The Influence of Performance Aspects of Hospital Information Systems (HIS) against Outpatient Registration at X Hospital Tangerang using PIECES Analysis

Sani Heriani, Fransiskus Adikara, and Siswati

ABSTRACT

Hospitals in improving services and responding to the challenges of the times and the needs of their users apply the Hospital Information System (HIS). HIS is a series of activities that cover all health services at all levels of administration that can provide information to managers for the process of managing health services in hospitals. Based on the results of the PIECES analysis, there are aspects of performance that are not yet connected to other units, and frequent trouble loading occurs. In the information aspect, the menu in the application display has not been automatically linked between the website and HIS for outpatient registration. Based on the economic aspect, HIS is not yet paperless and has not been connected to the patient queue time monitor in other units. In the control aspect, the application of HIS has not been able to control the information displayed to each user. Based on the efficiency aspect, there are often additional features in HIS, and in the service aspect, it is found that there is no manual backup in case of system errors. This study uses a quantitative approach with a causal design research design using SPSS multiple regression, aiming to analyze the effect that can improve outpatient registration services in hospitals. This study used a sample of 60 staff related to the hospital registration unit. Results: There is a significant effect of the PIECES aspect of HIS on outpatient registration at X Hospital Tangerang. The better the PIECES aspect of HIS will result in or improve the quality of outpatient registration services. Based on the results of the study, the implications of this study indicate the magnitude of the influence of the HIS performance aspect that can improve outpatient registration services at the hospital.

Keywords: Economic Control, Efficiency, HIS, Information, Outpatient Registration, Performance, Service.

I. INTRODUCTIONS

Hospitals are an important part of the health system. The hospital provides complex curative services, emergency services, knowledge and technology transfer centers, and functions as a referral center (Ministry of Health, 2009). Outpatient services are services provided to patients who do not receive inpatient services, facilitated by health services. Furthermore, outpatient is one of the work units in hospitals that serve outpatients and not more than 24 hours of service, including all diagnostic and therapeutic procedures.

Admission or registration of outpatients called Place of Reception/Registration of Outpatients is a place where patients will register to the polyclinic to be addressed in accordance with the patient's illness complaints after recording the patient's identity to the HIS.

Patient admission procedures can be adapted to the information system adopted by each hospital. TPPRJ is a functional unit that handles the admission or registration of patients in hospitals. So it is not an exaggeration to say that the procedure for patient acceptance is the patient's first impression of good or bad health services in that place. One of the hospital's efforts to help improve services and respond to the challenges of the times and the needs of its users is to implement a Hospital Information System (HIS) which is a series of activities that includes all health services (hospitals) at all levels of administration that can provide information to managers for the process. management (related to data collection, data processing, information presentation, and analysis) of health services in hospitals.

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Evaluation of an information system is a real effort to find out the actual condition of an information system implementation. With this evaluation, the achievements of the implementation of an information system can be identified and further actions can be planned to improve the performance of its implementation. The information system evaluation method used in this study is the PIECES method. PIECES analysis is a framework to analyze manual and computerized systems in Hospital Information Systems. This analysis is carried out to consumers and internal parties of the company to analyze the current system and the proposed system in order to see the performance of the HIS that is owned and then improved for improvements in improving the quality of service at the hospital.

Based on the results of observations using the PIECES analysis method, it was found that the HIS performance aspect had not been utilized optimally to support activities in outpatient registration such as not yet connected to other units (poly, medical record, pharmacy, laboratory, etc.), the time needed was needed. In serving patients when registering due to frequent trouble loading which results in ongoing services. Trouble loading causes problems, namely the decline in the quality and the accuracy of the information produced by the information system.

In the information aspect, it was found that the menu in the application display has not been linked automatically, patients who register using the website are not directly registered with HIS for-outpatient registration, so patients have to re-register when they arrive at the hospital, there are still patient data that has more than one record. which can cause the accuracy of the information to decrease.

Based on the economic aspect, the results show that the service is still not 100% paper-free, such as patients still having to bring document files to be taken to the destination polyclinic because they are not yet connected to the services at the poly. In the control aspect, it was found that the HIS application was considered unable to control the information displayed on each user, the difference in access for each user that occurred caused officers to sometimes still lend users to other officers because each user has different access rights so security is still not guaranteed.

Based on the efficiency aspect, the results show that the features in the general registration information system are simple, but if there are new features added, the officers must learn self-taught. In the service aspect, it is found that the implementation of using HIS in service does not yet have a manual back-up if a system error occurs, and if there is a problem loading it causes waiting times which can reduce the quality of service.

In order to improve performance in the management of outpatient registration for the better at X Hospital Tangerang, the PIECES analysis (Performance, Information, Economics, Control, Efficiency, and Service) is used respectively as an exogenous variable or a variable that has an influence on endogenous variables, namely inpatient registration. Street. so it is hoped that in this study we can find out whether PIECES has a significant positive effect in increasing the implementation of a registration in the outpatient unit of the X hospital Tangerang.

