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ANALYSIS OF THE IMPLEMENTATION OF AN INFORMATION TECHNOLOGY-BASED HOSPITAL MANAGEMENT SYSTEM ON SERVICE QUALITY AND PATIENT SATISFACTION

Novri Syafitri Rahmayanti *, Christin Setiawan, Sonia Novita Sari, Nabiela El Rizqa
Universitas Pelita Harapan, Jl. Boulevard Diponegoro No. 1100 (atau Jl. MH. Thamrin Boulevard 1100), Kelapa Dua, Tangerang, Banten 15811, Indonesia
*novrisyftr@gmail.com

ABSTRACT

The rapid advancement of information technology has transformed healthcare services through the implementation of Hospital Management Information Systems (SIMRS). This study aimed to analyze the effect of information technology-based SIMRS implementation on service quality and patient satisfaction at Fatmawati Central General Hospital, Jakarta. This quantitative study employed an analytical observational design with a cross-sectional approach. A total of 110 outpatients and inpatients were recruited using consecutive sampling. Data were collected using structured questionnaires measuring information system quality, information quality, service quality, and patient satisfaction. Prior to data collection, all research instruments were tested and demonstrated good psychometric properties. The validity test showed that all questionnaire items were valid ($r = 0.567–0.801$; $p < 0.05$), while the reliability test indicated high internal consistency with Cronbach's Alpha values of 0.888 for information system quality, 0.835 for information quality, 0.841 for IT service quality, and 0.841 for patient satisfaction. Data were analyzed using Pearson correlation and multiple linear regression. The findings showed that information system quality, information quality, and IT service quality each had a significant positive effect on patient satisfaction ($p < 0.05$). Information quality was identified as the strongest predictor of patient satisfaction ($\beta = 0.357$), followed by IT service quality ($\beta = 0.355$) and information system quality ($\beta = 0.170$). The three variables simultaneously explained 83.1% of the variance in patient satisfaction ($R^2 = 0.831$). These findings indicate that effective implementation of SIMRS contributes substantially to improving healthcare service quality and patient satisfaction.

Keywords: hospital management information system (SIMRS); information quality; information technology; patient satisfaction; service quality

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INTRODUCTION

The development of information technology has become a key pillar in the transformation of healthcare services in the digital era. Hospitals, as complex healthcare organizations, require integrated information systems capable of managing administrative and clinical processes accurately, efficiently, and responsively to meet the needs of patients and healthcare professionals. In this context, the Hospital Management Information System (Sistem Informasi Manajemen Rumah Sakit [SIMRS]) has emerged as a strategic solution for improving operational efficiency, supporting clinical decision-making, and enhancing the quality of healthcare services (Kementerian Kesehatan Republik Indonesia, 2013).

SIMRS is an integrated information technology platform that connects patient registration, electronic medical records, pharmacy, laboratory, radiology, billing, and hospital management into a unified system. The implementation of SIMRS aims to establish an efficient, effective, and

standardized healthcare service process while minimizing manual recording errors and duplication of patient data. In addition, service quality in healthcare encompasses multiple dimensions, including service responsiveness, system reliability, timeliness, and effectiveness of clinical workflows. Previous studies have demonstrated that information system quality, information quality, and service quality are important determinants of patient satisfaction in healthcare organizations (Jad & Zainol, 2022; Salendra et al., 2024).

Several studies have reported that improvements in hospital information systems and information technology infrastructure contribute significantly to higher patient satisfaction by facilitating faster service delivery, improving data accuracy, and enhancing communication among healthcare providers (Hartono et al., 2024; Nurwito, 2024). Likewise, the implementation of clinical information systems has been associated with improved patient experiences through shorter waiting times, more accurate medical documentation, and greater accessibility of healthcare information, all of which positively influence patient satisfaction (Elliason, 2025).

In Indonesia, healthcare digitalization policies have encouraged hospitals to implement SIMRS as part of national healthcare transformation initiatives. Nevertheless, many hospitals continue to experience challenges in optimizing SIMRS implementation, including limited human resource competencies, resistance to organizational change, inadequate staff training, and technical constraints that may reduce the effectiveness of information systems and ultimately affect the quality of healthcare services (Kementerian Kesehatan Republik Indonesia, 2013; Pratiwi et al., 2025).

Fatmawati Central General Hospital, Jakarta, is one of Indonesia's national referral hospitals that has implemented SIMRS to support both administrative and clinical services. Although the system has been widely utilized, empirical evidence regarding its influence on service quality and patient satisfaction within this hospital remains limited. Most previous studies have focused on evaluating SIMRS implementation in different healthcare settings without specifically examining the combined effects of information system quality, information quality, and information technology service quality on patient satisfaction at Fatmawati Central General Hospital. This research gap highlights the need for further investigation to provide evidence-based recommendations for optimizing hospital information systems.

Therefore, this study aims to analyze the effect of information technology-based Hospital Management Information System (SIMRS) implementation on patient satisfaction through information system quality, information quality, and information technology service quality at Fatmawati Central General Hospital, Jakarta. The findings of this study are expected to provide empirical evidence that can support hospital management in optimizing SIMRS implementation to improve healthcare service quality and patient satisfaction.

