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THE CORRELATION BETWEEN INFORMATION QUALITY AND USER SATISFACTION OF THE HOSPITAL MANAGEMENT INFORMATION SYSTEM

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ABSTRACT
The Hospital Management Information System (HMIS) is a system of communication and information that processes and integrates the entire flow of hospital service in a network of coordination, reporting and administrative procedures to obtain accurate information. Integrated HMIS will help speed up the hospital management process. Purpose: To determine the correlation between the quality of information produced by HMIS and user satisfaction in terms of the benefits generated at Balimed Hospital Denpasar. Methods: This research used a quantitative method by administering a questionnaire. The number of samples was 69 respondents HMIS users from 15 unit in the hospital with Proportionate Random Sampling technique. Data was collected using a questionnaire with the sample participating in answering several questions in this research questionnaire. Spearmans Test was conducted for Hypothesis testing. Results: Variable of information quality has good category with overall average value is 2.71. The statement with the highest average value is "HMIS produces accurate information" which is 3.27. The statement with the lowest average value is "how HMIS works is difficult to understand" which is 1.88. Variable of user satisfaction has the satisfied category with overall average value is 2.95. The statement with the highest average value is "the information systems, facilities and equipment currently provided and used, can help and satisfy user" which is 3.27. The statement with the lowest average value is "The information provided is not reliable/trustworthy" which is 2.21. The results of the analysis obtained r value = 0.76 with p value <0.001. These results mean that information quality has a positive and significant effect on user satisfaction.

Keywords: information quality; the hospital management information system; user satisfaction

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INTRODUCTION

The Hospital Management Information System (HMIS) is a communication information system that processes and integrates the entire flow of hospital service processes in the form of a network of coordination, reporting and administrative procedures to obtain precise, accurate information and is part of the Health Information System (Permenkes No. 82 Year 2013). The integrated HMIS capabilities will help speed up the hospital management process, starting from diagnostic and treatment services for patients, medical records, pharmacy, logistics, personnel databases, as well as creating financial reports that can be presented quickly and accurately. Darmawan and Fauzi (2013) stated that the indicators of a hospital management information system (HMIS) are as follows: 1) Hardware, 2) Software, 3) People (brainware), 4) Procedures , 5) Database, and 6) Communication Network. The implementation of a system, whether HMIS, requires an evaluation to find out how well the system can operate in the organization that implements it. Evaluation of an information

system is a real effort to find out the actual conditions of an information system implementation. The purpose of the evaluation is to find out the positive aspects that can encourage the use of the system and to identify any factors that create obstacles to its use (Alfiansyah, 2020).

Information Quality is the user's perception regarding the quality of the information produced by the software used. According to Weber (1999) in Istianingsih (2008) there are several characteristics to assess the quality of information from software, including information that is accurate, information produced is trustworthy, information produced is timely, information is relevant, information is easy to understand, information is detailed and correct. The better quality of the information, the more precise the decisions will be taken. If the information quality is low, it will have a negative effect on user satisfaction. Information system user satisfaction is one measure of the level of success in implementing or using an information system. This satisfaction is an assessment regarding whether the performance of an information system is good or bad, and whether the information system used is suitable or not with the user's goals. Users are also the main key to the success of an information system being implemented, because no matter how good a program or system is, it will not run well without support from users. If users feel burdened by the new system and think that this new system is hindering them, this information system will not be used, so this information system will not run well. Some researchers propose to use user satisfaction as a measure of the success of using an information system. These researchers propose that user satisfaction be used as a measure of information system success only for certain information systems used by users (Jogiyanto, 2007). Based on the results of a preliminary study conducted at Balimed Hospital Denpasar, it is known that Balimed Hospital Denpasar has developed HMIS. However, there are several employee complaints regarding the HMIS, for example the system sometimes experiences errors. Seeing these problems, it is necessary to carry out an analysis of the correlation between the quality of HMIS information and user satisfaction so that it will be able to improve performance and support the decision-making process for management. This study aims to determine the correlation between the quality of information produced by HMIS and user satisfaction in terms of the benefits generated at Balimed Hospital Denpasar.

