

# Technology Acceptance Model (TAM) for Analyzing Acceptance of the Electronic Medical Record System at RSGM UNSOED

Yunita Tri Hardini<sup>1\*</sup>, Adi Indrayanto<sup>2</sup>, Haris Budi Widodo<sup>3</sup>

<sup>1\*</sup> Universitas Jenderal Soedirman, trihardiniyunita@gmail.com, Indonesia

<sup>2</sup> Universitas Jenderal Soedirman, adi.indrayanto@unsoed.ac.id, Indonesia

<sup>3</sup> Universitas Jenderal Soedirman, harisbudiwido@gmail.com, Indonesia

\*Yunita Tri Hardini

---

## ABSTRACT

**Introduction:** One of the uses of information technology (IT) in the health sector that is becoming a trend in health services globally is electronic medical records. In Indonesia, it is known as electronic medical record (RME). Technology Acceptance Model (TAM) was developed from a psychological theory that explains user behavior starting from beliefs, attitudes, intentions, and user behavior relationships. This model is contained in the attitude of each user behavior and has two variables, namely ease of use (easy of use) and usefulness (usefulness). **Research Methodology:** This study uses the Technology Acceptance Model (TAM) to analyze the acceptance of the electronic medical record system at RSGM Unsoed through questionnaires to medical personnel and health workers at RSGM Unsoed. Analysis of the results of the questionnaire was carried out using descriptive statistical methods. **Results:** Respondents are more likely to agree with the statement items made by researchers regarding the usefulness of the RSGM electronic medical record system. Nearly 55% more people agree. Respondents are more likely to agree with the statement items made by researchers regarding the ease of use of the RSGM electronic medical record system. Nearly 50% more people agree. **Conclusion:** The application of RME according to user perceptions is useful and provides convenience for the respondent's work.

**Keywords:** Technology Acceptance Model (TAM), Electronic Medical Records, Dental and Oral Hospital.

---

## 1. Introduction

### 1.1 Background

In Indonesia, the legal basis for the use of electronic medical records in a health care institution is protected by Law no. 11 of 2008 concerning Information and Electronic Transactions, Permenkes No. 269 of 2008 concerning Medical Records and Kepmenkes No. 55 of 2013 concerning the Implementation of Medical Recorder Jobs. This legal basis can be used as a legal basis for the use of electronic medical records because the implementation of electronic medical records is still widely doubted due to legal issues of medical record data. In the Minister of Health Regulation No. 21 of 2020 concerning the Strategic Plan of the Ministry of Health for 2020-2024 related to medical records, it is stated: Accelerating the implementation of reporting standards and health management information systems, optimizing the use of digital health innovations, optimizing the

use of the internet, one of the developments and expansions of the implementation of information systems in hospitals. (SIMRS), as well as integration/interoperability at the transaction data level in health care facilities.

One of the uses of information technology (IT) in the health sector that is becoming a trend in health services globally is electronic medical records. In Indonesia, it is known as Electronic Medical Record (RME). Electronic medical records are defined by the Center of Medicare and Medicaid Services (CMS) in 2017, namely as electronic medical records of patients, which are managed by health care providers from time to time, and include clinical data relevant to the care of a patient under a particular health care agency, including demographics, progress records, problems, medication, vital signs, previous treatment history, immunizations, laboratory results and radiology reports (Ningtyas and Lubis, 2018).

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. RSGM Unsoed currently uses manual medical records and electronic medical records in supporting services, but in practice it is still not effective because the application has not been developed optimally, there are differences in the perception of medical personnel at RSGM Unsoed. TAM is an information system that makes a model of how users are willing to accept and use technology. Perception of usefulness is indicated by the extent to which a person believes that the use of this system will improve his performance, while the concept of ease of use is shown how someone will believe that the use of an information system is easy, does not require hard effort from the user so that users will tend to use the system. This study will find out the response of the use of the electronic medical record system at RSGM Unsoed based on the Technology Acceptance Model (TAM). Researchers will use the TAM (Technology Acceptance Model) questionnaire (Jogiyanto, 2007).

## *1.2 Problem Formulation*

The implementation of RME at RSGM Unsoed which has not been so effective needs to be re-evaluated. Based on the above background, there are several problems that need to be investigated about how is response of the use of the electronic medical record system at RSGM Unsoed based on the Technology Acceptance Model (TAM)?