II. RELATIONSHIP BETWEEN VARIABLES

A. The Influence of Performance, Information, Economy, Control, Efficiency, and Service Aspects of HIS on Outpatient Registration at X Hospital Tangerang

Outpatient Registration is a place where patients will register to the polyclinic to be addressed in accordance with the patient's illness complaints after recording the patient's identity to the HIS and outpatient medical record document forms based on the patient's basic data, as well as getting information on how to pay to be made (Ministry of Health RI). Director General of YanMed, 2006).

Analyze manual and computerized systems in Hospital Information Systems. This analysis is carried out to consumers and internal parties of the company to analyze the current system and the proposed system in order to see the performance of the HIS that is owned and then improved for improvements in improving the quality of service at the hospital. Performance is a system's ability to complete tasks quickly so that goals can be achieved immediately (Whitten & Bentley, 2005). Information is the result of output produced in an information system and must have a value that is useful for decision-making by company management (Whitten & Bentley, 2005).

Efficiency is the process of assessing whether existing procedures can still be improved, so as to achieve increased operating efficiency, and must be superior to the manual system of Wetherbe and Vitalari (1994).

The puskesmas management information system after being evaluated using PIECES analysis, assessed the performance assessed in Health Center Management Information System (HCMIS) showed a significant relationship between throughput and the implementation of HCMIS implementation at the North Bogor Health Center, Bogor City with the results of the statistical test P-value = 0.030. The frequency distribution is based on the information aspect of the accuracy of respondents who think that using HCMIS based on the accuracy aspect 21 people or (50.0%) say it is not accurate while using HCMIS based on the accuracy aspect 21 people or (50.0%) say it is accurate. Based on the results of the research on the relationship between accuracy and the implementation of HCMIS implementation, it is known that the statistical test results obtained P-value = 0.002. In the economic aspect, it is used to assess whether the current procedure can still be used for many benefits (use value) or lower the cost of implementing it, based on the results of research respondents who argue that by using HCMIS the frequency of resources is 40.5% saying that the resources needed are few, while the frequency of resources is low. resource 59.5% said that there were a lot of resources in the implementation of the HCMIS. Based on the results of statistical tests, P-value = 303 or greater than alpha 0.05 was obtained. So it can be concluded that there is no significant relationship between resources and the
implementation of HCMIS implementation at the North Bogor Health Center, Bogor City. The results showed that control in the PIECES aspect was needed in the implementation of HCMIS, respondents argued that by using HCMIS the security frequency (42.9%) said the security required was not safe, while the security frequency (57.1%) said that security was safe in the implementation of HCMIS. Statistical test results obtained P-value = 0.963 or greater than alpha 0.05. So it can be concluded that there is no relationship between security and the implementation of HCMIS implementation at the North Bogor Health Center, Bogor City. Efficient in PIECES analysis required in HCMIS implementation, respondents think that using HCMIS 42.9% said usability was not efficient, while usability frequency 57.1% said efficient usability in HCMIS implementation. Statistical test results obtained P-value = 0.546 or greater than alpha 0.05. So it can be concluded that there is no significant relationship between usability efficiency and the implementation of HCMIS implementation at the North Bogor Health Center, Bogor City. And in the PIECES aspect, the Service analysis shows the services needed in the implementation of HCMIS, respondents think that by using HCMIS the reliability efficiency frequency is 42.9% saying reliability is not easy, while the reliability frequency (57.1%) says reliability is easy in HCMIS implementation. The results of statistical tests obtained P-value = 0.046 or smaller than alpha 0.05, it can be concluded that there is a significant relationship between reliability and the implementation of HCMIS implementation at the North Bogor Health Center, Bogor City.

The results of another study stated that the hospital health consultation web. X shows that all websites have similarities in economic and efficiency parameters, which are both free of charge and the web is very well organized. While other parameters (performance, information, control, service) there are significant differences in terms of the scientific value of information, guarantee of user privacy rights, and unique features that differ from one web to another. Based on the description above, the following hypothesis is obtained:

**H₁:** Aspects of performance, information, efficiency, economy, control, and service of HIS have a significant positive effect on outpatient registration.

**B. The Influence of Performance Aspects of HIS on Outpatient Registration**

The procedure for patient admission/registration can be interpreted as a service that the patient receives for the first time when he arrives at a healthcare facility, containing patient data collection which is administrative data to be inputted into the system and recorded or filled. into the medical record.

The Outpatient Information System application is an application for automatically administer outpatient data so that it can produce precise and accurate information so that there are no errors in processing data. Performance in HIS (Hospital Information System) is a system's ability to complete tasks quickly so that goals can be achieved immediately. Performance HIS is needed to assess the performance of the information system that has been designed.

