS: 4 x 1 = 4

Total =2,449

So the evaluation score achieved for the independent opinion was 2,449.

Effectiveness = (Total score obtained) / (Ideal score) × 100

Index % = 2,449 / 3,000 × 100

Index = 81.64 %

Based on the results of the analysis of the distribution of questionnaires to 100 respondents, it is known that the evaluation of the effectiveness of the online registration system using the JKN mobile service in XYZ Hospital according to the answers of the respondents using the JKN mobile service is in the category of “very successful” or “very effective” from the 6 statement items answered by 100 people with a percentage of 81.64%.

Conclusion

Based on the discussion outlined by the author previously, it can be concluded that the implementation of the online outpatient registration system through the JKN mobile application in XYZ Hospital is already in the very effective category in its use after passing the testing phase by distributing several questionnaires to patients. In addition, the online outpatient registration system using the JKN mobile application has an impact on the queuing system in XYZ Hospital Bandung, where the impact of using the JKN mobile service can reduce the formation of queues at the registration counter. Even though its use falls into the very effective category, it is currently not able to completely overcome the build-up of the queuing system in XYZ Hospital. However, looking at the future prospects, there is great potential in overcoming the phenomenon of building queuing systems in XYZ Hospital in Bandung due to the extensive use of the JKN mobile application service.

For further research, it is hoped to identify problematic factors regarding the online registration system as a whole. To find out the potential of using the online outpatient registration system as a strategy to minimize the queue system phenomenon in XYZ Hospital Bandung.

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