METHOD

This study employed a quantitative approach using an analytical observational design with a cross-sectional method to examine the effect of the implementation of an information technology-based Hospital Management Information System (SIMRS) on service quality and patient satisfaction at Fatmawati Central General Hospital, Jakarta. Data collection was conducted during June 2026, including the stages of research preparation, data collection, data processing, statistical analysis, and report writing.

The independent variables consisted of information system quality (X_1), information quality (X_2), and information technology service quality (X_3), while the dependent variable was patient satisfaction (Y). The study population comprised all outpatients and inpatients who received

healthcare services supported by SIMRS, including digital registration, electronic medical records, electronic queuing systems, and SIMRS-based administrative services.

The inclusion criteria were patients aged 17 years or older, those who had received healthcare services using SIMRS, were willing to participate, and were able to read and understand the questionnaire. Patients in emergency conditions, those with unstable clinical conditions, or those who did not complete the questionnaire were excluded from the study. The sample size was determined using the Slovin formula because the population size was known, and a quantitative survey approach was employed. Respondents were recruited using a non-probability consecutive sampling technique, whereby every eligible patient who met the inclusion criteria during the data collection period was consecutively selected until the required sample size of 110 respondents was achieved.

Data were collected using a structured questionnaire consisting of four constructs: information system quality (10 items), information quality (7 items), information technology service quality (7 items), and patient satisfaction (7 items). Before being administered to the respondents, the research instrument underwent validity and reliability testing. Construct validity was evaluated using the Pearson Product-Moment correlation test. All questionnaire items demonstrated satisfactory validity, with corrected item-total correlation coefficients ranging from 0.567 to 0.801, exceeding the critical value ($r = 0.1874$) at a significance level of $p < 0.05$, indicating that all items were valid for measuring their respective constructs. Instrument reliability was assessed using Cronbach's Alpha coefficient. The results showed excellent internal consistency, with Cronbach's Alpha values of 0.888 for information system quality, 0.835 for information quality, 0.841 for information technology service quality, and 0.841 for patient satisfaction, all exceeding the acceptable threshold of 0.60.

Data analysis was performed using IBM SPSS Statistics. Descriptive statistics were used to summarize respondent characteristics and study variables. Pearson correlation analysis was conducted to examine the relationships between variables, while multiple linear regression analysis was performed to determine the effect of information system quality, information quality, and information technology service quality on patient satisfaction. Statistical significance was established at $p < 0.05$.

RESULT

Results of Descriptive Analysis of Research Variables

This descriptive analysis was conducted on each research variable to provide a general overview of respondents' perceptions of SIMRS implementation, information quality, service quality, and patient satisfaction at Fatmawati General Hospital. The analysis used minimum, maximum, mean, and standard deviation values to assess the trends in respondents' responses.

Table 1.
Descriptive Results of Research Variables

Variables	N	Minimum	Maximum	Mean	Standard Deviation
SIMRS	110	20	49	43.07	5.138
Information Quality	110	15	35	30.05	3,622
Quality of Service	110	15	35	30.18	3,650
Patient Satisfaction	110	16	34	30.04	3,632

SIMRS Quality

Based on the descriptive analysis of the SIMRS variable, the minimum value was 20 and the maximum value was 49 with a mean of 43.07 and a standard deviation of 5.138. The mean value, which is close to the maximum value, indicates that most respondents have a positive assessment of the SIMRS implementation at Fatmawati General Hospital. These results indicate that both the

implementation and the SIMRS used have been able to support the health service process effectively, starting from the registration process, recording patient data, managing medical information, to hospital service administration. The results also show a standard deviation of 5.138, which is much smaller than the average value, indicating that respondents' answers are relatively homogeneous. This can be interpreted as meaning that the majority of respondents have almost similar perceptions and opinions regarding the implementation of SIMRS at Fatmawati General Hospital. These findings indicate that the implementation of SIMRS at Fatmawati General Hospital has been well implemented, so it has been positively received by patients and is able to provide a more structured, fast, and efficient service experience.

Information Quality

In terms of information quality, this variable has lower minimum, maximum, and mean values compared to the SIMRS implementation. The questionnaire results obtained a minimum value of 15, a maximum value of 35, with a mean value of 30.05 and a standard deviation of 3.622. These mean values indicate that the information obtained from SIMRS is of good quality. These values indicate that the information obtained is accurate, complete, relevant, and easy to understand, thus helping patients. The standard deviation of 3.622 indicates a relatively small variation in questionnaire responses, indicating homogeneity, with respondents having relatively similar opinions regarding the quality of information obtained through the SIMRS. Information quality plays a crucial role in the continuity of hospital services because it can impact service speed, reduce the likelihood of administrative errors, and improve patient satisfaction. Conversely, inaccurate information can lead to service errors and reduce patient trust in the hospital.