## **2. Literature Review**

### *2.1 Technology Acceptance Model (TAM)*

Technology Acceptance Model (TAM) is one of the most frequently used models in adoption research in the field of information systems. Existing studies validate the truth of TAM in testing various types of information technology use in various types of agencies and companies and are recognized by researchers in the world (Setyawan, 2015). 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. Theory of Reasoned Action (TRA), which is a theory of reasoned action with one premise that a person's reaction and perception of something, will determine that person's attitude and behavior, TRA is the basic theory from TAM. TAM turns into perceived usefulness and perceived ease of use directly affect behavioral intentions to use (behavior intention to use) and ultimately indicate actual system use. 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. Researchers can find out why a system may not be accepted by the user, so it is necessary to take corrective action to overcome it (Agung & Tanamal, 2021).

According to Davis (1989), the main purpose of TAM is to establish a basis for exploring the influence of external factors on beliefs, attitudes (personalization), and goals of computer users. TAM is based on Theory of Reasoned Action (TRA) proposed by Ajzen and Fisbein (1980). Based on TRA, users of accounting information systems are determined from individual perceptions and attitudes which will ultimately shape a person's behavior in the use of an accounting information system. 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, 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 (ease of use), namely the user feels ease in using the technology. operate the system and can understand independently (Davis, 1989).

#### 2.1.1. Perceived Usefulness

Perceived usefulness is the degree to which a person believes that using a system will improve his performance (Tirtana & Sari, 2014). 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 (Davis, 1989).

#### 2.1.2. 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 (Noviandini, 2012). 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).

### 2.2 *Electronic Medical Record System*

One of the parameters to determine the quality of health services in hospitals is data or information from good and complete medical records. Medical records have a function to maintain and provide information for all parties involved in providing health services to patients. Electronic medical records are lifelong patient medical records in electronic format about a person's health information written by one or more health workers in an integrated manner in every meeting between health

workers and clients. Electronic medical records can be accessed by computers from a network with the main purpose of providing or improving efficient and integrated health care and services (Potter & Perry, 2009). One of the uses of information technology (IT) in the health sector that is becoming a trend in health services globally is electronic medical records. In Indonesia, it is known as electronic medical record (RME). RME has been widely used in various hospitals in the world as a substitute or complement to paper health medical records (Khasanah, 2020).

The development of RME cannot be avoided and must also be accepted by medical record users consisting of medical recorders, doctors, nurses and other health workers. The advantages of using RME are: data can be stored more structured, and the data search process is much easier and faster (Sabarguna, 2008). The advantages of electronic medical records will provide many benefits for more effective and efficient medical record management. Although financially the development of electronic medical records requires no small investment, it will provide benefits in the future. Richard (2012) states that one of the benefits of using electronic medical records include providing good service, low financing and competitive advantages in the future (Khasanah, 2020).

### *2.3 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 improvement and disease prevention services carried out through emergency outpatient services and medical treatment services. teeth and mouth which is also used as a means of learning process Education and research for the dental health profession and other health workers and is bound through collaboration with the Faculty of Dentistry (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).

## **3. Research Methodology**

This study uses a descriptive research method with a quantitative approach. Descriptive research is research to describe things that happen or are studied in a population. The population in this study were Electronic Medical Record (RME) users at RSGMP Unsoed including students of the dental profession for the 2020 period. In this study, samples were taken from the entire population, namely 30 students of the dental profession for the 2020 period, RME users. To obtain data in this study, data collection techniques were carried out by distributing questionnaires. Data analysis was performed with descriptive statistics.

### 3.1 Hypothesis

There is a response to the Use of the Electronic Medical Record System at RSGM Unsoed Based on the Technology Acceptance Model (TAM)

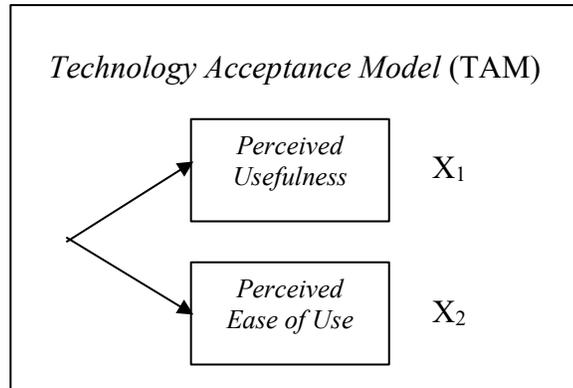


Figure 1. Research model

## 4. Results

On the characteristics of the respondents, there are 30 respondents consisting of students of the dental profession for the 2020 period. Data regarding the results of the respondent's questionnaire are shown in table 4.1 below:

Tabel 1. Respondents' Answers Regarding the Usefulness (X1)