METHOD

This research uses a quantitative method by administering a questionnaire to determine the extent of the quality of HMIS information and user satisfaction. The minimum sample size was calculated using the Slovin method and the number of samples used in this study was 69 respondents that use HMIS from 15 units in the hospital. Sampling used the Probability Sampling method, with the Proportionate Random Sampling technique. The inclusion criteria for the sample were HMIS users at Balimed Hospital Denpasar, still actively working as officers at Balimed Hospital Denpasar and willing to be research subjects until this research was completed. Research data collection was carried out on July-August 2022 at the Balimed Hospital Denpasar. The questionnaire is divided into three parts which is the sample demographic data form, a questionnaire that measures the quality of information and a questionnaire that measures user satisfaction. This research uses indicators of information characteristics from the research by Weber (1999) in Istianingsih (2008) which uses several characteristics to assess the quality of information from software with indicators of relevance, accuracy, up to date, completeness of information, availability of information and presentation of information by measuring using a Likert scale, while user satisfaction is the user's response to the use of information system output with indicators of satisfaction regarding completeness of content, accuracy, appearance, convenience, correctness by measuring using a Likert scale.

Data analysis was carried out using univariate and bivariate analysis. Univariate analysis to see descriptive demographics of the research sample, descriptive variables of information quality and user satisfaction. Bivariate analysis was carried out to see the correlation between information quality variables and user satisfaction. The analysis technique used in this research is the Spearman Rank test because the data is not normally distributed. The correlation test is used to examine the relationship between two variables. The basis for decision making in the correlation test is if the sig value. < 0.05, it can be concluded that there is a significant correlation between the variables being linked; if the sig value. > 0.05, it can be concluded that there is no significant correlation between the variables being linked. The criteria for the level of relationship (correlation coefficient) between variables range between ± 0.00 - ± 1.00. The (+) sign is positive and the (-) sign is negative. The interpretation criteria according to Sugiyono (2018) are: 0.00 to 0.20: almost no correlation; 0.21 to 0.40: low correlation; 0.41 to 0.60: moderate correlation; 0.61 to 0.80: high correlation; 0.81 to 1.00: perfect correlation. Data analysis was carried out by analyzing descriptive data and conducting bivariate analysis to see correlations and examine the relationship between two variables. This data will be tested using spearman rank analysis.

RESULTS

From the research results, the characteristics of respondents has been categorized based on gender, age, length of work, length of use of HMIS, level of education and unit where they work. From the results obtained, it is known that the frequency distribution of respondents' characteristics at Balimed Hospital Denpasar is as follows:

Table 1.
Characteristic

Characteristics	Category	f	%
Gender	Male	22	31,9
	Female	47	68,1
Age	24-43	53	76,8
	44-60	16	23,2
Length of Work	<5 years	21	30,4
	>5 years	48	69,6
Length of use of HMIS	<1 years	12	17,4
	1-2 years	22	31,9
	>3 years	35	50,7
Level of Education	Academy/D3	14	20,3
	D4/Bachelor	39	56,5
	Masters/Specialist	16	23,2

Table 1, it is known that the majority of respondents were female, namely 47 respondents (68.1%). Meanwhile, male respondents were 22 respondents (31.8%) of the total number of respondents. Meanwhile, if we look at the age of the respondents, the majority were aged 24-43 years, with 53 respondents (76.8%). Meanwhile, respondents with an age range of 44-60 years had 16 respondents (23.2%). The characteristics of length of work are known to be that the majority of respondents have worked >5 years with 48 respondents (69.6%). Meanwhile, there were 21 respondents (30.4%) who had worked <5 years.

The characteristics of respondents seen from the length of time they have used HMIS, it is known that most have a range of >3 years with a total of 35 respondents (50.7%). Meanwhile, the length of use of HMIS with a range of 1-2 years had a total of 22 respondents (31.9%) and for a range of <1 year there were 12 respondents (17.4%). Furthermore, based on education level, it is known that the majority of respondents have a D4/S1 education level, 39

respondents (56.5%). Meanwhile, the Academy/D3 education level had 14 respondents (20.3%) and for Masters/Dr. Specialists there were 16 respondents (23.2%).

Table 2.