Quality of Service

Based on the results of the descriptive analysis, it was found that the service quality variable obtained a minimum value of 15 and a maximum value of 35 with an average of 30.18 and a standard deviation of 3.650. The values given by respondents for the service quality aspect were relatively similar to the information quality variable. The mean value obtained indicated that respondents considered the quality of services provided through and related to SIMRS to be good. This result reflects the good performance of SIMRS accompanied by services from hospital staff and nurses who can support the services received by patients through SIMRS. The standard deviation obtained was smaller than the mean value, indicating that respondents' perceptions of service quality were homogeneous or relatively similar.

Patient Satisfaction

The final variable, patient satisfaction, had a minimum score of 16 and a maximum score of 34, with *a mean* of 30.04 and a standard deviation of 3.632. The results for this variable were the lowest among the others, although the difference was relatively small. The high *mean score* indicates that patients were generally satisfied with the overall patient experience, including the treatment provided by healthcare professionals, the administrative processes involved, and both clinical and non-clinical aspects. Patient satisfaction is a crucial indicator in assessing the success of healthcare services because it reflects the alignment between patient expectations and what they receive. The standard deviation of 3.632 indicates that patient satisfaction levels were relatively even among respondents. This indicates that most patients also had a positive perception of their experience. Overall, the results obtained for this variable indicate that other variables in this study, such as the quality of the SIMRS, services, and current information, have provided tangible benefits to patients at Fatmawati General Hospital.

The Influence of SIMRS, Information Quality, and Service Quality on Patient Satisfaction

To determine the influence of each variable on individual patient satisfaction, a partial t-test was conducted.

Table 2.
Partial T-Test Results

Variables	T Count	T Table	Sig.	Interpretation
SIMRS	2,494	1,983	0.014	There is a significant influence
Information Quality	4,041	1,983	0.000	There is a significant influence
Quality of Service	3,814	1,983	0.000	There is a significant influence

The results of the partial t-test show a calculated t-value that is greater than the t-table value for each variable with a significance value smaller than 0.05, indicating that each variable, namely SIMRS, information quality, and service quality, has a significant influence on patient satisfaction.

Table 3.
Results of Multiple Linear Regression Analysis

Variables	Regression Coefficient	Beta	T count	Sig.
Constant	1,272	-	1,004	0.318
SIMRS	2,494	0.241	2,494	0.014
Information Quality	4,041	0.356	4,041	0.000
Quality of Service	3,814	0.357	3,814	0.000

In this study, a multiple linear regression test was also conducted, which obtained the following results: Y = 1.272 + 0.170 X1 + 0.357 X2 + 0.355 X3. Where Y represents patient satisfaction, X1 represents the quality of the SIMRS, X2 represents the quality of information, and X3 represents the quality of service. The equation shows that each variable has a positive regression coefficient. This indicates that an increase in each variable will be followed by an increase in patient satisfaction. Conversely, if the quality of these three variables decreases, patient satisfaction will also tend to decrease. Based on the regression coefficient values, the "Information Quality" variable has the greatest influence on patient satisfaction with a coefficient value of 0.357, followed by the " Service Quality" variable with a coefficient value of 0.355, and the "Quality of SIMRS" variable is in the last position with a coefficient value of 0.17. Overall, the analysis results show that the implementation of SIMRS supported by good information quality and optimal service quality will increase patient satisfaction. Therefore, these three variables need to be maintained and developed together to improve patient satisfaction.

Validity and Reliability Test Results

Validity Test

Measurement of the accuracy of the statement items in the questionnaire was carried out through a validity test. Evaluation of the validity of each instrument item was based on a comparison between the Pearson correlation coefficient value (r_{hitung}) with the critical value of the correlation table (r_{tabel}). Through a sample size (N) of 110 respondents and a significance level of 5% ($\alpha = 0.05$), the degrees of freedom ($df = N - 2 = 108$) were obtained which produced a value $r_{tabel}$of 0.1874. The statement in the research instrument was declared valid if the value r_{hitung}obtained was greater than the value r_{tabel}($r_{hitung} > 0.1874$) with a significance value below 0.05 ($p < 0.05$). The results of the validity test for each research variable are described in detail in the data below.

Table 4.
Results of Validity Test of Information System Quality Variables (X_1)

Statement Items	Calculated r value	Table r value	Significance (p)
Item$X_{1.1}$	0.749	0.1874	0.000
Item$X_{1.2}$	0.725	0.1874	0.000
Item$X_{1.3}$	0.599	0.1874	0.000
Item$X_{1.4}$	0.719	0.1874	0.000
Item$X_{1.5}$	0.794	0.1874	0.000

Item$X_{1.6}$	0.702	0.1874	0.000
Item$X_{1.7}$	0.759	0.1874	0.000
Item$X_{1.8}$	0.725	0.1874	0.000
Item$X_{1.9}$	0.567	0.1874	0.000
Item$X_{1.10}$	0.699	0.1874	0.000

Valid status was obtained by all statement items measuring the Information System Quality variable ( ) in Table 4. The correlation coefficient (X_1) $X_{1.1}$values obtained from the r_{hitung}items $X_{1.10}$ranging from 0.567 to 0.794 are the main cause of this valid status. All of these values are far above the minimum threshold $r_{tabel}$of 0.1874. Additional evidence of the validity of this instrument is also strengthened by the significance value (p) which all show the number 0.000, below the tolerance error limit of 0.05. Therefore, these ten statement items are suitable for use to measure the Information System Quality variable in the next data analysis stage because they have met the empirical validity criteria.

