



RESEARCH ARTICLE

DEVELOPING HOSPITAL MANAGEMENT INFORMATION SYSTEM (HMIS) BASED ON THE ANALYSIS OF SYSTEM QUALITY, INFORMATION QUALITY, AND SERVICE QUALITY TOWARD PATIENTS' SATISFACTION AT PUBLIC HOSPITAL OF DR. KOESNADI BONDOWOSO

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Abstract

Public Hospital of dr. Koesnadi Bondowoso has grappled with numerous issues related to data and information pertinent to patients, employees, schedules, medical records, queues, medicines, maintenance, finance, the number and effectiveness of employees and rooms, and so forth. The problems found by the researcher at the research site included system quality, information quality, and service quality. This research was quantitative in nature, conducted at Public Health of dr. Koesnadi Bondowoso with 32 people as the population. Thirty persons were chosen as research subjects, determined by random sampling. The researcher conducted a simple analytical test. The research results indicated that the influence of system quality to users' satisfaction was evident, evinced by t-value of 6,39. Information quality also exerted significant influence to users' satisfaction, with t-value of 14,74. Likewise, service quality was also proven influential to users' satisfaction, marked by t-value of 13,65. The result of modelling generated in this research was formulated fit with p-value = 1,000 value RMSEA = 0,000 Degree of Freedom value = 0 Chi-Square value = 0,00. The research has concluded that the 3 exogenous variables under investigation yielded impact to endogenous variable, as corroborated by t-value across three correlational tests > 1,96. Suggestions for the hospital pertain to developing hospital information system in manual fashion first, followed by implementation and evaluation. Afterward, integrated electronic system should come underway.

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Introduction:-

The development of information technology and systems has taken place in an instant. Information systems at present become very crucial to an organization, company, or individual to gain easiness, promptness, and accuracy in processing and obtaining data, and/or information. Taking into account various solutions offered by information systems, the application of information systems is not only limited to the field of computers and information technology, but also related to various aspects of life, including the realm of health.

Public Hospital of dr. Koesnadi Bondowoso has been striving to cope with various problems related to the data and information of patients, employees, schedules, medical records, queues, medicine, maintenance, finance, the number

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and effectiveness of employees and rooms, and so forth. The problems relate to the process of entering and search data, especially in the absence of computer, which is difficult and lengthy.

Based on preliminary study that the researcher did at the hospital, several problems came under the spotlight. First, searching patients' information at clinics without information system was difficult and lengthy. Second, searching information of employees at clinics without the aid of information systems was difficult and lengthy. In addition, seeking information germane to care in wards with no support of information system was laborious and lengthy. Fourth, the search for schedule of patients and doctors at clinics, which had yet to implement information system, required much effort and much time. The other issue was concerned with the analysis on the effectiveness of employees and rooms in clinics, which was so complicated and lengthy due to the absence of information system. Lastly, lengthy and stressful search was also evident upon searching financial report, due to the absence of information system.

Hospital's management information system is developed to address the problems faced by a hospital, which pertain to patient registration, medical records search and record keeping, recording payments, scheduling and queuing schedules, searching information of employees/doctors, searching drugs, treatment tariffs, reporting patient schedules, details regarding old or new patients, care, doctors' schedules, medical services, finance, and sale of goods. Each of these details can later be used as consideration in developing hospital. In addition to facilitating the search of information, management information system will prune the amount of time required to retrieve required information, to a large extent.

Up until now, no research has been done to find out the success of hospital management information system. As such, this study deemed the aforementioned issue of essential research problem. In particular, it aimed to know with certainty the success of information system. Research on hospital management information system was expected to set the bedrock in developing hospital management information system.

Based on the above description of the researcher was interested in conducting research entitled "Developing Hospital Information System Based on The Analysis of System Quality, Information Quality, and Service Quality toward Patients' Satisfaction at Public Hospital of dr. Koesnadi Bondowoso".

