Utilization of Hospital Management Information System (SIMRS) Using the Technology Acceptance Model (TAM) at RSGM UNSOED

Frita Warasati[1]*, Rahab [2], Haris Budi Widodo[3]

[1*]Universitas Jenderal Soedirman, frita.warasati@unsoed.ac.id, Indonesia
[2]Universitas Jenderal Soedirman, rahab@unsoed.ac.id, Indonesia
[3]Universitas Jenderal Soedirman, harisbudiwidodo@gmail.com, Indonesia
* Frita Warasati

ABSTRACT

The Covid-19 pandemic has changed the paradigm of health. Health care facilities, especially hospitals, must be able to adapt and adapt in order to continue to provide quality services for patients, the use of health technology is growing rapidly in the midst of a pandemic. The use of an electronic hospital management system at RSGM Unsoed is an effort to guarantee the quality of health services in hospitals by applying technology in the health sector. This study aims to determine the utilization of the RSGM Unsoed hospital management information system through the attitude of hospital staff in using SIMRS. The population studied were hospital staff who used the Hospital Management Information System (SIMRS) RSGM Unsoed. The sampling technique in this study used a non-probability sampling approach, namely by purposive sampling. The data used are sourced from primary data. The data collection technique used is a questionnaire. This research is a quantitative research with data analysis using multiple regression analysis. The theory used is the Technology Acceptance Model (TAM). The results showed that perceived usefulness and perceived convenience had a significant effect on the attitudes of hospital management information system users to hospital staff.

Keywords: Quality, hospital management system information, technology acceptance model (TAM), health care, dental and oral hospital.

1. Introduction

RSGMP Unsoed is a special hospital that provides dental and oral health services in promotive, preventive, curative and rehabilitative efforts to the community as well as being a means of providing professional education for dental students at Jenderal Soedirman University, Purwokerto. Accelerating the implementation of reporting standards and health management information systems can be done by optimizing the use of digital health innovations, optimizing the use of the internet. Efforts to develop and expand technology in the health sector are through implementation information systems in hospitals (SIMRS), as well as integration/interoperability at the transaction data level in health care facilities. Information systems can be used for data and information service activities in a more productive, transparent, orderly, easy, accurate, integrated, safe and efficient manner, especially assisting in expediting and simplifying hospital operations.

2. Literature Review

2.1 Hospital Management System

Health Information System is a set of arrangements that include data, information, indicators, procedures, technology, tools, and human resources that are interrelated and managed in an integrated manner to direct useful actions or decisions in supporting health development. Hospital Management Information System, hereinafter abbreviated as SIMRS, is a communication information technology 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 and accurate information, and is part of the Health Information System. Ministry of Health of the Republic of Indonesia, 2013).

2.2 Dental and Oral Hospital

Dental and oral hospital is a health service facility that provides individual dental and oral health services for treatment and recovery services without neglecting health promotion and disease prevention services carried out through emergency outpatient services and medical action services. RSGM education is an RSGM that organizes dental and oral health services which is also used as a means of learning and research processes for dental health professionals and other health workers and is bound through collaboration with the Faculty of Dentistry (Permenkes, 2004). RSGM must have personnel that includes medical personnel of dentistry, namely dentists, specialist dentists which include: oral surgery, leveling teeth (orthodontics), dental reinforcement (conservation), dentures (prosthodontics), pediatric dentistry (pedodontics), dental braces (periodontitis) and oral disease. RSGM also requires other medical personnel such as doctors with training in the Management of Emergency Patients (PPGD). Health workers such as nurses and dental nurses, pharmacists such as pharmacists, pharmaceutical analysts, and pharmacist assistants, medical technical personnel such as radiographers, dental technicians, health analysts, medical record officers, as well as non-health workers in the form of administration, IT, and hygiene are also needed in RGSM (Permenkes, 2004). The function of the RSGM is to provide services in the form of basic, specialist, and sub-specialist dental medical services, support services, referral services, emergency dental and oral health services, education, research and development. The supporting services referred to include pharmaceutical services, laboratory services which include clinical laboratories and dental engineering laboratories, dental radiology services, and anesthesia services. The facilities and infrastructure of the RSGM include outpatient rooms, emergency rooms, recovery rooms, operating rooms, pharmacy and dental materials, clinical laboratories, dental engineering laboratories, central sterilization rooms, radiology, waiting rooms, administration rooms, toilet rooms, and infrastructure which includes electricity, supply of clean water, installation of waste disposal, communication tools, fire extinguishers and parking lots (Permenkes, 2004).