No	Strongly agree		Agree		Questionable		Disagree		Strongly Disagree		Total	
	F	%	F	%	F	%	F	%	F	%	F	%
1	12	40	17	56,67	1	3,33	0	0	0	0	30	100
2	11	36,67	11	36,67	8	26,67	0	0	0	0	30	100
3	9	30	16	53,3	4	13,3	1	3,33	0	0	30	100
4	4	13,3	11	36,67	12	40	3	10	0	0	30	100
5	6	20	10	33,3	9	30	5	16,67	0	0	30	100
6	10	33,3	15	50	4	13,3	1	3,33	0	0	30	100

From the table above, it is stated that respondents are more likely to agree with the statement items made by researchers regarding the usefulness of the RSGM electronic medical record system. Nearly 55% more people agree. In the ease of use variable (X2), there are 6 questions that are submitted to the respondents. The presentation of respondent's answer data based on the ease of use variable (X2) which is the independent variable in this study is as follows:

Tabel 2. Respondents' Answers Regarding Ease of Use (X2)

No	Strongly agree		Agree		Questionable		Disagree		Strongly Disagree		Total	
	F	%	F	%	F	%	F	%	F	%	F	%
1	4	13,3	19	63,3	5	16,67	2	6,67	0	0	30	100
2	4	13,3	14	46,67	11	36,67	1	3,33	0	0	30	100
3	6	20	15	53,3	9	30	0	0	0	0	30	100
4	8	26,67	14	46,67	8	26,67	0	10	0	0	30	100
5	10	33,3	13	43,3	7	23,3	0	0	0	0	30	100
6	9	30	16	53,3	5	16,67	0	0	0	0	30	100

In terms of ease of use, it is stated that respondents are more likely to agree with the statement items made by researchers regarding the ease of use of the RSGM electronic medical record system. Nearly 50% more people agree.

To see the description of the results of the questionnaire, statistical descriptive tests were carried out including:

Table 3. Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Perceived Usefulness	30	23	50	48.45	4.140
Perceived Ease of Use	30	25	50	46.43	3.785
Valid N (listwise)	30				

The usability variable got the highest mean of 48.45, standard deviation of 4.140. This means that almost all respondents answered with the option of strongly agree. As a determinant of whether a statement is valid or not, a correlation can be made between the calculated r and the r table. If  $r \text{ count} > r \text{ table}$ , the statement is substantial, but if  $r \text{ count} < r \text{ table}$ , the statement is considered invalid. The results of the survey instrument validity test were 12 questions (X1-X12) for each variable with 30 individual samples. Based on the test results, the connection value or Pearson relationship value on all matters for the poll consists of 12 questions that are worth more than rtable, which is 0.176. So it is very possible to reason that every question in this study is declared valid.

Table 4. Reliability Statistics

<b>Reliability Statistics</b>	
Cronbach's Alpha	N of Items
.943	34

The results showed that the value of Cronbach's alpha for a total value of 0.943, so it can be concluded that the statements in the questionnaire are all reliable variables because they have Cronbach's alpha values greater than 0.7

To see the correlation between two variables, a correlation test model is used as below:

**Table 4. Reliability Statistics  
Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.960	.964		2.032	.043
	Perceived Usefulness	.248	.034	.263	7.302	.000
	Perceived Ease of Use	.337	.035	.328	9.722	.000

The t-test resulted in a t-test for the usefulness variable of 7,302, the convenience variable of 9,772. Each one is higher than t-table (1.960) and if you pay attention to sig. the value is below 0.05 (tolerance point) then the usability, convenience variable has a significant effect. The test resulted in an r value of 0.000, then concluded  $r \leq 0.000 < 0.05$ . This shows that there is a relationship between these factors.

## 5. Discussion

Evaluation of information systems is a real effort to find out the actual condition of an information system implementation. With this evaluation, the achievement of information system implementation activities can be identified and the performance of its implementation can be improved (Yusof et al., 2008).

- Evaluation of the Implementation of the RME System on the Perceived Usefulness Evaluation of the RME system is an attempt to find out the actual state of an RME system implementation. Evaluation of an information system is a real effort to find out the actual condition of an information system (Yusof et al., 2008). The TAM questionnaire was prepared in accordance with Davis's (1989) theory that perceived usefulness is defined as the extent to which a person believes that the use of a particular system will improve his or her performance. The concept of perceived usefulness shows user confidence in the contribution of information systems to user performance (Davis et al., 1989). The results of the questionnaire on perceived usefulness of use show that from the 6 statement items, the total score based on the Likert scale is in the good category, which

means that the RME system is useful and helps performance. All of the valid statement items are also in the good category. The results of the statement items are that according to their perception, RME makes their work easier, RME makes it easier to control their work, RME makes their working time more effective, the use of RME increases work productivity in hospitals, the use of RME increases effectiveness in doing work in hospitals, the use of RME makes their work faster, and RME improves the quality of their work. Overall RME provides benefits in completing tasks in the hospital. In accordance with the results of the questionnaire, the users of the RME system at RSGM Unsoed considered that this application was beneficial for them, but the benefits were still not felt optimally. . This is in line with the results of interviews, which said that if this system works well, it will produce benefits for their work in providing services to patients. This is related to the modules in the electronic medical record according to the needs of patient care, so that when it runs optimally it will really help their work. So it was concluded that the suitability of the electronic medical record system and the needs of the user's work would facilitate their work (Lin *et al.*, 2011; Melas *et al.*, 2011).

