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Evaluation of Employee Acceptance of the IMS Application at PT Sarana Utama Adimandiri: TAM Approach

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Abstract

PT Sarana Utama Adimandiri (SUA) which is engaged in the construction sector implements an IMS application in its purchasing activity. This paper aims at describing the evaluation of employee acceptance of the information system at PT SUA using the Technology Acceptance Model (TAM) approach. TAM has two main variables i.e: perceived usefulness and perceived ease of use which function as independent variables, while the dependent variable is acceptance of IT (integrated management system/IMS applications). The population and sample in this study were all employees of PT SUA, which was used to obtain research data through the distribution of structured questionnaires. The instrument was tested using validity and reliability tests, and data was analyzed by using spearman rank test. This study suggests that there is a strong effect of perceived usefulness and perceived ease of use on acceptance of IT.

Keywords: System, Information, Evaluation, Technology, TAM.

Introduction

The development of computer technology is indeed endless. People are moving towards literacy and computer skills. In the last decade, the implementation and utilization of the internet and information technology has become important tools in facilitating user tasks [1]. Information technology has changed the physical boundaries that exist in society, so that it is able to change conventional jobs into modern jobs. In addition, with the development of the internet, there have been some changes in the configuration of work from the manufacturing industry to an information-based industry. Rogers in Ahmad (2013) states that an information society is a society in which most of its employment works in the information sector, and information has become the most important element in life. So that brings up the term "The world at your finger" [2].

Information society can also be defined as a society that has a high level of intensity of relationship with information to support daily life, which takes place in most of the activities of its citizens, organizations and workplaces. People use technology for various personal, social, educational, and business purposes. Having the ability to send and receive digital data quickly without being limited by distance is one of the characteristics of information technology [3]. There are three main components of the concept of information technology: brainware, software and hardware. Information society falls into the category of brainware, individuals who run the technology and make it operate.

In the application of a company's technology, a brainware or technician who runs a technology must be able to take advantage of the technology. Utilization of technology is generally in the field of how to direct the business flow by implementing technology. PT Sarana Utama Adimandiri is a company engaged in the provision of mechanical and electrical goods and services for Mass Rapid Transportation (MRT) Jakarta.

In 2015, PT Sarana Utama Adimandiri started implementing management information system in the form of an Integrated Management System (IMS) application that is used to carry out purchasing activities. This application is web-based that can be accessed anywhere and anytime enabling all users to make requests for goods and services independently. At the end of the purchase flow there will be approval from the supervisor. Jogiyanto states that the system is a network of procedures that work together to achieve predetermined goals. In addition, the system can be defined as a set of elements that interact with each other to achieve goals [4].

Management Information System (MIS) is an information system that does not only perform transaction processing required by the organization, but it also provides **information. Information** is needed to support organizational decision making activities [5]. Anggadini defines information as the result of data processing, but not all results from data processing can be referred to as information. There are three things that can be considered related to information such as information is the result of data processing, gives meaning, and provides benefits [6].

To be an information; data or facts need to be processed first. It should be undergoing verification or transformation to be called information. McCreadie and Rice provide several summaries related to the concept of information, including: Information is a place to store knowledge and is part of communication [7]. An information system is a system within an organization that meets organizational needs such as daily transactions, supporting operations and providing information to outsiders (stakeholders) [8].

There are various types of management information systems (MIS). Ahmad divides the types of management information systems into 4 levels: upper, middle, lower and operational levels. The IMS system is applied in the operational level category, because it is used for daily operational activities. The staffs at PT SUA work routinely to input purchase transactions which are included in the Transaction Operational Process (TPS) category [9].

One of reason that support companies to move forward with implementation information systems/information technology (IS/IT) is because technology can increase company productivity [10]. However, failure in information system implementation usually occurs due to its incompatibility with business processes and information needed by the organization. [11] defines an IS as a computer system embedded in an organization. Information systems are not purely technical systems, but also social systems[12].

Information system evaluation activities need to be carried out. One of the key success factors of the implementation of information technology is user perception. Humans are important factors in the implementation of information systems because company decisions are often based on various information that is processed and summarized into useful data by human resources in the organization [13].

The concept of Technology Acceptance Model (TAM) was developed by F. Davis in 1986. Surendran (2012) proposed that TAM is one of the most well-known research methods used to measure the extent to which a system and technology is accepted by an individual or group of people [14]. TAM model is a development of the Theory of Reason Action (TRA) model introduced by Fishben and Ajzen in 1975 with the premise that a person's reactions and perceptions will determine the person's attitude and behavior. Davis added two main constructs into the model which are the perceived usefulness and perceived ease of use, both of which are believed to predict attitudes or behavior in using technology. If the user's perception is positive, it will cause "interest" in using a system leading to "actual use" of the application [15] [16].