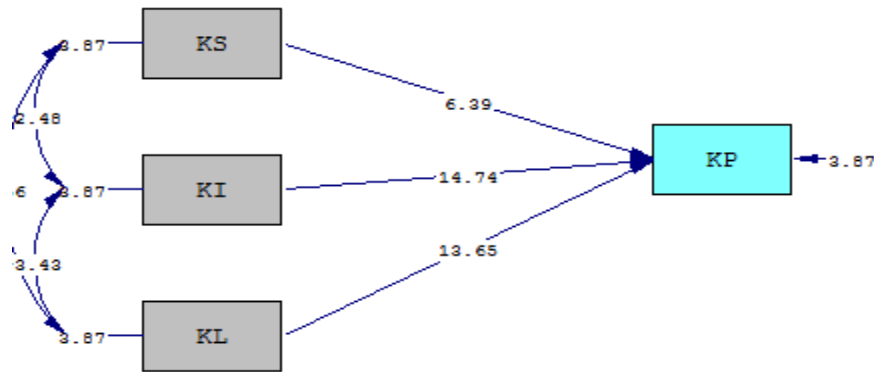
Research Method:-

This research was quantitative in nature because the data under investigation were presented in numbers and analysed by statistical techniques. This research was conducted at Public Hospital of dr. H. Koesnadi Bondowoso in 2017. In this study, the population investigated were all employees in the hospital, particularly those in polyservices. Involving 32 subjects as the population, the study scrutinized the use of hospital management information system. The sample size was 30 people according to the calculation using Slovin formula, and this figure was the minimum limit of sample size in analytic research. Simple random sampling technique was operationalized on inclusion and exclusion criteria, which had to be met.

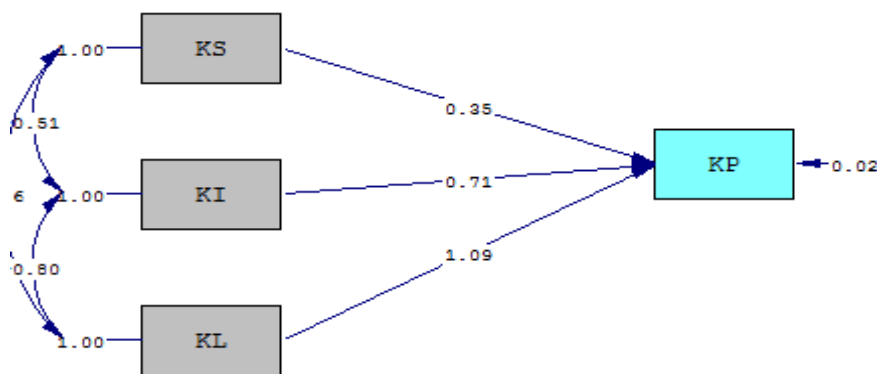
Result and Discussion:-

Analysing the influence of system quality (SyQ), information quality (IQ), and service quality (SvQ) on patient's satisfaction (PS) at the Public Hospital of dr. Koesnadi Bondowoso in 2017:

The result of statistical test was consummated with modelling on the hospital management information system. It dealt with four variables, inter alia, system quality (SyQ), information quality (IQ), and service quality (SvQ) on patient's satisfaction (PS).



Chi-Square=0.00, df=0, P-value=1.00000, RMSEA=0.000



Chi-Square=0.00, df=0, P-value=1.00000, RMSEA=0.000

Figure of T-Value Figure of Standardized Correlation.

VARIABLES	STANDARDIZED SOLUTION			
	Loading Factor ($\lambda > 0,50$)	Description	Significance (T-value = sig = marked in black)	Description
SyQ – PS	0,35	Not valid	6,39	Significant
IQ – PS	0,71	Valid	14,74	Significant
SvQ – PS	1,09	Valid	13,65	Significant

As seen in the table, the standard coefficient of SyQ to PS is 0.35. This means that if the value of SyQ increases by 1 time of standard deviation, then the value of PS will increase by 0.35 time of standard deviation. The t-value of this path is $6.39 > T\text{-standard } 1.96$. Therefore, it is significant, which implies that SyQ has bearing impact on PS.

The standard coefficient of IQ to SvQ is 0.71. This means that if the value of IQ increases by 1 time of standard deviation, then the value of SyQ will increase by 0.71 time of standard deviation. The t-value of this path is $14.74 > T\text{-standard } 1.96$, so it is significant. Thus, it can be concluded that IQ has an influence on PS.

The standard coefficient of SvQ to PS is 1.09. This means that if the value of SvQ increases by 1 time of the standard deviation, the value of PS will rise by 1.09 time of the standard deviation. The t-value of this path is $13.65 > T\text{-standard } 1.96$, so it is significant. Thus, it can be concluded that SvQ exerts bearing impact on PS. Based on the abovementioned statistical descriptions, the researcher has proven that H1 is accepted and H0 is rejected because SyQ, IQ, SvQ pose bearing impact on PS, as evidenced by the LISREL output with t-value > 1.96 .

DeLone and McLean (2003) state that the quality of system can create impact to users' satisfaction. Some characteristics of quality information encompass accessibility, completeness, flexibility, relevance, accuracy, timeliness, and clarity. As for some indicators of quality information, accuracy, completeness, format, punctuality, and relevance are worth pondering.