Variables	f	%
Operating Theatre	9	13,0
Human Resource Department	2	2,9
Radiology	3	4,3
Finance	3	4,3
Laboratory	5	7,2
Admission	9	13,0
Marketing	1	1,4
Quality Control	1	1,4
House Keeping	3	4,3
Logistic	1	1,4
Food and Beverage	7	10,1
Pharmacy	10	14,5
Cashier	3	4,3
Medical Record	5	7,1
Outpatient Department	7	10,1

Based on the distribution of work units (table 2), it is known that 10 respondents came from the pharmacy unit (14.5%), while the operating room unit had 9 respondents (13.0%), the HR unit had 2 respondents (2.9%), the radiology unit had 3 respondents (4.3%), the finance unit had 3 respondents (4.3%), the laboratory unit had 5 respondents (7.2%), the admission unit had 9 respondents (13, 0%), the marketing unit had 1 respondent (1.4%), the quality unit had 1 respondent (1.4%), the house keeping unit had 3 respondents (4.3%), the logistics unit had 1 respondent (1.4%), the food and beverage unit had 7 respondents (10.1%), the cashier unit had 3 respondents (4.3%), the medical records unit had 5 respondents (7.2%) and the The polyclinic had 7 respondents (10.1%).

Next, an analysis was carried out of respondents' answers in filling out the questionnaire regarding Information Quality and User Satisfaction. The respondent's assessment of the variables in the research requires determining the frequency distribution based on the interval value (Sugiyono, 2018). Meanwhile, determining the interval is done using an interval scale of 0.75 The score given on the Likert scale questionnaire in this study has a maximum value that is four and a minimum value that is one, so that the range of criteria and categories for assessing respondents' answers can be seen in Table below.

Table 3.
Questionnaire

Questionnaire	Range Criteria	Favorable Statement	Unfavorable Statement
Information Quality	1,00 – 1,75	Very Poor	Very Good
	1,76 – 2,50	Poor	Good
	2,51 – 3,25	Good	Poor
	3,26 – 4,00	Very Good	Very Poor
User Satisfaction	1,00 – 1,75	Very Dissatisfied	Very Satisfied
	1,76 – 2,50	Dissatisfied	Satisfied
	2,51 – 3,25	Satisfied	Dissatisfied
	3,26 – 4,00	Very Satisfied	Very Dissatisfied

Information Quality

The HMIS information quality variable is measured using 14 statement items with indicators of relevance, accuracy, up-to-date, completeness, availability and presentation of information which are described as follows:

Table 4.
Statement

No	Statement	Average	Criteria
1	HMIS produces accurate information	3,27	Very Good
2	HMIS is able to present reports according to hospital needs	3,23	Very Good
3	HMIS has not been able to produce a proper report	2,33	Good
4	The HMIS format (display) is easy to use	3,11	Good
5	The hospital does not yet have clear instructions or instructions for using the HMIS in the hospital	2,34	Good
6	How HMIS works is difficult to understand	1,88	Good
7	The information output from the HMIS used is presented in a useful format	2,98	Very Good
8	The accuracy of the HMIS that I use is not satisfactory	2,10	Good
9	The HMIS I use provides sufficient information	3,18	Good
10	The HMIS that I use provides information that is not up to date	1,97	Good
11	I get the information I need on time or in real time	2,95	Good
12	The information content from HMIS has met my needs	3,05	Good
13	The layout (display) is easy to read	3,15	Good
14	A system that does not always provide periodic reports in a timely manner (for regular needs)	2,42	Good
Total Average		2,71	Good

The table above shows that the overall information quality variable is in the good category. This can be seen from the overall average value of the information quality variable, namely 2.71. The statement with the highest average value is the statement "HMIS produces accurate information" which is 3.27. The statement with the lowest average value is the statement "how HMIS works is difficult to understand" which is 1.88.

User Satisfaction

The HMIS user satisfaction variable is measured using 12 statement items with indicators of content completeness, accuracy, appearance, convenience and correctness which are described as follows:

Table 5.
Statement

No	Statement	Average	Criteria
1	The information systems, facilities and equipment currently provided and used can help and satisfy you	3,27	Very Satisfied
2	Information systems in providing services precisely and accurately	3,17	Satisfied
3	Information systems help you to complete tasks on time	3,21	Satisfied
4	The attention given by information system providers to the problems being faced	3,08	Satisfied
5	The capabilities of the information system convince you so that you always use the system	3,24	Satisfied
6	The capabilities of the information system do not convince you enough that you will not recommend it to other staff	2,28	Satisfied
7	The existing HMIS supports the provision of information for fast decision making	3,26	Strongly Satisfied
8	The HMIS service provider (vendor) carries out services in accordance with the agreement and ability	3,20	Satisfied
9	If a problem or system error occurs, the service provider does not resolve it quickly and in a timely manner	2,34	Satisfied
10	The existing HMIS rarely does not respond	2,86	Satisfied
11	The information provided is not reliable/trustworthy	2,21	Satisfied
12	I feel satisfied because HMIS has a high level of reliability	3,26	Very Satisfied