Table 5.
Results of Validity Test of Information Quality Variable ($\boldsymbol{X_2}$)

Statement Items	Calculated r value	Table r value	Significance (p)
Item$X_{2.1}$	0.801	0.1874	0.000
Item$X_{2.2}$	0.656	0.1874	0.000
Item$X_{2.3}$	0.676	0.1874	0.000
Item$X_{2.4}$	0.644	0.1874	0.000
Item$X_{2.5}$	0.730	0.1874	0.000
Item$X_{2.6}$	0.719	0.1874	0.000
Item$X_{2.7}$	0.726	0.1874	0.000

The feasibility of all indicators for the Information Quality variable (X_2) is transparently shown by the data in Table 5. The lowest Pearson correlation coefficient value is found in the item $X_{2.4}$of 0.644, while the highest correlation coefficient is shown by the item $X_{2.1}$of 0.801. Because all statement items obtain values r_{hitung}that exceed the critical value $r_{tabel}$of 0.1874, all items of this instrument are declared to have statistically valid validity quality. The reliability of this measurement is also supported by the significance value of all items which is 0.000, which proves the existence of a real positive correlation between the item score and the total score of the variable without any statement items being dropped.

Table 6.
Results of the Validity Test of IT Service Quality Variables ($\boldsymbol{X_3}$)

Statement Items	Calculated r value	Table r value	Significance (p)
Item$X_{3.1}$	0.678	0.1874	0.000
Item$X_{3.2}$	0.787	0.1874	0.000
Item$X_{3.3}$	0.695	0.1874	0.000
Item$X_{3.4}$	0.788	0.1874	0.000
Item$X_{3.5}$	0.650	0.1874	0.000
Item$X_{3.6}$	0.720	0.1874	0.000
Item$X_{3.7}$	0.686	0.1874	0.000

It can be observed from the data in Table 4.3 that there is a consistent value r_{hitung}obtained above the critical number for the IT Service Quality variable (X_3). The smallest correlation number is shown by the item $X_{3.5}$with a value of 0.650, which is still far above the minimum limit $r_{tabel}$of 0.1874. On the other hand, the highest value is achieved by the item $X_{3.4}$with a correlation coefficient of 0.788. By fulfilling all the statistical testing criteria, the seven statement items for

measuring IT Service Quality are categorized as fully valid and ready to be used in the next structural analysis procedure.

Table 7.
Results of Validity Test of Patient Satisfaction Variable (Y)

Statement Items	Calculated r value	Table r value	Significance (p)
Item$Y_{.1}$	0.583	0.1874	0.000
Item$Y_{.2}$	0.716	0.1874	0.000
Item$Y_{.3}$	0.789	0.1874	0.000
Item$Y_{.4}$	0.690	0.1874	0.000
Item$Y_{.5}$	0.674	0.1874	0.000
Item$Y_{.6}$	0.759	0.1874	0.000
Item$Y_{.7}$	0.788	0.1874	0.000

The feasibility of each instrument used to measure the Patient Satisfaction variable (Y) can be seen in Table 7. The item $Y_{.1}$ indicates the smallest correlation value, which is 0.583, while the highest correlation value is in the item $Y_{.3}$ with a coefficient of 0.789. The exceedance of the critical limit value r_{tabel} of 0.1874 by all r_{hitung} these values guarantees the feasibility of all instruments in collecting research data. Based on the results of this test, the seven statement items in the Patient Satisfaction questionnaire meet the absolute validity requirements and are confirmed to be valid for use as the main data collection tool in this study.

Reliability Test (*Cronbach Alpha*)

Measurement of the consistency and stability of research instruments when used repeatedly is evaluated using reliability testing. In this analysis, *the Cronbach's Alpha method* is applied to test the level of data reliability across all variables. A research instrument is categorized as having a good level of reliability if the resulting *Cronbach's Alpha coefficient* is greater than 0.60 ($r_{\alpha} > 0.60$). The results of the reliability testing of the research instruments for all variables are presented below.

Table 8.
Results of the Reliability Test of Research Instruments

Research Variables	Number of Statement Items	Cronbach's Alpha Value	Limits of Reliability
Information System Quality (X_1)	10	0.888	0.60
Information Quality (X_2)	7	0.835	0.60
IT Service Quality (X_3)	7	0.841	0.60
Patient Satisfaction (Y)	7	0.841	0.60

The results of the internal consistency test on the research instrument are presented in Table 4.5. High reliability is demonstrated by all research variables, with Cronbach's Alpha values above the minimum limit of 0.60. The highest value was recorded by the Information System Quality variable (X_1) of 0.888, while the Information Quality variable (X_2) recorded a value of 0.835. The IT Service Quality variable (X_3) and Patient Satisfaction (Y) simultaneously obtained a coefficient value of 0.841. Based on the achievement of these figures, all variables are classified into the reliable category, which provides the conclusion that the reliability of this instrument is very adequate to be used as a stable and consistent measuring tool.