System quality was a support quality gained by users of information system department (in this case the developer of clinical information systems). Some indicators of service quality included responsiveness (timely response), technical competence, and empathy of the system developers.

Westbrook and Reilly (in Tjiptono, 2007) argue that users' satisfaction is an emotional response to experience related to a particular product or service purchased, retail outlets, or even behavioural patterns (such as shopping behaviour and buyers' behaviour), and the market as a whole. According to Yamit (2002), customers' satisfaction is the perceived outcome of the use of products and services, which can be equal to or exceeding desired expectations. By contrast, Pohan (2007) states that patients' satisfaction is the level of patients' feeling which arises as the result of health care performance they receive, compared to what is expected. Another opinion proposed by Endang (in Mamik, 2010) claims that that patients' satisfaction is an evaluation or assessment after using a service, which determines that the chosen service, at least, meets or exceeds their expectations.

Based on the aforementioned experts' opinions, it can be concluded that patients' satisfaction is the result of assessment in the form of emotional response (feelings of pleasure and satisfaction) on the part of patients due to the fulfilment of hope or desire in using and receiving services.

Jogiyanto is an expert focusing on behavioural information system. In 2007, he reveals that there are 5 main constructs constituting behaviour in the implementation of hospital information system, including the followings.

Perceived Usefulness:

Perceived usefulness is defined as the extent to which a person believes that using a technology will improve the performance of his work. The implementation of IT is evident of the belief of IT users in determining the acceptance of IT, which underpins that the use of IT makes a positive contribution to its users. The indicators of usefulness consists of: 1) prompter work; 2) usefulness; 3) increased productivity; 4) enhanced effectiveness; 5) improved job performance.

Perceived Ease of Use:

The ease of use is defined as the extent to which a person believes that using a technology will put him at more ease. On the ground of this definition, it can be concluded that ease of use will reduce effort (both time and energy) a person makes in learning computer. IT users believe that IT, which is more flexible, easier to understand and easier to operate (compatible), defines the characteristics of ease of use. Some constructive indicators of the ease of use comprise of; 1) learnable; 2) controllable; 3) clear and understandable; 4) flexible; 5) easy to master; 6) easy to use.

Attitudes toward Behaviour:

The attitudes toward behaviour are defined as one's positive or negative feelings when it comes to performing a behaviour determined beforehand. Some researches evince that attitude positively influences behavioural intention. However, some studies also show that attitude has no significant effect on behavioural interest, so these studies do not include attitude constructs in the model.

Behavioural Intention:

Behavioural interest constitutes one's desire (interest) to perform a certain behaviour. Someone will do a behaviour if he has the desire or interest to do so. The results of previous research indicate that behavioural interest is the most dominant predictor to the use of technology by system users.

Behaviour:

Behaviour is an action that someone actuates. In the context of using information technology systems, behaviour is the actual use of technology. In various studies, because the actual use cannot be observed by researchers who use questionnaires, this actual use is widely replaced by the notion of perceived usage. Jogiyanto deploys the notion of real usage in his study, which assesses perceived use on the basis of the amount of time spent interacting with a technology and its usage frequency.

As premised in DeLone and McLean's theory (2003) and supported with Jogiyanto's theory of behavioural information system (2007), the study has discovered that higher perception values of SyQ, IQ, and SvQ lead to patients' satisfaction. Herunder are the results of the model interpretation.

Based on the results of path analysis, the analysis on the indicator of goodness of fit operated in the model has confirmed that test results have met the fit model criteria. Thus, it can be concluded that the proposed model fits the data. This means that the model can produce a covariance matrix/correlation matrix of population, which is equal to covariance matrix/correlation matrix of sample data. By extension, the estimation results of model parameters are proven valid to be applied to the population.

GFT Measurement	Test Criteria	Model Indicator	Description
P- value	> 0,05	1,000	Perfect fit
RMSEA	< 0,08	0,000	Perfect fit
Degree of Freedom	As low as possible	0	Perfect fit
Chi-Square		0,00	Perfect fit

Conclusion:-

The study has revealed that system quality, information quality, and service quality are all influential to patients' satisfaction. This has been corroborated by t-value > 1,96. The influence of system quality toward patients' satisfaction is marked by t-value of 6,39. The information quality influence to patients' satisfaction is corroborated by t-value of 14,74. Lastly, service quality influence toward patients' satisfaction is evinced by t-value of 13.65.

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