2.3 Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) is one of the models built to explain and calculate user acceptance of information systems. Fred Davis was the one who first introduced TAM in 1986. The Technology Acceptance Model (TAM) is a model used to study several factors that can affect the acceptance of technology use. TAM is intended to determine the determinants of the acceptance of an information-based technology (Supriyanti and Cholil, 2017). TAM considers that

there are two main variables in adopting an information system, namely the user's perception of the benefits (perceived usefulness) and the user's perception of the use (perceived ease of use). Perceived usefulness is defined as the level at which a person believes that using a particular system can improve performance, and perceived ease of use is defined as the level at which a person believes that using the system does not require any effort (free of effort) (Davis, Bagozzi and Warshaw, 1989). Based on TAM, there are 2 dominant factors that influence technology integration, namely the perception of usefulness, namely through the system concerned it will be useful for its users and its performance will increase and the perception of ease of use of technology, i.e. users feel the ease of operating. system and can understand independently.

2.4 Hypothesis Formulation

2.4.1 Perceived Usefulness

Perception of usefulness determines whether a system can be accepted or not. Perceived usefulness is defined as a belief about the decision-making process. Thus if someone believes that the information system is useful, then the user will continue to use it. Conversely, if someone believes that the information system is less useful, then the user will not use it. The indicators used to measure perceived usefulness were adapted from Davis' research, namely working faster, job performance, increasing productivity, being effective, making work easier and more useful. Based on a review of perceived usefulness or usefulness, the first hypothesis is proposed:

H1: Perceived usefulness has a positive effect on the attitudes of SIMRS users.

2.4.2 Perceived Ease of Use

Perceived ease of use is the degree to which a person believes that technology is easy to understand. Convenience is defined as the extent to which a person believes that using a technology will be free of effort (Utami, 2021). Perceived ease of use is defined as the extent to which users believe that using information technology will be effort-free. From this definition, it is known that the construct of perceived ease of use is a belief about the decision-making process. The indicators used to measure perceived ease of use were adapted from Davis' research, namely easy to learn, controllable, easy to understand, flexible in use and easy to use (Davis, 1989). Based on a review of perceived ease of use, a second hypothesis is proposed:

H2: Perception of convenience has a positive effect on attitudes of SIMRS users.

The picture of this research model is:

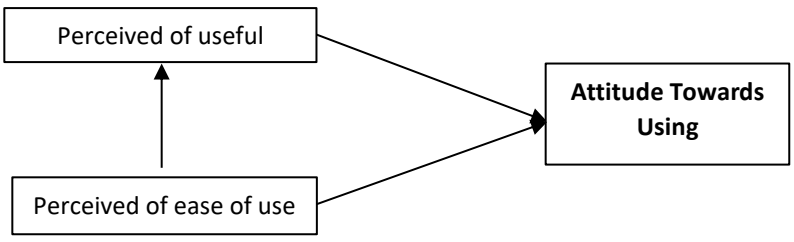

Figure 1. Research Design

Based on the description above, the purpose of this study is to determine the use of SIMRS through the attitude of SIMRS user officers by knowing the influence between the constructs that exist in TAM including perceptions of user usefulness (perceived usefulness), perceived ease of use and perceptions of attitudes to use SIMRS (attitude toward using) uses the Technology Acceptance Model (TAM) method at RSGM Unsoed Purwokerto.

3. Research Methodology

3.1 Data Collection

The population in this study were RSGM Unsoed officers who used SIMRS in their daily work using a questionnaire distributed online using a google form. The number of respondents was calculated based on the slovin formula, based on the calculation of the formula known from the total population of 120 people, the research sample was 92 people.

3.2 Measurement

This study aims to determine the effect of usefulness and convenience on the attitudes of SIM users at RSGM Unsoed. There are two independent variables, namely Benefit and Ease, while User Attitude is the dependent variable. In this study, the approach used is a quantitative approach that uses regression analysis with the TAM model as the research framework.

4. Results

4.1 Validity Test and Reliability Test

Validity test is intended to test the statement on each question item on the questionnaire is valid or not. To process the validity test, the researcher used SPSS Version 25 with the following criteria:

- If the value of r count > r table, then the instrument is valid
- If the value of r count < r table, then the instrument is not valid

The results of the variable validity test are as follows:

Table 1.

Item	r Calculate	r Table	Decision
X1.1	0.906	0.2199	Valid
X1.2	0.895	0.2199	Valid
X1.3	0.750	0.2199	Valid
X1.4	0.787	0.2199	Valid
X1.5	0.736	0.2199	Valid
X1.6	0.794	0.2199	Valid

Based on the table data above, the perceived usefulness variable (X1) is obtained by the value of r count > r table (0.2199), thus all questionnaire items are declared valid. For this reason, the questionnaire used is feasible to be processed as research data.

Table 2.