Bivariate Analysis Results

The Relationship between Information System Quality and Patient Satisfaction

Testing the closeness of the relationship between Information System Quality (X_1) and Patient Satisfaction (Y) is described in the following table.

Table 9.
Results of Pearson Correlation Analysis between Information System Quality (X_1) and Patient Satisfaction (Y)

Relationship between variables	Pearson Correlation Value (r)	Significance (p-value)	Number of Samples (N)
Information System Quality (X_1) ↔ Patient Satisfaction (Y)	0.866	0.000	110

A very strong correlation between Information System Quality (X_1) and Patient Satisfaction (Y) can be observed in Table 9. The Pearson correlation coefficient value of 0.866 was obtained from this test, which indicates a very close positive relationship. This relationship is categorized as statistically significant because the significance value (Sig. 2-tailed) obtained was 0.000, which is below the tolerance error level of 0.05. An increase in patient satisfaction will occur along with the improving quality of the information system implemented by the hospital, as indicated by the direction of the positive relationship in the same direction.

The Relationship between Information Quality and Patient Satisfaction

The independent statistical relationship between the variables Information Quality (X_2) and Patient Satisfaction (Y) is presented in the table below.

Table 10.
Results of Pearson Correlation Analysis between Information Quality (X_2) and Patient Satisfaction (Y)

Relationship between variables	Pearson Correlation Value (r)	Significance (p-value)	Number of Samples (N)
Information Quality (X_2) ↔Patient Satisfaction (Y)	0.872	0.000	110

Table 10 presents the results of measuring the relationship between Information Quality (X_2) and Patient Satisfaction (Y). The Pearson correlation coefficient value obtained was 0.872, which reflects a positive relationship level in the very strong category. The significance of this relationship is in a real significant status because the probability value (p) obtained was 0.000, which is far below the error threshold of 0.05. Through these results, it can be understood that the provision of accurate, timely, and relevant information makes a real contribution to increasing patient comfort and satisfaction during the service process at the hospital.

The Relationship between IT Service Quality and Patient Satisfaction

The results of the analysis of the closeness of the association between the IT Service Quality (X_3) and Patient Satisfaction (Y) variables are shown by the following data details.

Table 11.
Results of Pearson Correlation Analysis between IT Service Quality (X_3) and Patient Satisfaction (Y)

Relationship between variables	Pearson Correlation Value (r)	Significance (p-value)	Number of Samples (N)
IT Service Quality (X_3) ↔Patient Satisfaction (Y)	0.876	0.000	110

The results of the bivariate analysis between IT Service Quality (X_3) and Patient Satisfaction (Y) are shown by the data in Table 11. The Pearson correlation coefficient value was obtained at 0.876, which indicates a very strong positive relationship. The significance of this relationship is at the very real criteria, evidenced by the probability value of 0.000 which is below the test error level of 0.05. Increasing patient satisfaction is a logical impact of the provision of reliable, responsive, and empathetic information technology services by hospital staff.

Multivariate Analysis Results

Multiple linear regression results

Details of the regression coefficient estimates, significance values, and multicollinearity parameters for the multivariate analysis model are presented in full below.

Table 12.
Results of Multiple Linear Regression Analysis

Measurement Model	Unstandardized Coefficients (B)	Standard Error (Std. Error)	Standardized Coefficients (β)	Calculated value	Significance (p-value)	Tolerance	VIF
Constant (a)	1,272	1,268	-	1,004	0.318	-	-
System Quality (X_1)	0.170	0.068	0.241	2,494	0.014	0.171	5,846
Information Quality (X_2)	0.357	0.088	0.356	4,041	0.000	0.205	4,878
Quality of Service (X_3)	0.355	0.093	0.357	3,814	0.000	0.182	5,500

The summary of parameter estimation results for the multiple linear regression model is presented in Table 12. The constant value (a) is recorded at 1.272 with a significance level of 0.318. For the regression coefficient of each independent variable, the coefficient value X_1(Information System Quality) is 0.170, the coefficient X_2(Information Quality) is 0.357, and the coefficient X_3(IT Service Quality) is 0.355. In the multicollinearity test, the VIF value of all independent variables is below 10.00 with a *tolerance value* approaching 1, so it can be concluded that there are no symptoms of multicollinearity disturbances in this regression model.

Regression equation

Based on the regression coefficient parameters obtained in Table 4.9, the formulation of the multiple linear regression equation in this study is as follows:

$$Y = 1.272 + 0.170X_1 + 0.357X_2 + 0.355X_3$$

Variable description:

Y : Patient Satisfaction

X_1 : Information System Quality (SIMRS)

X_2 : Information Quality

X_3 : IT Service Quality

The interpretation of the regression equation is described below:

1. The constant value ($a = 1.272$) shows that if the variables Information System Quality (X_1), Information Quality (X_2), and IT Service Quality (X_3) are assumed to have a value of zero or no change, the estimated value of the Patient Satisfaction index (Y) is 1,272 units.
2. A positive coefficient value of 0.170 indicates that a one-unit increase in the Information System Quality variable (X_1) will be followed by a Y0.170-unit increase in Patient Satisfaction ( ). This relationship is calculated by conditioning the other independent variables to remain constant.
3. positive Yregression coefficient of the Information Quality variable ( ) of 0.357 indicates an increase in Patient Satisfaction (X_2) of 0.357 units for every additional unit of information quality. This increase occurs when other variables are assumed to remain constant.
4. A positive coefficient of 0.355 indicates that every one unit increase in IT Service Quality (X_3) will trigger an increase in Patient Satisfaction (Y) of 0.355 units, assuming the values of the other independent variables remain unchanged.

