The evaluation of hospital information system management based on hot-fit model at rsu dr. h. koesnadi bondowoso 2018

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Abstract. Hospital Management Information System (SIMRS) helps hospital management in decision making to support service system for the sake of patients. SIMRS at RSU Dr. H. Koesnadi Bondowoso has been running since 2015. However, the utilization of SIMRS still meets some obstacles in the operation of the information system. The study aims to evaluate SIMRS based on HOT-FIT Model analysis at RSU Dr. H. Koesnadi Bondowoso. This is an analytic survey research with cross sectional design. The sample of this research is SIMRS user at RSU Dr. H. Koesnadi Bondowoso (158 people). The variables in this study are Human (user satisfaction), Organization, Technology (the quality in terms of system, information and service) and performance of SIMRS. Its analysis is carried out through Regressed Multiple Linear. The results showed that user satisfaction did not affect the SIMRS ($p = 0.413$) while the organizational variable had an effect on the performance of SIMRS ($p = 0.00$). Technological variables, consisting of system as well as information quality influence SIMRS performance ($p = 0.002$ and $p = 0.001$) while service quality has no effect on SIMRS performance ($p = 0.793$).

1. Introduction

Hospital is one of healthcare institution that aims to facilitate public access to health services. Several types of health services in hospital include inpatient services, outpatient care and emergency services. The regulation of the Republic of Indonesia Number 44, 2009 about hospitals explains that the development of health science and technological progress is one of aspects that influences the characteristics of hospital [1].

The development of Information Technology is inevitably growing. The hospital service is closely related to Hospital Information System. The reason of hospitals using information system aims at improving the efficiency, effectiveness, and services quality. The government of Indonesia has create policy related the using of hospital information system, PMK Number. 82, 2013 about the information system of hospital management article 4 paragraph (1) that every hospital is obliged to carry out management and development using Hospital Information System [2].

One of state-owned hospitals located in Bondowoso Regency is RSU Dr. H. Koesnadi Bondowoso. It is a type B hospital and has been using hospital information system management in its operations since 2015. Service units in hospitals which use hospital information system management include registration of outpatient (TPPRJ), emergency patient registration sites (TPPGD), Poly, Pharmacy, Impatient and Medical Records.

Preliminary study conducted at RSU Dr. H. Koesnadi Bondowoso stated the management of system of information in hospital is aimed at providing the convenience in hospital operations.

Moreover, the hospital information system management is aimed to support the services for patients at the hospital.

However, the utilization of hospital information system management meets some problems. Several employees at RSU Dr. H. Koesnadi Bondowoso complained that the information system could not be used as expected. The problem deals with less disciplined users as well as ignorant of the Standard Operating Procedure (SOP) in inputing patient data. Furthermore, the users still use manual based reporting data due to inability to solve problems when an error occurs in reporting feature. Employees often ignore SOP due to limited time as well as reluctance when it comes to consult SOP reference, they also sometimes forget or even too busy with numbers of patients to eventually open the SOP.

In terms of organization, RSU Dr. H. Koesnadi Bondowoso has not punished indisciplined employees in using information system. furthermore, training of information system use is infrequently implemented and provided for certain employees only such as the manager of working unit. Training which involves all users of the system is very important to produce a positive response for system utilization.

Based on technological aspect, several modules of information system are still unfinished. The module of pharmaceutical working unit has been provided since 2015 but still incomplete. Moreover, the module of operating room, Central Sterile Supply Department (CSSD), and inventories unit provided since 2016 have been incomplete until this research was conducted in 2017. It causes the increase of workload of information system users as they have to use paper based system and input the data from paper to information technology system. User satisfaction is one of assessment in the information system suitability. The failure in the implementation of information technology system occurs due to incompatibility of the system with the business process and information needed by the organization [3].

To ensure the benefits of hospital information system implementation, evaluation is an important part to carry out. Proper execution of system of information in hospital was influenced by various factors such as human, organization and technology. The information system evaluation model with Human Organization Technology-Fit (HOT-Fit) is a complete one and best suited to the problems in RSU Dr. H. Koesnadi Bondowoso. Although there are many system evaluation models such as Task Technology Fit (TTF), End User Satisfaction, and Technology Acceptance Models (TAM), the HOT-Fit evaluation model has the advantage in accommodating organizational structure and environment variables in which those variables are not present in other evaluation models.

Yusof *et al.* [4] suggested that HOT-fit is a successful model of information system and adopted due to its comprehensiveness, categories of specific evaluation, wide validation and the possiblity to be applied in the evaluation of Health Information System. HOT-fit uses information system successful model to categorize factors of evaluation, measures and dimensions. Moreover, the HOT-fit model is adopted to complete the information system successful model through factors of organization feature integration and fit concept between factors of human, organization and technology. The study was aimed at evaluating the utilization of information system in hospital based on HOT-Fit evaluation model in RSU Dr. H. Koesnadi Bondowoso. The benefits of this research are to formulate the recommendations in developing hospital information system.

2. Research Method

The research deployed an analytic survey with cross sectional study as the data is collected once. The research was conducted at RSU Dr. H. Koesnadi Bondowoso. Data were collected in April – May 2018. The research populations are employees as users of information system in RSU Dr. H. Koesnadi Bondowoso. The populations are divided into three levels of management included top, middle, and lower management. Sample was the selected part of population and represents the whole populations. The sampling method is proportionate stratified random sampling and 155 respondents were collected.

Data collection was conducted through questionnaire. Three stages were conducted during the research: (1) design; (2) implementation; and (3) data analysis and discussion of the result. Data analysis was conducted by linier regression study using SPSS. It aims to analyze the influence of independent variables included human, organization and technology towards dependent variable called information system utilization at RSU Dr. H. Koesnadi Bondowoso.