Based on the results of interviews, observations, and documentation related to HIS performance analysis based on performance aspects, information is obtained based on throughput indicators (results), HIS can produce the output required by the user. Although, in one service unit there are those that cannot produce output. This can be influenced by software and hardware that support the implementation of information system performance. Based on the indicator response time (response time) can be interpreted as the time required to start HIS or HIS operation during the service process. Based on the results of interviews, HIS can be accessed quickly in the patient care process, for the range of access time is less than 1 minute according to observations. However, some units sometimes cannot meet the needs related to fast response times. The range of access time is more than 3 minutes according to observations. This can be influenced by software and hardware that support the implementation of information system performance. Based on the audibility indicator (data suitability) is a match between the data entered by the officer and the information generated by the system.

That is, what is inputted is in accordance with what is displayed and does not change. The results of interviews, observations, and documentation show that HIS can produce information that is in accordance with the inputted data, if there is a data discrepancy it can be caused by human error or incorrect data input. Based on the prevalence of communication indicators is the ease of interface or display HIS for users. This interface aims to make the information system easy to use by system users. Based on the results of interviews, observations, and documentation, shows that HIS has an easy-to-understand interface, however, the HIS display is sometimes boring. Because there has never been a change in the appearance of the HIS design during its implementation. Based on the indicators of completeness is the level where the full implementation of the functions of the HIS. Starting from the function of whether the program can be run, then the menus on HIS can function optimally so that they can assist users in completing their work. Based on the results of interviews, observations, and documentation, shows that the menus in HIS have been running according to their functions and there are no menus that do not work, it's just that one of the HIS users in the medical record unit feels slow. This can be influenced by software and hardware. According to observations, in-service units that can be accessed quickly, the software used is Windows 10 with computer hardware used by a 19-inch screen PC. Meanwhile, for service units that cannot be accessed quickly, the software used is Windows 7 with computer hardware that uses a small screen size PC. Based on the fault tolerance indicator, is an assessment of the program if it experiences errors and even experiences damage which results in the service process being hampered. Based on the description above, the following hypothesis is obtained:

**H₂:** Performance aspect of HIS has a significant positive effect on outpatient registration.
C. The Influence of Information Aspects of HIS on Outpatient Registration

The information system (IS) that is used absolutely must have an advantage when compared to using the system manually. The PIECES analysis developed by Wetherbe and Vitalari (1994) was used to analyze both manual and computerized systems in Hospital Information Systems. Information in the PIECES aspect or framework is a need to improve or improve the information and data in the information system used by an agency, company, or organization, including hospitals. The information and data presented or required by the company are one of important factors for the progress of a company including hospitals in improving service quality.

Based on the analysis of information aspects in PIECES, the results on the accuracy indicator (accuracy) show that HIS can provide accurate information with an average accuracy according to users of 85%. Based on the information relevance indicator, it shows that HIS can provide the information needed by HIS users, such as searching for patient data, searching for reports, and registering patients for treatment. HIS users provide advice related to user needs such as updating the ICD code in HIMS to match the ICD-10 code used in the health world, if the diagnosis code is not in accordance with ICD-10 it can cause a decrease in the quality of service in hospitals, affect the quality of information, and financing related to INA-CBG's which is used as a payment method for patient services. Based on information presentation indicators, the conditions under which information is presented in an appropriate form. The information system must have information that is easily understood by users so that users avoid difficulties. The results show that HIS has a display that is easily understood by HIS users. Starting from the language used does not use a foreign language which for ordinary people is difficult to understand. Based on the flexibility indicator, it shows that HIS users can correct errors when inputting data with the data edit menu, for example, if there is an incorrect patient data input by the HIS user, just click on the patient data edit menu to correct it. With the edit menu, the user's needs are met regarding data improvement and service processes.

In reporting IKP. Blame culture still needs to be lowered in order to increase the willingness of employees to report IKP in Government Hospitals X, Y, and Z. Then the following hypothesis is obtained:

**H₃:** Information aspect of HIS has a significant positive effect on outpatient registration.

D. The Effect of Economic Aspects of HIS on Outpatient Registration

PIECES analysis is carried out to consumers and internal parties of the company to analyze the current system and proposed system in order to see the performance of the HIS that is owned and then improved for improvements in improving the quality of service in hospitals. One of these classifications is aspects of economics, control, efficiency, and service. According to Whitten and Bentley (2005), the economy variable in the PIECES aspect becomes a parameter of whether the company's sacrifice to apply HIS that is currently used is commensurate with the results obtained by the company in this case the hospital. Assessing whether the current procedures can still be increased in benefits (use value) or reduce the cost management of their implementation.