R^2 value

The strength of the regression model's ability to explain variations in dependent variables simultaneously is measured using the coefficient of determination (R^2). The results of the simultaneous analysis of the Determination Coefficient are presented below.

Table 13.
Results of the Analysis of the Determination Coefficient ($\boldsymbol{R^2}$)

Model	Correlation Value (R)	R Square (R2) Value	Adjusted R Square	Standard Error of the Estimate
Model 1	0.912	0.831	0.827	1,512

The ability of the regression model to explain the variation of the dependent variable can be seen from the coefficient of determination (R^2) value in Table 13. The R Square value obtained was 0.831 (or 83.1%). This indicates that the variability of Patient Satisfaction (Y) of 83.1% is influenced by Information System Quality (X_1), Information Quality (X_2), and IT Service Quality (X_3) together. Meanwhile, other factors outside this research model explain the remaining variability of 16.9%. To see the contribution of each independent variable separately to the dependent variable, the partial coefficient of determination is calculated by multiplying the Standardized Coefficients (Beta) by the zero-order correlation value. Details of the partial contributions are presented below.

Table 14.
Results of Partial Determination Coefficient Calculation

Independent Variables	Beta Coefficient (β)	Zero-Order Correlation	Partial Determination Coefficient Value	Percentage of Influence (%)
Information System Quality (X_1)	0.241	0.866	0.208	20.8%
Information Quality (X_2)	0.356	0.872	0.311	31.1%
IT Service Quality (X_3)	0.357	0.876	0.313	31.3%
Total Influence ($\boldsymbol{R^2}$)			0.831	83.1%

The individual contribution of each independent variable is outlined in Table 14. IT Service Quality (X_3) provides the largest contribution to Patient Satisfaction with a partial determination value of 31.3%. The second largest contribution is given by Information Quality (X_2) at 31.1%. Finally, Information System Quality (X_1) provides an influence of 20.8%. The accumulation of these three partial contributions produces a total influence of 83.1%, which proves the important role of these three variables in the level of patient satisfaction.

F test

The simultaneous F test is used to evaluate the feasibility of the regression model and to test whether the three independent variables together have a significant influence on the dependent variable. The results of the model fit test (ANOVA) are presented below.

Table 15.
Simultaneous F Test (ANOVA) Results

Regression Model	Sum of Squares	Degrees of Freedom (df)	Mean Square	Calculated Value	Significance (p-value)
Regression	1195,442	3	398,481	174,244	0.000
Residual	242,412	106	2,287	-	-
Total	1437,855	109	-	-	-

The feasibility of the overall regression model was tested using a simultaneous F test, with the results presented in Table 15. A value F_{hitung} of 174.244 was obtained from the computer program calculation. Comparison with a value F_{tabel} of 2.69 at a significance level of 5% shows that the value is F_{hitung} much greater ($174.244 > 2.69$). The significance value at 0.000 (below 0.05)

strengthens this finding. Thus, rejection of the null hypothesis (H_0) is mandatory, which proves that Information System Quality (X_1), Information Quality (X_2), and IT Service Quality (X_3) together have a significant influence on Patient Satisfaction (Y).

t-test

The partial t-test was applied to test the level of significance of the individual influence of each independent variable on the dependent variable. The critical value of the t-distribution table (t_{tabel}) was sought at a significance level of 5% (two-tailed test) with degrees of freedom $df = N - k - 1 = 110 - 3 - 1 = 106$, so that a value $t_{tabel}$of 1.983 was obtained. The research hypothesis was declared accepted if the value $t_{hitung} > 1.983$with a significance value of less than 0.05 ($p < 0.05$). Partial hypothesis testing is shown by the data details below.

Table 16.
Results of Partial Hypothesis Testing (t-Test)

Independent Variables	T-value	Table t value	Significance (p)
Information System Quality (X_1)	2,494	1,983	0.014
Information Quality (X_2)	4,041	1,983	0.000
IT Service Quality (X_3)	3,814	1,983	0.000

The significance of the influence of each independent variable on the dependent variable is partially evaluated through a t-test, with detailed statistical results contained in Table 4.13. The analysis of the hypothesis decision for each variable is described as follows:

1. A value $t_{hitung}$of 2.494 was obtained for the Information System Quality variable (X_1). Because the value $t_{hitung}$is greater than t_{tabel}($2.494 > 1.983$) and the significance value of 0.014 is below 0.05, the first hypothesis (H_1) is declared accepted. The results of this partial test empirically prove that Information System Quality has a positive and significant partial effect on Patient Satisfaction at Fatmawati General Hospital, Jakarta.
2. A value $t_{hitung}$of 4.041 was recorded for the Information Quality variable (X_2). The significance of the influence is indicated by a probability value of 0.000, which is below the significance threshold of 0.05. This indicates that the value t_{hitung}far exceeds t_{tabel}($4.041 > 1.983$). Thus, the second hypothesis (H_2) is officially accepted, which proves the significant positive influence of information quality on patient satisfaction.
3. A value $t_{hitung}$of 3.814 was obtained in the IT Service Quality variable test (X_3). Since the value t_{hitung}exceeds the value t_{tabel}($3.814 > 1.983$) and the significance value is recorded at 0.000 (below 0.05), the third hypothesis (H_3) is officially accepted. IT Service Quality is proven to have a positive and significant partial influence on Patient Satisfaction at Fatmawati General Hospital, Jakarta.

DISCUSSION

Implementation of the Hospital Management Information System (SIMRS)

The descriptive analysis showed that respondents gave a positive evaluation of the implementation of the Hospital Management Information System (SIMRS), with a mean score of 43.07 out of a maximum score of 49. This finding indicates that the system has been successfully integrated into hospital services and is perceived as supporting administrative and clinical processes effectively. The relatively small standard deviation further indicates that respondents had consistent perceptions regarding the quality of SIMRS implementation. A well-implemented hospital information system contributes to improving healthcare efficiency by facilitating patient registration, medical record management, and coordination among hospital departments. Efficient information systems reduce administrative errors, improve workflow integration, and support timely clinical decision-making,

ultimately enhancing healthcare delivery. These findings are consistent with Nurwito (2024), who reported that effective implementation of hospital information systems improves operational efficiency in both public and private hospitals. Likewise, Kruse et al. (2016) emphasized that system usability, reliability, and accessibility are essential determinants of successful electronic health record implementation.

Information Quality

The descriptive results also demonstrated that respondents perceived the quality of information generated by SIMRS as good, with a mean score of 30.05. This indicates that the information provided through the system was considered accurate, complete, relevant, and understandable. Reliable information enables patients to obtain clear explanations regarding healthcare services and supports healthcare professionals in making appropriate clinical decisions. High-quality information reduces uncertainty during healthcare services and strengthens patients' confidence in hospital management. This finding supports the Information Systems Success Model proposed by DeLone and McLean, which identifies information quality as one of the primary determinants of user satisfaction. Similar findings were reported by Jad and Zainol (2022), who concluded that information quality significantly influences patient satisfaction with hospital information systems.

Information Technology Service Quality

The descriptive analysis indicated that respondents evaluated the quality of information technology services positively, with a mean score of 30.18. This finding reflects patients' perceptions that hospital personnel were able to provide responsive, reliable, and supportive services while utilizing SIMRS during healthcare delivery. Service quality extends beyond technological performance and also includes healthcare workers' responsiveness, empathy, communication, and technical support. Effective interaction between hospital staff and patients contributes substantially to positive healthcare experiences. These findings are in accordance with Salendra et al. (2024), who reported that service quality remains one of the strongest determinants of patient satisfaction in hospitals implementing digital healthcare systems.

Patient Satisfaction

Patient satisfaction showed a relatively high mean score of 30.04, indicating that most respondents were satisfied with the healthcare services received. Although this variable had the lowest average among the study variables, the difference was minimal, suggesting that overall patient perceptions toward hospital services remained positive. Patient satisfaction represents one of the most important indicators of healthcare quality because it reflects patients' evaluations of the services they receive. High satisfaction levels indicate that hospital services successfully meet patients' expectations regarding administrative efficiency, healthcare quality, and communication. Similar findings were reported by Hartono et al. (2024), who demonstrated that clinical information systems significantly improve patient satisfaction by enhancing service effectiveness.

Relationship Between Information System Quality and Patient Satisfaction

Pearson correlation analysis demonstrated a very strong positive relationship between information system quality and patient satisfaction ($r = 0.866$; $p < 0.001$). The regression analysis also confirmed that information system quality had a statistically significant positive effect on patient satisfaction ($\beta = 0.170$; $p = 0.014$). These findings indicate that improvements in system performance contribute directly to higher levels of patient satisfaction. A reliable information system enables healthcare providers to deliver faster and more accurate services while minimizing administrative errors. Previous studies by Noh (2021) and Putra and Darmawan (2021) similarly found that system quality significantly affects user satisfaction with hospital information systems.

Relationship Between Information Quality and Patient Satisfaction

Information quality demonstrated the strongest positive relationship with patient satisfaction ($r = 0.872$; $p < 0.001$) and emerged as one of the most influential predictors in the regression analysis ($\beta = 0.357$; $p < 0.001$). These findings indicate that accurate, timely, relevant, and complete information plays a fundamental role in shaping patients' perceptions of healthcare quality. Patients who receive clear and reliable information tend to develop greater trust in healthcare providers and are more likely to report positive healthcare experiences. These findings support previous studies by Jad and Zainol (2022) and reinforce the DeLone and McLean Information Systems Success Model, which identifies information quality as a major determinant of user satisfaction.