3. Result and Achieved Ouputs

Previous researches have discussed the information system of health in hospital. Yet, in terms of evaluation, only a few literatures focus on three important aspects (human, organization and technology-fit) in evaluating the health system of information in hospital [5]. The research data collection was conducted through questionnaire according to the framework of HOT-Fit evaluation model and distributed to the users of hospital information system.

Health system of information implemetation varies in Indonesia. Based on Section 1 of the Indonesian Government Regulation Number 46 Year 2014, health information system means "a set of structures that includes data, information, indicators, procedures, tools, technology, and human resources which is interrelated and managed in an integrated manner to direct actions or decisions which is useful in supporting health development" [6]. To obtain benefits of hospital system of information in a long run , hospital needs to keep long-term engagements [7]. this engagement should obtain back-up be from organization and technology. It highlights three important factors of successful implementation of health information system such as human, organization, and technology [5].

DeLone and McLean [8] created a model adopted to evaluate the quality of information system called the "DeLone and McLean IS Success Model (ISSM)" or the D&M model. Delone and McLean suggested that six dimensions influence the quality of information system such as: (1) system; (2) information; (3) the use; (4) the satisfaction of users; (5) Impact of individuals; and (6) impact of organization. Whereas, the MIT90s also known as IT-organizational fit model. This framework highlights the success of deployment management of information technology in the organization depends on the balance of the following six factors: (1) environment; (2) the strategy of organization; (3) roles and individuals; (4) the structure of organization; (5) technology and; (6) process of management. In 2008, Yusof et al. combined the ISSM concept and the IT Organizational Fit Model [4].

This research deals with the implementation of the framework of HOT-Fit to evaluate hospital system of information by analyzing human impact, organization and technology variables towards information system utilization in the hospital. The human varible is taken from users satisfaction. The satisfaction of users over the systems of information (IS) works as an important indicator of successful systems of information and has become subject of a wide range of research to date [9].

Research results showed that users satisfaction did not influence information system utilization (P = 0,475; Beta = -0,073). Erlirianto *et al*. [5] stated that users' satisfaction cannot affect the information system utilization. The users of hospital information system use manual as well as system. The operation of system of information in hospital does not play a pivotal role. Thus, users satisfaction cannot affect the information system utilization as it is not their main job. Even though the results showed that users satisfaction did not influence information system utilization, the users satisfaction must keep in mind that satisfaction is a key determinant of habitual use and hence, as stabilizing behavior. In terms of its adapted use, interim judgments leads to users' dissatisfaction with numerous aspects of system of information which may disturb the on going use of a system (e.g., routine use) and, thus, lead to changes in use [10]. Here, dissatisfaction as well as satisfaction may respectively play pivotal roles to enable changes when used.

Organization influenced information system utilization (P = 0,000; Beta = 0,324). The results of this study are similar to the results of the study conducted by Erlirianto *et al*. [5] that organization had the biggest effect towards information system utilization. In practice, the organization can apparently affect the information system utilization. The organizational structure gives significant

effect over organizational environment. The management of hospital supports and implements proper strategy according to organizational environment. Communication and competition provide significant effect over information system utilization. Moreover, organization can also support the system implementation and carry out policy that technology provides advantages and increases information system utilization.

The sub-variables of technology are the quality of system, information and service. The quality of system influenced the utilization of information system (P = 0,002; Beta = 0,270). The measure of system quality includes the easiness of use, learning, time of response, availability, usefulness, completeness, reliability, the flexibility of system, and security. The easiness of use highlights healthcare professionals consider hospital system of information as satisfactory, pleasant and convenient to apply. Availability refers to provision of hospital system of information while flexibility deals with the preparedness of hospital information system to adapt healthcare setting and integrate with other systems. Even systems with frequent work cannot necessarily be used as anticipated. Hence, the system has to ensure to (1) satisfy the users' need, (2) user-friendly and convenient to use, (3) matches the professional work patterns and overall health system [4].

Moreover, the quality of information influenced the utilization of information system (P = 0,001; Beta = 0,282). The measures of information quality deals with information provided by hospital information system which include the records of patients, images, reports and prescriptions. The measures of Information quality may be subjective, as user perspective works. Category applied for the quality of hospital information system is completeness, accuracy, legibility, timeliness, availability, relevancy, consistency and reliability of information.

On the other hand, the service quality do not influence information system utilization (P = 0,533; Beta = 0,044). The quality of service deals with overall support by the service provider of hospital information system or technology regardless of which healthcare department provides it. The quality of service can be determined through technical support, responsiveness, assurance, empathy and the follow-up service. At RSU Dr. H. Koesnadi Bondowoso, hospital information system service provider or technology did not provide proper response. It is obvious that several modules of information system are still not finished as expected. This result is similar to Erlirianto et al. [5] suggesting that the aspect of human and technology did not show effect over information system utilization.

4. Conclusion And Recommendation

4.1 Conclusion

The research result concludes that:

1. Human/ users satisfaction do not influence information system utilization. The users satisfaction cannot affect the information system utilization as it is not necessarily their main job.
2. Organization influences the information system utilization. Organization supports the system implementation and provide policies that technology provides advantages and increases the information system utilization.
3. The sub-variables of technology are the quality system, information and service quality. The quality of system and information influence the information system utilization. Whereas, the service quality do not influence the information system utilization.

4.2 Recommendation

The recommendation of this research are:

1. In human variable, should be provided in the form of guidance for all users and provide user-friendly manuals.
2. In the organization variable, policies are needed that technology can apparently give benefits and increases information system utilization.
3. In technology variable, system update is needed, ensuring the clearness of business process, and providing tutorial for system use. Policy for process writing and data input accuracy are also needed.

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6. References

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