HIS performance analysis based on economic aspects is an analysis related to the benefits and costs resulting from the application of information systems assessed from reusability and resources. Based on the reusability indicator (which can be reused) it shows that HIS has been integrated with BPJS Health related to the printing of BPJS Participant Eligibility Letters, financing claims, and reporting related to hospitals. starting from 2018. Based on the resource indicator, namely the total number of resources used in the implementation/development of the HIS system, including human resources and economic resources, it shows that the hospital always conducts follow-up evaluations of efforts to improve and develop HIS but the results of the evaluation are still not carried out, such as the ICD code has not been updated in accordance with INA-CBG's and the HIS language still uses a lot of health language that is foreign to ordinary users, especially in the outpatient registration section with non-health backgrounds, has not yet been completed.

The cost is budgeted at 5% of the value of the work, a fairly large promotion budget can minimize company profits in each job, so it is considered necessary to have supervision and evaluation. The large promotional costs incurred only to use promotional techniques in the form of visits without any other promotional alternatives, so it is proposed that the cost of using the website does not require large costs to reduce the company's promotional budget and the costs incurred have definite and consistent costs, so there are no costs. for which there are no uncertain costs. Then obtained the following hypothesis:

**H₄:** The economic aspect of HIS has a significant positive effect on outpatient registration.

E. Effect of Control Aspects of HIS on Outpatient Registration

The control aspect is one part of the PIECES aspect which is also important for achieving good service, the control itself aims to check and see all the processes that have been carried out. Control is monitoring the progress of the organization or work unit toward goals and then taking corrective actions if necessary. States that computer security is a preventive measure from attacks by computer users or irresponsible network accessors. So it is very important for smoothness in outpatient services, where outpatient services are the basic services of services to patients, if control is carried out properly then outpatient services will also run smoothly.

Octavio (2020) in his research stated that the control and security applied to the hospital information system. Happy Land Medical Center is in a good category. The assessment of the good category shows that HIS has security against outside disturbances that try to enter the HIS by hackers, the existence of control settings in each data display of each user according to their needs in supporting each job.
control aspect of the PIECES aspect also stated that data control was not implemented in the company, where there was no database that could convey information data and data in the form of documentation, activities and work results were not used for distribution so that it became vain. The proposed system is given by controlling the data, where the data can be stored in the database. Data in the form of documentation, activities, and work results can be used for distribution, as a promotional medium. Then obtained the following hypothesis:

Hs: Control aspect of HIS has a significant positive effect on outpatient registration.

F. The Effect of the Efficiency Aspect of HIS on Outpatient Registration

The value of efficiency in a HIS is closely related to outpatient services that require speed and appropriate services, so the need for efficiency in improving HIS as support facilitates and facilitates services. In the research, Although the general registration information system training is only representative and there is still no manual for using the general registration information system, especially in the registration section.

The consumer must contact and visit the company first if they need product and service information. And the information search process is still often repeated, and the information that has been conveyed is considered less fulfilling the needs of consumers, so it is considered less effective. The proposed system includes: Information systems should be able to present information online easily. In order to improve the old system to the new system, it is hoped that the updated system can make it easier for consumers to simply access the company's website, to get information. And repeated information searches can make it easier for consumers by providing an alternative to easy access to information without considering time. Then the hypothesis obtained is as follows:

Hs: The efficiency aspect of HIS has a significant positive effect on outpatient registration.

G. The Influence of Service Aspects of HIS on Outpatient Registration

The service aspect in HIS in hospitals is an important thing where the service itself is a service provided to patients. Service is any action or activity that one party can offer to another, which is essentially intangible and does not result in the ownership of anything. The criteria for this service include: Who is the user of the service, are there different types of users, does the system pay attention to the user, instructions and how to use the device must be included in the system, and is it necessary to save documents. Information systems that have good service will certainly produce products that are accurate, consistent, reliable, easy to learn and use, not awkward to use, flexible to new conditions, flexible to certain changes, and integrated with other systems. HIS that has fulfilled this aspect can indirectly improve services at outpatient registration which causes patients to feel satisfied if the services provided are appropriate, fast, and responsive with the support of good service.

That the old system did not provide easy service for consumers in finding information and ordering services. Company visits as a promotional technique are considered less than optimal in providing services. And the services provided are still considered standard, so companies need to try other alternatives in carrying out the service process. The proposed system includes: the old system must pay attention to the ease of service of information needs, and the information system must be flexible to the latest changes. When using the new system, it must be able to reduce visits that occur only for company information needs. The services provided are considered to be good and optimal because there is an alternative system for the promotion of new proposals. Then the hypothesis is obtained as follows:

Hs: The service aspect of HIS has a significant positive effect on outpatient registration.

A. Conceptual Framework and Hypotheses

H1: There is a significant effect of the performance, information, economy, control, efficiency, and service aspects of HIS on outpatient registration at the X hospital Tangerang.

H2: There is a significant effect of the performance aspect of HIS on outpatient registration at the X hospital Tangerang.

H3: There is a significant influence on the information aspect of HIS on outpatient registration at the X hospital Tangerang.

H4: There is a significant effect of the economic aspect of HIS on outpatient registration at the X hospital Tangerang.