Davis defines perceived ease of use as "the degree to which a person believes that using a particular system would be free of effort". Meanwhile, perceived usefulness refers to "the degree to which a person believes that using a particular system would enhance his or her job performance"[17]. There are 2 other indicators in TAM model, namely: behavior intention and actual system use. The author refers to Gahtani's (2001) opinion suggesting that basically the construct of behavior intention and actual system use in the TAM model can measure IT acceptance[18].

Based on the background above, it is necessary to evaluate the acceptance of technology at PT Sarana Utama Adimandiri. This paper aims to explain the influence of perceived easy to use and perceived usefulness on acceptance of IT based on TAM model by Davis.

Method

This research employs a quantitative approach using a survey method. The data was obtained from a structured questionnaire given to IMS users. This study will describe the influence of the independent variable to the dependent variable. The sampling method used is non-probability sampling in the form of saturated sampling, where the entire population is sampled [19]. This study relates to the perception of employees at PT Sarana Utama Adimandiri, so the questionnaire used a Likert scale. The bigger the point the more positive it is. The explanation is as follows:

1. Strongly Disagree
2. Disagree
3. Agree
4. Strongly Agree

There are three variables included in this study, the **perceived usefulness** and **perceived easy to use** as independent variables and **acceptance of IT** as dependent variable.

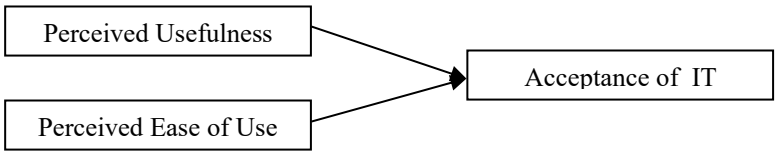

Figure 1 Research Model
Source: Surahman (2008)

Davis (1989) explained the indicators of **Perceived Usefulness** consists of work more quickly, job performance, increase productivity, effectiveness, makes job easier, useful. Meanwhile, the indicators used to measure **Perceived Ease of Use** technology are ease of learn, controllable, clear and understandable, flexible, easy to become skillful, easy to use [20]. On the other hand, adopting the study by Surahman (2008), the **acceptance of IT** was measured using indicators of behavioral intention in using technology (BI) and actual use of technology (AU). This study included 8 indicators of acceptance of information technology [21]. Behavioral intention refers to the desire to use technology in the future or outside of working hours. Actual usage refers to the daily users by the PT SUA employee whether frequently or not. Two stages of data analysis were used. Firstly, validity and reliability test, and secondly the non-parametric test. All tests employ SPSS version 21.

Hypothesis

H1. There is a correlation between perceived usefulness and the acceptance of information technology

H2. There is a correlation between perceived easy to use and the acceptance of information technology

Results and Discussion

A. Respondent Description

This section presents respondents' description as shown in Table 1.

Table 1 Respondent Description

Indicator		Freq.	Percent (%)
Gender	Male	19	62,75
	Female	32	37,25
Level of Education	High School	6	12,00
	Diploma (D3)	7	14,00
	Bachelor (S1)	34	66,00
	Master	4	8,00
Working Experience	1-2 years	19	37,25
	3-5 years	19	37,25
	> 5 years	13	25,49

Based on the table 1, it is shown that 37.25% or 19 people are female and 62.75% or 32 people are male. In terms of education, the majority of IMS users which are 34 respondents (66%) hold Bachelor Degree. Moreover, there are 13 users have worked at PT SUA for more than 5 years and the remaining 38 persons were shared equally to 1-2 years and 3-5 years.

B. Validity Test & Realibility test

1. Validity test

Cooper & Schindler in Zulganef stated that validity is a measure that indicates that the variable being measured is really the variable that the researcher wants to examine [22]. The test results can be seen in the following table;

Table 2 Validity Test

Perceived Usefulness		*Perceived Ease of Use*		*Acceptance of IT*		result
Indicator	r test	Indicator	r test	Indicator	r test	
X1.1.	0,760	X2.1.	0,767	Y.1.	0,894	Valid
X1.2.	0,778	X2.2.	0,811	Y.2.	0,883	Valid
X1.3.	0,680	X2.3.	0,906	Y.3.	0,924	Valid

X1.4.	0,847	X2.4.	0,734	Y.4.	0,888	Valid
X1.5.	0,763	X2.5.	0,848	Y.5.	0,906	Valid
X1.6.	0,819	X2.6.	0,829	Y 6.	0,876	Valid
				Y.7.	0,729	Valid
				Y.8.	0,670	Valid

Table 2 shows that the validity value of the 3 research variables on the use of IMS. The calculated r value for 3 variables with each of the 6 indicators above is above the **r-table** value of **0.2759**. So, it can be inferred that 3 research variables are valid.