Item	r Calculate	r Table	Decision
X2.1	0.832	0.2199	Valid
X2.2	0.810	0.2199	Valid
X2.3	0.804	0.2199	Valid
X2.4	0.855	0.2199	Valid
X2.5	0.825	0.2199	Valid
X2.6	0.853	0.2199	Valid

Based on the table data above, the perceived convenience variable (X2) obtained the value of r count > r table (0.2199), thus all questionnaire items were declared valid. For this reason, the questionnaire used is feasible to be processed as research data.

Table 3.

Item	r Calculate	r Table	Decision
Y1	0.633	0.2199	Valid
Y2	0.904	0.2199	Valid
Y3	0.802	0.2199	Valid
Y4	0.814	0.2199	Valid
Y5	0.633	0.2199	Valid
Y6	0.904	0.2199	Valid

Based on the table data above, the user attitude variable (Y) obtained the value of r count > r table (0.2199), thus all questionnaire items were declared valid. For this reason, the questionnaire used is feasible to be processed as research data.
To determine the reliability of the questionnaire items, the following tests were carried out:

Table 4.

Variabel	Cronbatch Alpha	Standar Cronbatch Alpha	Keputusan
X1	0,956	0.600	Reliabel
X2	0,900	0. 600	Reliabel
Y	0,936	0. 600	Reliabel

Each variable is declared reliable because it has a value above the standard Cronbach Alpha 0.600. These results can be used as a basis for testing classical assumptions and hypotheses.

Table 5. One-Sample Kolmogorov-Smirnov Test

Status	Information	Unstandardized Residual
N		92
Normal Parameters	Mean	0,02717
	Standard Deviation	0,07016610
Most Extreme Differences	Absolute	0,00787
	Positive	0,056
	Negative	0,036
Test Statistic		0,087
Asymp. Sig. (2-tailed)		.260c,

- Test distribution is Normal.
- Calculated from data.
- Lilliefors Significance Correction.
- This is a lower bound of the true significance.

Based on the test results in the table above, the significance value of = 0.260 is obtained where the value is greater than the value of = 0.050 or (0.260 > 0.050). Thus, the assumption of the distribution of equations in this test is normal.

4.2. Multiple Regression Test

Multiple Regression Test is intended to determine how much influence the variables X1 and X2 have on the Y variable. In this study, the perceptions of usefulness (X1) and perceptions of convenience (X2) on user attitudes (Y) both partially and simultaneously. The following is the result of processed regression data with SPSS Version 25 which can be seen in the following table:

Table 6

Model		Unstandardized Coefficients	
		B	Std. Error
1	(Constant)	12,441	2,767

	Usefullness	0,135	0,064
	Ease of Use	0,416	0,095

- Dependent Variable: Attitude Toward Using

Based on the results of the regression calculations in the table above, the following multiple regression equations can be obtained:

$$Y = 12,441 + 0,135X1 - 0,416X2 + 2,767 \quad (1)$$

The analysis of the coefficient of determination is intended to determine the percentage of the strength of the relationship between the independent variable and the dependent variable either partially or simultaneously. In this study, the variables perceived usefulness (X1), perceived ease (X2) on user attitudes (Y). The following are the results of the calculation of the coefficient of determination processed with the SPSS Version 25 program, as follows:

Table 7

Model Summary

Model	R	R Square
1	.877a	0,786

a. Predictors: (Constant), Usefulness, Ease of Use

b. Dependent Variable: Attitude Toward Using

To test the hypothesis, a post hoc analysis was carried out with a partial t test as follows:

Table 8

Model		Sig.
1	(Constant)	0,000
2	Usefulness	0,018
3	Ease of Use	0,002

a. Dependent Variable: Attitude Toward Using

Based on the test results in the table above, the significance value of each variable is obtained. For the perceived usefulness variable, the value of value < Sig. 0.05 or (0.018 < 0.050) was obtained.

Thus, H0 is rejected and H1 is accepted, this indicates that there is a partially significant influence between the usability style on user attitudes. For the perceived convenience variable, the value of value < Sig. 0.05 or (0.002 < 0.05). Thus, H0 is rejected and H1 is accepted, this shows that there is a partially significant effect between ease of use and user attitudes.

5. Discussion

From the multiple linear regression equation above, it can be concluded as follows:

- The regression coefficient value of the perceived usefulness variable (X1) of 0.135 means that if the constant is fixed and there is no change in the perceived convenience variable (X2) then every 1 unit change in the perceived usefulness variable (X1) will result in a change in the user attitude variable (Y) of 0.135 points.
- The regression coefficient value for the perceived convenience variable (X2) of 0.416 means that if the constant is fixed and there is no change in the perceived usefulness variable (X1), then every 1 unit change in the perceived convenience variable (X2) will result in a change in the user attitude variable (Y). of 0.416 points.