H5: There is a significant effect of the control aspect of HIS on outpatient registration at the X hospital Tangerang.

H6: There is a significant effect of the efficiency aspect of HIS on outpatient registration at the X hospital Tangerang.

H7: There is a significant effect of the service aspect of HIS on outpatient registration at the X hospital Tangerang.
III. RESEARCH METHODS

The design of this study used a quantitative approach and the design of this study was hypothetical deductive, namely a causal design. Based on the research objectives, this study aims to identify factors related to outpatient registration and determine steps to improve the quality of HIS services at outpatient registration X hospitals in Tangerang. The results of data processing will then be used as a basis for analysis and answering the proposed hypothesis. The analysis used in this study uses the Statistical Product of Social Sciences (SPSS) with multiple regression tests. In this study, the number of question indicator items was 57 items that were used to measure 7 variables, and the number of samples used in this study was a saturated sample of 60 respondents, with the inclusion criteria of respondents being all staff of medical personnel at the X hospital Tangerang.

IV. RESULTS AND DISCUSSION

A. Characteristics of Respondents

Based on the results of the questionnaires distributed by the researchers, the demographic data of the respondents from 60 people studied were obtained, based on gender, women dominated in this study as many as 46 people (76.67%), while the smallest number of respondents' gender was male as many as 14 people (23.33%). Furthermore, the characteristics were based on age, most of them aged between 20-30 years were 42 people (70.00%), while the smallest number was >40 people (8.33%). Based on the characteristics of the latest education, most of them have the latest diploma education as many as 34 people (56.67%), while the smallest number has the last education of SMA/Equivalent 9 people (15.00%), based on employment status, most of them are contract employees as many as 40 people (66.67%), while the smallest number are permanent employees of X Hospital Tangerang as many as 20 people (33.33%).

B. Data analysis

1) Validity Test

In this study, the validity test will use the Product Pearson Moment Correlation. Question items are said to be valid if the value of rcount > rtable, if the value of rcount < rtable, it can be concluded that the question item is invalid and must be removed. Meanwhile, to see the value of rtable, will be seen from the number of samples (N = 60) which is 0.254 with a significance level of 5%. The results of the validity of the variable in this study have a value of rcount > rtable, where the smallest rcount value in this study is 0.317 which is the value of the PRO1 question (the procedure for registering outpatients is considered efficient and uncomplicated) but is still larger when compared rtable. So it can be stated that the entire series of questionnaires in this study are valid to be used as research instruments or meet the requirements for calculating the validity test.

2) Reliability Test

A questionnaire is said to be reliable or reliable if a person's answer to the statement is consistent or stable over time. The reliability of a test refers to the degree of stability, consistency, predictability, and accuracy. Measurements that have high reliability are measurements that can produce reliable data. The general agreement is that the reliability is considered quite satisfactory if 0.700.

Thus, we are testing the reliability of the instrument using the Alpha Cronbach formula because the research instrument is in the form of a questionnaire and a graded scale.

Based on the results of the reliability test in Table I, it can be seen that all variables obtained Cronbach alpha reliability coefficient values > 0.700. so it can be stated that the variables in the study can be declared reliable.

C. Three Box Method Analysis

Descriptive analysis in this study uses the Three Box Method index number analysis. To get the tendency of respondents' answers to each variable, it will be categorized into a range of scores based on the calculation of the three box method. The resulting index number is 60, while the scale range for each criterion is 16.

Based on the results of the study, the outpatient registration variables, performance, information, economic, control, efficiency, and service have a moderate value response, indicating that the outpatient registration, performance, information, economic, control, efficiency, and service owned by X Hospital Tangerang considered quite meaningful, there is still a need for supervision, development, and adjustment to the HIS program for outpatient registration needs and there is still a need for evaluation and socialization to all officers for each new item developed by HIS X Hospital Tangerang.

1) Multicollinearity Test

The basis for making decisions on the multicollinearity test, is if the tolerance value is > 0.10 and the VIF value is < 10, it means that it is said to be free of multicollinearity and if the tolerance value is < 0.10 and the VIF value is > 10, it is said to be multicollinearity.

Based on the results of the calculations in Table II, the results obtained are tolerance values > 0.10 and VIF values < 10, so it can be stated that the data in this study are free from multicollinearity problems.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cronbach Alpha</th>
<th>Critical Value</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient</td>
<td>0.713</td>
<td>0.700</td>
<td>Reliable</td>
</tr>
<tr>
<td>Registration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td>0.771</td>
<td>0.700</td>
<td>Reliable</td>
</tr>
<tr>
<td>Information</td>
<td>0.751</td>
<td>0.700</td>
<td>Reliable</td>
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<td>Reliable</td>
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<tr>
<td>Control</td>
<td>0.752</td>
<td>0.700</td>
<td>Reliable</td>
</tr>
<tr>
<td>Efficiency</td>
<td>0.808</td>
<td>0.700</td>
<td>Reliable</td>
</tr>
</tbody>
</table>

TABLE 1: RELIABILITY TEST
The coefficient of determination ($R^2$) is a tool that can be used to measure the quality of the assessment by looking at the percentage of the influence of all independent variables on the dependent variable.