2. Reliability test

According to Ghozali, reliability is a tool to measure a questionnaire which is an indicator of a variable or construct. The reliability test refers to the degree of stability, consistency of predictive and accuracy [23]. The level of reliability is empirically indicated by a number called the coefficient of reliability. The research instrument can be said to be reliable if the cronbach's alpha value is above 0.60. The test results can be seen in the following table;

Table 3 Reliability test

Variable	*Cronbach's Alpha*	result
Perceived Usefulness (X1)	0,985	Reliable
Perceived Ease of Use (X2)	0,978	Reliable
Acceptance of IT (Y)	0,938	Reliable

Table 3 above portraits that the statements in the questionnaire are reliable because it has a cronbach's alpha value > 0.60. This indicates that each statement item used is able to obtain meaningful consistent data if the statement is submitted again.

C. Correlation Test

This study employed non-parametric test because the results of the normality test did not meet the requirements. The correlation between the dependent and independent variables using the Spearman Rank test is provided in Table 4 below:

Table 4 Spearman Rank Test Results

			PU	PEOU	Acceptance of IT
Spearman's rho	PU	Correlation Coefficient	1.000	.788**	.713**
		Sig. (2-tailed)	.	.000	.000
		N	51	51	51
	PEOU	Correlation Coefficient	.788**	1.000	.748**
		Sig. (2-tailed)	.000	.	.000
		N	51	51	51
	AcceptanceIT	Correlation Coefficient	.713**	.748**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	51	51	51

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4 indicates that that there is a strong and some direction correlation between perceived usefulness (PU) and acceptance of IT. This can be seen from the positive coefficient number of 0.713. Thus, it can be inferred that the higher the perception of usefulness, the higher the level of acceptance of information technology. In addition, a sig value obtained was of 0.00, which was lower than 0.05, indicates that there is a significant relationship between PU and Acceptance of IT.

Furthermore, it can be concluded that there is a strong and some direction correlation between perceived ease of use (PEOU) and acceptance of IT. This can be seen from the coefficient number of 0.748 which is positive. Thus, it can be concluded that the higher the perception of convenience, the higher the level of acceptance of information technology. In addition, a sig value of 0.00 was lower than 0.05 indicating that there is a significant relationship between PEOU and Acceptance of IT.

D. Discussion

Based on the results of the calculations above, it can be interpreted that the test results support the existing hypothesis. This can help companies, especially information system designers, to assess whether the IMIS system has met the needs of both the company and the users. There are inputs from IMS users that need to be considered such as (1) the security system that is not guaranteed, and (2) long loading times if the internet is poor. The security system needs more attention since it is related to purchasing data including customer and vendor data.

Companies must comply with information security in IMS applications. Some issues that are frequently occur are hacking, virus, worm, Trojan, spoofing, sniffing, denial of service, spay, malware, mobile malware, cryptovirology, etc. The damage can be very severe. By exploiting security weakness, attackers can gain access to computer systems without the user's knowledge. Information Security refers to the policies, procedures, and technical measures used to prevent unauthorized access, alteration, theft, or physical damage to information systems. David icove [24] divided the security system into 4 parts, namely; physical security, data and media security, user-related security and operation security. Information security cannot be described as solely a technical problem. Computers are operated by people and this means that information security is also a human factor issue. It is therefore suggested, for information and data breaches to be curbed, organizations must adopt a holistic security framework by incorporating the human factor [25].

From 4 David Icove classifications, this study suggests that the most dangerous threats are data and media security as well as external threats for IMS users at PT Sarana Utama Mandiri (SUA). This external threat uses the carelessness of IMS users who have access rights to existing information systems. Customer and vendor data are information that can be capitalized as an important asset for the company. This asset needs to be protected for information security. If there is leakage and failure of information in the system, it can result in losses financially as well as in productivity of the company.

Conclusion

Based on the results of the discussion, a conclusion can be drawn as follows:

1. There is a strong and some direction relation between perceived usefulness (PU) and acceptance of IT with a positive coefficient value of 0.713.
2. There is a strong and some direction relation between perceived ease of use (PEOU) and acceptance of IT with a positive coefficient of 0.748.
3. The need for more attention on the security system in the Integrated Management System (IMS) application. This application has information related to customers, vendors, payment transactions which are important assets for this MRT contractor company.

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