- Evaluation of the Implementation of the EMR System on Perceived Ease of Use  
Perception of ease of use in TAM (Technology Acceptance Model) theory states that perceived ease of use is defined as the degree to which a person believes that using an information system is easy and does not require the user's hard effort to use it. The concept of ease of use will give the understanding that if an information system is easy to use, users will tend to use the system. The ease of using an information system will create a feeling in him that the system is useful and provides a comfortable feeling when working with the system. According to Davis *et al.*, (1989), perceived ease of use is considered as one of the significant determinants of technology acceptance. Meanwhile, Teo (2009), when users feel confident that the technology is free from effort, will increase one's intention to use and adopt it (San and Yee, 2013).

## **6. Conclusion**

Based on the results of research and discussion, it can be concluded several things as answers to the problems of this research. The application of RME according to user perceptions is useful and provides convenience for the respondent's work. The concept of perceived usefulness shows user confidence in the contribution of information systems to user performance. The ease of using an information system will create a feeling in him that the system is useful and gives a comfortable feeling when working using the system.

## **References**

- Peraturan Menteri Kesehatan Republik Indonesia Nomor 1173/MENKES/PER/x/2004 Tentang Rumah Sakit Gigi dan Mulut.
- Peraturan Menteri Kesehatan Republik Indonesia Nomor. 269/MENKES/ PER/III/2008, Rekam Medis/Medical Record.

### Journal article

- Agung, A., & Tanamal, R. (2021). Pengaruh Persepsi Kegunaan, Persepsi Kemudahan, Kepuasan, Kualitas Sistem, dan Pemahaman Wajib Pajak Terhadap Minat Wajib Pajak Orang Pribadi (WPOP) Dalam Penggunaan E-Filing. *Teknika*, 10(2), 128–136. <https://doi.org/10.34148/teknika.v10i2.368>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly: Management Information Systems*, 13(3), 319–339. <https://doi.org/10.2307/249008>
- Khasanah, M., 2020, Tantangan Penerapan Rekam Medis Elektronik Untuk Instansi Kesehatan, *Jurnal Sainstech Politeknik Indonusa Surakarta*, 7(2): 50-53.
- Lin F, Fofanah SS, Liang D. Assessing citizen adoption of e-Government initiatives in Gambia: A validation of the technology acceptance model in information systems success. *Gov Inf Q*. 2011;28:271–279.
- Melas CD, Zampetakis LA, Dimopoulou A, Moustakis V. Modeling the acceptance of clinical information systems among hospital medical staff: An extended TAM model. 2011;
- Miles, P.M., Covin, G.J. & Heeley, B.M. (2000). The relationship between environmental dynamism and small firm structure, strategy, and performance. *Journal of Marketing Theory and Practice*, 10, 63-74.
- San ANC, Yee CJ. The Modified Technology Acceptance Model for Private Clinical Physicians: A Case Study in Malaysia, Penang. 2013;
- Setyawan, M. B. (2015). Analisis Faktor-Faktor Yang Mempengaruhi Adopsi Cloud Computing Di Rumah Sakit Muhammadiyah. *Simetris : Jurnal Teknik Mesin, Elektro Dan Ilmu Komputer*, 6(2), 197. <https://doi.org/10.24176/simet.v6i2.452>
- Tirtana, I., & Sari, P. S. (2014). Analisis pengaruh persepsi kebermanfaatan, persepsi kemudahan dan kepercayaan terhadap penggunaan mobile banking. *Prosiding Seminar Nasional Dan Call for Paper Program Studi Akuntansi-FEB UMS*, 25, 671–688. <https://publikasiilmiah.ums.ac.id/xmlui/handle/11617/4589>
- Yusof MM, Kuljis J, Papazafeiropoulou A, Stergioulas LK. An evaluation framework for Health Information Systems: human, organization and technology-fit factors (HOT-fit). *Int J Med Inf*. 2008 Jun;77(6):386–98.

### A book

- Potter, P. A., & Perry, A. G. (2009). *Fundamental of Nursing*. Sydney: Amy Hall.