On the r-square results are 0.874 or 87.4%, this shows that the contribution of the independent variables performance, information, economic, control, efficiency and service, on the dependent variable (outpatient registration), while the remaining 12.6% is a contribution the influence of other variables not examined in this study.

2) Heteroscedasticity Test

This heteroscedasticity test is carried out to test the presence or absence of variance inequality from the residuals of one observation to another observation. If there is a certain pattern, such as the existing dots forming a certain regular pattern (wavy, widening, and then narrowing), then heteroscedasticity occurs. If there is no clear pattern, and the points spread above and below the number 0 on the Y axis, there is no heteroscedasticity.

Based on the results of the heteroscedasticity graph in Fig. 2, it can be seen that there is no clear pattern, and the points spread randomly above and below the number 0 (zero) on the Y axis, so it can be stated that there is no heteroscedasticity problem in this study.

V. Correlation Coefficient Test

This analysis aims to determine a quantity that states how strong the relationship between a variable and another variable is, namely the X variable to the Y variable. For the form or direction of the relationship, the correlation coefficient value is expressed in positive (+) and negative (-) or (-1 Kk). + 1)

If the correlation coefficient is positive then the variables are positively correlated, the closer the correlation coefficient value to +1 the stronger the positive correlation. If the correlation coefficient is negative, the variables are negatively correlated, the closer the correlation value to -1, the stronger the negative correlation. And if the correlation coefficient is (0) zero then the variable does not show a correlation.

Then to find out whether there is a strong influence or not, where the correlation number ranges from -1 to 1. The closer to 1 the correlation is getting closer to perfect. The interpretation includes: 0.00-0.199 (very low), 0.20-0.399 (low), 0.40-0.599 (moderate), 0.60-0.799 (strong), and 0.80 - 1.00 (very strong).

The results of the correlation coefficient are shown by the R-value of 0.935, this shows that the correlation is positive. The correlation result of 0.935 is in the range of 0.80 - 1.00, so it can be stated that the strength of the relationship between the independent variables (performance, information, economic, control, efficiency, and service) and the dependent variable (outpatient registration) is in the very strong category.
2) Influence of performance aspects of HIS on outpatient registration

Based on the results of hypothesis testing with the t-test, the results obtained tcount> ttable (5.471>2.002) and a significance (p-value) of 0.000 <0.05, it can be stated that there is a significant effect of the information aspect of HIS on outpatient registration at the X hospital Tangerang. It means that the higher/better the performance of HIS, it will further increase the outpatient registration of the X hospital Tangerang.

Performance or performance is a description of the level of achievement of the implementation of an activity program or policy in realizing the goals, objectives, vision, and mission of the hospital or organization as outlined in the strategic planning of an organization. Performance analysis has an important role to assess whether existing processes or procedures may be improved in performance and seeing to what extent and how reliable an information system is in the process to produce the desired goals. Input processes until the output produced from a system will be input in the next stage.

Performance analysis is the ability to complete business tasks quickly so that goals can be achieved immediately. Performance is measured by the amount of production (throughput) and response time (response time) of a system. The amount of production (throughput) is the amount of work that can be completed during a certain time. Response time (response time) is the result of the analysis carried out on the Patient Registration Information System with the PIECES Method at the Hospital. The existence of HIS performance analysis based on the performance aspect is an analysis related to the performance of the information system assessed from throughput, response time, audibility, communication prevalence, completeness, and fault tolerance. Based on the results of interviews, observations, and documentation related to HIS performance analysis based on performance aspects, information is obtained based on throughput indicators (results), HIS can produce the output required by the user. Although, in one service unit there are those that cannot produce output. This can be influenced by software and hardware that support the implementation of information system performance.

That performance based on performance aspects in the general registration information system does not always run smoothly for information system users, especially in the general registration unit who are still experiencing system trouble (unstable network problems) and there are still problems with some menus that are cannot be run and becomes an obstacle that affects the service process. HIS performance analysis based on the performance aspect, which is an analysis related to the performance of the information system assessed from throughput, response time, audibility, communication prevalence, completeness, and fault tolerance.

3) Influence of Information Aspect of HIS on Outpatient Registration

The results of hypothesis testing with t test, obtained the results of tcount> ttable (5.001>2.002) and a significance (p-value) of 0.000 <0.05, it can be stated that there is a significant effect of the information aspect of HIS on outpatient registration at the X hospital Tangerang. It means that the higher/better the information provided by the HIS, the higher the outpatient registration of the X hospital Tangerang. Information or data is important because with this information the management and users can take the next step, if the ability of the information system is good then the user will get accurate information.