Based on the results of this analysis, it shows that there is an influence of the benefits of SIMRS on user attitudes. The effect of perceived usefulness of users on perceptions of user attitudes (Attitude Toward Using) on admins and users of SIMRS RSGM Unsoed, users feel that the benefits of SIMRS do not affect the attitudes of user use in the context of work coverage or the availability of facilities will affect the strength and weakness of the influence of these cognitive beliefs on attitude. SIMRS admins who do not have job descriptions require the use of SIMRS, such as patient data in inpatient and outpatient settings, the task of inputting is to nurses to input patient data so that they cannot form cognitive beliefs. The shift in the task of inputting patient data by nurses makes the admin perform patient data recording manually, so that the SIMRS admin in certain sections or installations feels less productive due to lack of improving their performance.

The results showed that the ease of having a positive and significant effect on user attitudes, can be proven from the results of a significant value of 0.000 <0.05. With a regression coefficient value of 0.416, it is concluded that the second hypothesis is accepted. This is in accordance with the statement according to Ajzen (in Cholil 2017: 90) "the definition of behavior as an observed action is related to persuasive feelings or individual attitudes, while attitudes / feelings of attitudes are defined as "the extent to which a person has an evaluation or assessment of the behavior is favorable or unfavorable. Based on the results of research by Supriyanti and Cholil (2017), it proves that there is a positive and significant influence on the interest in using SIMRS on the use of technology. The effect of perceived ease of use on perceptions of user attitudes (Attitude Toward Using) on SIMRS users of RSGM Unsoed. Users feel that SIMRS is easy to learn and apply only takes a short time, this causes users to feel more skilled and not bored in operating SIMRS (Adams et al., 1992). Users find it easy to find patient data stored in data based, convenience in searching data makes it easy for users to make reports even though they are not in accordance with service needs. Users easily understand the steps in data entry by using features or facilities, language that is easy to understand, makes users feel happy in operating SIMRS. Someone who finds it easier to use the internet, will find it easier to get the benefits of this technology. The results of the study (Winda *et al.*, 2022) support the hypothesis that the perception of the ease of using SIMRS has a positive and significant effect on perceptions of convenience and attitudes.

6. Conclusion

After the researchers carried out several stages of research, namely research preparation, research methodology, data collection, data analysis and testing, the results obtained that could explain the relationship of the variables used, namely Perception of Benefit and Perception of Ease, both variables had a positive direction. There is an effect of perceived ease of use on perceptions of user attitudes (attitude toward using) and the effect of perceived usefulness on user perceptions of attitudes (attitude toward using) at SIMRS RSGM Unsoed. The results studied from the perceived usefulness variable have a significant and positive effect on user satisfaction. In this case, the T test results show a significance value of 0.000. This means that the dimensions of perceived usefulness and perceived convenience are able to influence the attitudes of users of SIMRS RSGM UNSOED.

7. Suggestions

- This study has not examined the relationship variables between demographic data and attitudes of SIMRS users, so further research is needed to study this.
- It is hoped that the Medical Record and SIMRS unit will provide socialization of the importance or benefits of SIMRS in backup and searching for input data on a regular basis because sometimes there is a delay in inputting patient data so that users can feel the benefits provided by SIMRS. So that users can increase the usefulness of using SIMRS.

References

Adams, D.A. *et al.* (1992) *'Perceived Usefulness, Ease of Use, and Usage of Information Technology: A Replication Increasing Systems Usage Perceived Usefulness, Ease of Use, and Usage of Information Technology: A Replication'*, *Source: MIS Quarterly*, 16(2), pp. 227–247.

Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. (1989) *'User Acceptance of Computer Technology: A Comparison of Two Theoretical Models'*, *Management Science*, 35(8), pp. 982–1003. doi:10.1287/mnsc.35.8.982.

Kementrian Kesehatan Republik Indonesia (2013) *'Peraturan Menteri Kesehatan RI Nomor 82 tentang Sistem Informasi Manajemen Rumah Sakit', Peraturan Menteri Kesehatan*, (87), pp. 1–36.

Supriyanti, S. and Cholil, M. (2017) *'Aplikasi Technology Acceptance Model Pada Sistem Informasi Manajemen Rumah Sakit Di Rumah Sakit Ortopedi Prof. Dr. R. Soeharso Surakarta'*, *Jurnal Manajemen Dayasaing*, 18(1), p. 42. doi:10.23917/dayasaing.v18i1.3817.

Utami, T.L.W. (2021) *'Technology adoption on online learning during Covid-19 pandemic: implementation of technology acceptance model (TAM)'*, *Diponegoro International Journal of Business*, 4(1), pp. 8–19. doi:10.14710/dijb.4.1.2021.8-19.

Winda, I. *et al.* (2022) 'Analisis Penerimaan Simrs Dengan Metode Technology', *J-REMI: Jurnal Rekam Medik Dan Informasi Kesehatan*, 3(2), pp. 147–158.