Relationship Between Information Technology Service Quality and Patient Satisfaction

Information technology service quality also showed a very strong positive correlation with patient satisfaction ($r = 0.876$; $p < 0.001$) and had a significant positive effect in the regression model ($\beta = 0.355$; $p < 0.001$). This finding indicates that responsive technical assistance and effective support from hospital personnel enhance patients' experiences when interacting with SIMRS. High-quality IT services facilitate smoother healthcare processes and reduce patient frustration associated with technological issues. These findings are consistent with Novitasari (2022) and Putra and Darmawan (2021), who reported that IT service quality significantly improves patient satisfaction in hospitals implementing digital information systems.

The Most Influential Factor Affecting Patient Satisfaction

Among all independent variables, information quality was identified as the strongest predictor of patient satisfaction ($\beta = 0.357$), followed closely by information technology service quality ($\beta = 0.355$) and information system quality ($\beta = 0.170$). Collectively, these variables explained 83.1% of the variance in patient satisfaction ($R^2 = 0.831$), indicating that the regression model had substantial explanatory power. These findings suggest that while technological infrastructure is essential, the quality of information delivered through the system is the primary factor influencing patients' perceptions of healthcare services. Therefore, hospital management should prioritize improving data accuracy, completeness, accessibility, and integration within SIMRS while simultaneously strengthening IT support services and maintaining system reliability. Such improvements are expected to further enhance patient satisfaction and overall healthcare quality.

CONCLUSION

Based on the research results, the implementation of the Hospital Management Information System (SIMRS) based on information technology at Fatmawati General Hospital has been proven to have a positive and significant impact on patient satisfaction through improving the quality of the information system, information quality, and information technology service quality. A good quality information system can accelerate data access, improve the accuracy and integration of information, simplify the administrative process, and reduce recording errors, with a regression coefficient of $\beta = 0.170$. Information quality is the most dominant factor in influencing patient satisfaction ($\beta = 0.357$), because accurate, complete, relevant, timely, and easy-to-understand information can increase patient trust and positive perceptions of hospital services. In addition, the quality of information technology services also has a significant influence ($\beta = 0.355$) through responsive, fast, empathetic services, and supported by technical assistance that facilitates the use of SIMRS. Simultaneously, these three variables are able to explain 83.1 % of the variation in patient satisfaction ($R^2 = 0.831$), which indicates that SIMRS has been well received and effective in supporting hospital services. However, this study has limitations because it was only conducted in one hospital, used a cross-sectional design that limits causal conclusions, relied on self-report data that could potentially lead to perception bias, and did not include other factors that might influence patient satisfaction. Therefore, further research is recommended to expand the study location to various hospitals, use a longitudinal design, add variables such as waiting time, health worker

communication, clinical conditions, and demographic factors, apply more diverse data collection methods, focus the study on improving the quality of information as the most dominant factor, and conduct analysis based on patient characteristics and types of services to obtain a more comprehensive picture of the influence of SIMRS on patient satisfaction.

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Conflicts of interest: The authors declare that they have no known financial, professional, personal, or institutional conflicts of interest that could have influenced the design, conduct, analysis, interpretation, or reporting of this research. No competing interests are declared in relation to the findings presented in this manuscript or its consideration for publication. All authors are responsible for ensuring that this declaration accurately reflects their individual circumstances and any relationships that may reasonably be perceived as influencing the research.

Ethical approval: This study involved human participants in a hospital setting. Accordingly, the authors acknowledge the importance of protecting participants' rights, dignity, privacy, and confidentiality throughout the research process. The study should be reported as having received approval from the relevant research ethics committee only if such approval was obtained and can be documented. The name of the approving committee, approval or reference number, and date of approval should be provided in accordance with the requirements of the journal and the relevant institution. If the study was formally exempted from ethical review or was determined not to require review under applicable institutional rules, the relevant determination and its issuing authority should be reported accurately. The authors should also ensure that any required informed consent, institutional authorization, and safeguards for the handling of participant information were addressed in accordance with the approved research procedures.

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participant confidentiality, institutional policies, and any restrictions imposed by the relevant healthcare institution. Because the research was conducted in a hospital setting and involved human participants, any request for access to the data must be assessed to ensure that disclosure does not compromise participant privacy or reveal confidential personal or medical information. Where necessary, data may be provided only in an appropriately anonymized or aggregated form and subject to institutional authorization.

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Declaration of the Use of Artificial Intelligence in Scientific Writing: The authors declare that no artificial intelligence (AI) tools or AI-based applications were used in the writing, preparation, or development of this manuscript. All aspects of the manuscript, including the formulation of ideas, interpretation of the research findings, analysis and discussion of the results, and preparation of the written content, were carried out by the authors themselves. The authors take full responsibility for the originality, accuracy, integrity, and authenticity of the content presented in this manuscript. The authors further confirm that the manuscript reflects their own academic work and that all statements, interpretations, and conclusions are based on their research process and scholarly judgment.

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