Information can assess whether the current procedures can still be improved so that the quality of the information produced is getting better. What is meant by a better quality of information is that which is more relevant, accurate, reliable, and complete, and presented in a timely manner. Evaluation of the ability to register patients in X hospitals Tangerang produces useful information that needs to be done to address opportunities and deal with problems that arise. In this case, improving the quality of information does not increase the amount of information, because too much information will actually cause new problems. HIS users provide suggestions related to user needs such as updating the ICD code in HIS to match the ICD-10 code used in the world of health, if the diagnosis code is not in accordance with ICD-10 it can cause a decrease in the quality of service in hospitals, affect the quality of information, and financing related to INA-CBG's which is used as a payment method for patient services. The presence of double input patient data due to the lack of identification of the patient's address can affect the storage of health data information on the patient's e-medrec.

The accuracy aspect shows that HIS can provide accurate information with an average accuracy according to users of 85%. Based on the information relevance indicator, it shows that HIS can provide the information needed by HIS users such as searching for patient data, searching for reports, and registering patients who will seek treatment.

4) Effect of economic aspects of HIS on outpatient registration

Based on the results of hypothesis testing with t-test, the results obtained tcount> ttable (2.637>2.002) and a significance (p-value) of 0.011 <0.05, it can be stated that there is a significant effect of economic aspects of HIS on outpatient registration in X hospitals Tangerang. It means that the higher/better the economic aspect of HIS, it will further increase the registration of outpatient X hospitals in Tangerang.

Economics, namely the use of costs used from the use of information. An increase in the need for economical information can affect cost control and increase the benefits of information systems. Economic analysis is always related to the existence of agency budgets or costs, economic analysis is to study and apply about costs and benefits. The costs here are not only financial but also non-financial. X Hospital Tangerang in terms of economy, it is said that the use of this system can minimize hospital expenses. Effective use of available time resources with available manpower and
resources needed in the care and control of patient registration information systems.

nirHIS performance analysis based on economic aspects is an analysis related to the benefits and costs resulting from the application of information systems assessed from reusability and resources. Based on the reusability indicator (which can be reused), it shows that HIS has been integrated with health insurance related to the printing of insurance Participant Eligibility Letters, financing claims, and reporting related to hospitals.

5) Effect of control aspects of HIS on outpatient registration

Based on the results of hypothesis testing with t-test, the results obtained tcount> table (2.250>2.002) and a significance (p-value) of 0.029 <0.05, it can be stated that there is a significant effect of the control aspect of HIS on outpatient registration at the X hospital Tangerang. it means that the higher/better the control carried out by HIS, will increase the outpatient registration of X Hospital Tangerang

The control aspect is one part of the PIECES aspect which is also important for achieving good service, the control itself aims to check and see all the processes that have been carried out. Control is monitoring the progress of the organization and as a preventive measure against attacks by computer users or network accessors who are not responsible. So it is very important for smoothness in outpatient services, where outpatient services are the basic services of services to patients, if control is carried out properly then outpatient services will also run smoothly.

The results of this study are in line research which states that control and security applied to the hospital information system. Happy Land Medical Center is in a good category. The assessment of the good category shows that HIS has security against outside disturbances that try to enter the HIS by hackers, the existence of control settings in each data display of each user according to their needs in supporting each job.

The evaluation of the control aspect of the PIECES aspect also stated that data control was not implemented in the company, where there was no database that could convey information data and data in the form of documentation, activities and work results were not used for distribution, so that it became vain. The proposed system is given by controlling the data, where the data can be stored in the database. Data in the form of documentation, activities, and work results can be used for distribution, as a promotional medium. The general registration information system already have a username and password for access rights and also in terms of security the information system is running well because users of the general registration information system have different access rights according to their authority. each, but there are menus that can still be accessed outside the authority of the registration officer.

6) Effect of efficiency aspect of HIS on outpatient registration

The results of hypothesis testing with the t test, the results obtained tcount> table (2.361>2.002) and a significance (p-value) of 0.022 <0.05, it can be stated that there is a significant effect of the efficiency aspect of HIS on outpatient registration at the X hospital Tangerang. it means that the higher/better the efficiency of HIS, the higher the outpatient registration of the X hospital Tangerang.

Efficiency relates to an increase in operational efficiency, as opposed to economics. If the economy is related to its inputs, efficiency is related to how the resources are used so that there is no waste. The system is said to be efficient or successful if it can achieve the desired target, does not spend a lot of time and excessive officer labor. The value of efficiency in an HIS is closely related to outpatient services that require speed and appropriate services, so the need for efficiency in improving HIS as support that facilitates and facilitates services.