Total Average	2,95	Satisfied

Table 5 shows the overall system user satisfaction variable in the satisfied category. This can be seen from the overall average value of the system user satisfaction variable, namely 2.95. The statement with the highest average value is the statement "the information systems, facilities and equipment currently provided and used can help and satisfy you" which is 3.27. The statement with the lowest average value is the statement "The information provided is not reliable/trustworthy" which is 2.21. A normality test is then carried out to check whether the research data comes from a population with a normal distribution. The normality test of a residual are carried out statistically using the Kolmogorov-Smirnov test (Ghozali, 2013). It is said to be normally distributed if the value is ≥ 0.05.

Table 6.
The Normality Test

	Nilai α
N	69
Information Quality	0,004
User Satisfaction	0,001

In the table above, that can be seen the results of the normality test that the α value of the information quality variable is 0.004, while the α value of the system user satisfaction variable is 0.001. So, it can be concluded that this variable has a non-normal distribution. Because the data was not normally distributed, bivariate analysis was carried out using the Spearman Rank Test. The Spearman's test was carried out to test the research hypothesis and determine the effect of each independent variable on the dependent variable. The degree of significance used is 0.05. The significance value is > α (0.05), then H0 is accepted and H1 is rejected (t count > t table).

Table 7.
The Analysis Obtained

Variable Test	Variable	Item	Information Quality	User Satisfaction
Spearman's rho	K1	Correlation coefficient	1.000	.766**
		Sig. (2-tailed)	.	.000
		N	69	69
	KP	Correlation coefficient	.766**	1.000
		Sig. (2-tailed)	.000	.
		N	69	69

The results of the analysis obtained r value = 0.76 with p value <0.001. These results mean that information quality has a positive and significant effect on system user satisfaction. Based on the results seen from the respondents' responses, the overall average of respondents was satisfied with a score of 2.95. This data illustrates that users are still satisfied with the quality of the information provided by HMIS.

DISCUSSION

This is also reinforced by the opinions of Masrek et al (2010), Kirana (2010), Roldan and Leal (2003), and Stacie et al (2008) who state that the quality of information has a positive influence on system user satisfaction. Information quality can be used to measure the quality of output from an information system. The quality of information in the form of structured operational report documents which have the following characteristics: relevant; on time; accuracy; completeness; concise. Information quality is a measurement model that focuses on the output produced by the system, as well as the value of the output for the user. In this research, there is a significant influence of information quality on information system user satisfaction. This means that high or low information quality has a big impact on information system user satisfaction. Information quality is the output produced by the information system used (DeLone and McLean, 1992). Information quality shows the quality of the product

produced by the information system application and the information will have an influence on system user satisfaction.

Good information quality, which is represented as having an influence on user satisfaction. Information quality refers to the output of an information system, regarding the value, benefits, relevance and urgency of the information produced (Pitt and Watson, 1997). Information quality is the quality of output in the form of information produced by the information system used (Rai et al., 2002). Several dimensions for assessing the quality of this information are: authenticity, accuracy, completeness, uniqueness (non-redundancy), time-lines, relevance, comprehensibility, precision, conciseness, and informativeness (Weber, 1999 in Istianingsih, 2008). The better quality of the information, the more precise the decisions will be taken. Likewise, if information system users believe that the quality of the information produced by the system used is good, they will feel satisfied using the system.
The results of this research have the implication that HMIS user satisfaction depends on a positive individual assessment seen from the user's attitude in responding to a technology. This is because HMIS is felt to be in accordance with the operational needs carried out by the Balimed Hospital Denpasar as well as in accordance with the working environment and post-pandemic social situation at the time the research took place.

CONCLUSION

Information quality has a positive and significant effect on system user satisfaction with a significance value of 0.001 less than 0.05 (0.001 < 0.05). It is hoped that Balimed Hospital Denpasar can provide ongoing training and maintain available facilities such as networks and equipment in order to maintain the quality of HMIS implementation. In addition, it is hoped that management can periodically monitor and evaluate user satisfaction with the information system used in order to obtain suggestions for continuous improvement.

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