The evaluation of the efficiency of the PIECES aspect show that users of the general registration information system can easily learn, operate, and process data on the general registration information system because training for users of the general registration information system has been held. Although the general registration information system training is only representative and there is still no manual for using the general registration information system, especially in the registration section. With the additional information, system is expected to increase the quantity of information conveyed, and the time for delivery is short and clear. So it is very time efficient for patient registration staff. The efficiency evaluation of the PIECES aspect, it shows that the ease of finding information requires efforts that are considered difficult to obtain, resulting in consumer dissatisfaction with the service.

7) Influence of service aspects of HIS on outpatient registration

The results of hypothesis testing with the t test, obtained the results of tcount> table (2.315>2.002) and a significance (p-value) of 0.025 <0.05, it can be stated that there is a significant effect of the service aspect of HIS on outpatient registration at the X hospital Tangerang. it means that the higher/better the services provided by HIS, the higher the outpatient registration of the X hospital Tangerang.

Service or service is an increase in the service produced by the system. Service improvement shows various categories. Improvement of better services for management, users, and for others is a symbol of the quality of an information system. The service aspect in HIS in hospitals is an important thing where the service itself is a service provided to patients.

Service is any action or activity that can be offered by one party to another, which is essentially intangible and does not result in the ownership of anything. The criteria for this service include: Who is the user of the service, are there different types of users, does the system pay attention to the user, instructions and how to use the device must be included in the system, and is it necessary to save documents. Information systems that have good service will certainly produce products that are accurate, consistent, reliable, easy to learn and use, not awkward to use, flexible to new conditions, flexible to certain changes, and integrated with other systems. HIS that has fulfilled this aspect can indirectly improve services at outpatient registration which causes patients to feel satisfied if

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the services provided are appropriate, fast, and responsive with the support of good service.

All websites have similarities in economic and efficiency parameters, which are both free of charge and the web is very well organized. While other parameters (performance, information, control, service) there are significant differences in terms of the scientific value of information, guarantee of user privacy rights, and unique features that differ from one web to another. Meanwhile, the old system did not provide easy service for consumers in finding information and order services. Company visits as a promotional technique are considered less than optimal in providing services.

C. Research Findings

This study found that based on the perception of respondents regarding aspects of performance, information, economics, control, efficiency and service as independent variables and outpatient registration as the dependent variable using the three-box method, all of them were in the quite significant category. Through the results of the Three Box Method analysis, it was obtained that the highest response was on the performance variable, while the lowest was on the efficiency variable.

The test results of multiple linear regression analysis show that the coefficient values of all variables are positive, so this shows that there is a significant influence on aspects of performance, information, economics, control, efficiency, and service both simultaneously and partially on the outpatient registration variable. The value of the contribution of the influence of aspects of performance, information, economics, control, efficiency and service to the outpatient registration variable is 87.4%, while the remaining 12.6% is the contribution of the influence of other variables not examined in this study.

VI. CONCLUSIONS, IMPLICATIONS, AND SUGGESTIONS

A. Conclusions

The results of hypothesis testing in research with the F test, T-test and determination R2 prove that the variable has a significant influence on aspects of performance, information, economics, control, efficiency and service both simultaneously and partially on the outpatient registration variable. The value of the contribution of the influence of aspects of performance, information, economic, control, efficiency and service to the outpatient registration variable is 87.4%, while the remaining 12.6% is the contribution of the influence of other variables not examined in this study.

B. Implications

The results of the study indicate that there is a significant influence on aspects of performance, information, economic, control, efficiency and service either simultaneously or partially on the outpatient registration variable at X Hospital Tangerang. This study proves that the effect of the performance variable on outpatient registration at X Hospital Tangerang has the largest response value when compared to other variables.

The results showed that the declining quality of HIS based on the PIECES analysis showed that the management is expected to always carry out maintenance, upgrade, evaluate and implement the results of the evaluation to then conduct round table discussions with vendors related to HIS development that can reach all service needs of X Hospital Tangerang for become easier, time-saving, effective, efficient, paperless, and error-free due to lack of support for facilities or human resources.

C. Suggestions

Based on the results of the research that has been done, here are some suggestions that researchers can give, namely:

Management is advised to develop the existing HIS so that it can be integrated with all work units at X Hospital Tangerang. Integrated HIS can facilitate the coordination of patient care in each unit to be easier, more effective, and more efficient. Management is expected to consider improving the network that is currently used in order to minimize the occurrence of trouble errors or loading, especially during peak hours when patients are busy registering. Management is expected to apply the results of the HIS evaluation that has been carried out to improve the quality of outpatient registration services at X Hospital Tangerang.

Management needs to periodically monitor the results of every evaluation that has been carried out by the IT team, as well as periodic socialization related to HIS management which can help staff to always remind and work based on SOPs.

Future research is expected to be able to carry out further research with different research designs such as using the HOT-FIT model, TAM, and other types of research such as qualitative to improve the assessment of research results with more specific research variables so that they can be generalized from existing research results. Include respondents, namely groups of health and non-health workers so that the results can be more generalized because the population and sample are larger.

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