Employees’ Perception of Usefulness and Ease of Use of SAP Information Systems: An application of the Technology Acceptance Model (TAM)

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**Abstract.** This article aims to examine the relationship between perception of ease of use, perception of usefulness and information technology acceptance of SAP application. This study use Davis Technology Acceptance Model (TAM) as a theoretical framework. The method used is descriptive analysis method with a quantitative approach, that is research which describes data collection on the result of the observation that has been done. Data were collected from employees working in the spare part Departments. The findings concluded that the use of SAP Information Systems are determined by employees’ perceptions on ease of use and usefulness of the system. This study expands the existing literature by providing additional empirical supports on the use of Technology Acceptance Model within the context of Indonesia. The results offer an insight into the factors contributing to the acceptance of SAP application. This is important to ensure a sustained usage of the system in the organisation. Information systems can help employees work more efficiently and effectively.

**Keywords:** Perception, Information System, Technology Acceptance Model (TAM)

**1 Introduction**

The internet has become a new communication tool that is used as an exchange of data. The number of global Internet users increased from 23.2% in 2008 to 38.1% in 2013. With a global population of internet users totaling 2.7 billion in 2013. Then in 2014, the number of users increased to 2.9 billion and most recently in 2015, internet users increased to 3 billion. [1]. Information and Communication Technology or ICT is a media that supports data processing, information, storage, transmission, and communication through various types of facilities, especially the internet. The flexible forms of ICT enable technology not only to bring many benefits to businesses and organizations but also become part of the movement of the organization's activities. The willingness of people to use ICT is influenced by social interaction and human factors. The development of ICTs that so fast causes various forms of knowledge and literacy to be obtained by humans without knowing the boundaries of the place (e.g., Home, school, work, and community) [2].

The influence of advances in information technology on education is to open many learning methods, the community is not required to be present in the class. Information technology has made information accessible from anywhere and by / to all groups of people. Education has reached much of the world and ICT has become an integral part of human life. [3] In addition, the rapid development of technology, especially the use of the internet and computer technology, has brought tremendous changes to the economy, society, and culture. The basic activities used in business have evolved from manual accounting to sophisticated information technology. [4]

The influence of ICT also spread to various companies in Indonesia, one of which was PT United Tractor. PT United Tractors is a company engaged in the largest distributor of heavy equipment in Indonesia and has thousands of employees spread across the Head Office and branches in all regions of Indonesia. Within the organizational structure of PT United Tractors is the Product Support and Operations Department. Then under this Department, there is the Part Division Unit which has the main activities in the process of selling and buying. To carry out these trading activities, employees are required to use the SAP (System Application Product) application. To access the SAP system United Tractor employees must have a single identity and password. An information system will run well if it receives acceptance from employees. The author is interested in knowing the perception of employee acceptance of SAP information system applications using the Task Acceptance Model (TAM) model.

**2. LITERATURE REVIEW**

**2.1 Task Acceptance Model (TAM)**

In the field of information system studies, there is a need for researchers to know the actual level of use or acceptance of IT systems in an organization. Some methods used to measure acceptance of an information system [5], i.e:

a. Theory of Reasoned Action (TRA) [6] was developed by Icek Ajzen and Martin Fishbein. TRA is a model provide a conceptual framework predict individual performance in behaviour. In the TRA concept mentioned that there were two factors determine the intention to behave, viz individual attitude to behavior (attitude toward behavior) and subjective norms (subjective norms)

b. Unified Theory of Acceptance and Use of Technology (UTAUT) [7], In the UTAUT research model, the intention to behave (behavioral intention) and behavior to use technology (use behavior) is influenced by people's perceptions of performance expectations, business expectations ( efficiency expectancy), social influence, and facilitating conditions which are moderated by gender (gender), age (age), experience (voluntary), and voluntariness.

c. Theory of Planned Behavior (TPB), is the development of the Theory of Reasoned Action (TRA). In this TPB a construct of perceived behavioral control was added. This construct explains that an individual has a great possibility to adopt a behavior if the individual has a positive attitude towards the behavior and gets approval from other individuals who are close and related to the behavior and believe that the behavior can be done with [8]

d. Task Acceptance Model (TAM) is a model for measuring the acceptance of an information system by a user or users. TAM was developed by Davis (1989) who adapted the Theory of Reasoned Action (TRA) model made by Ajzen.

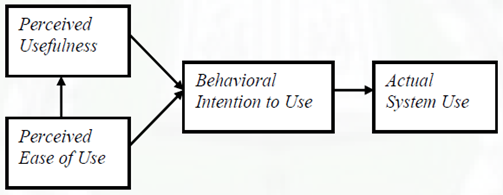


Figure 1. Technology Acceptance Model (Davis et.al 1989)

In general, there are four components of TAM, namely: ease to use, perception of usefulness, attitudes toward the use and behavioral intention to use [9]. In this paper, the author will only focus on the perception of ease to use, usefulness perceptions.

**2.2. Perceived Usefulness (PU)**

In addition, Perceived of Usefulness (PU) [10] can specifically be defined to what extent an information system can improve individual performance on the job. In general, individuals tend to adapt to new technologies if they find it useful to achieve certain goals and help them to do their jobs better.

**2.3. Perceived Ease of Use (PEOU)**

Davis (1989) defines PEOU as the extent to which users believe that using the system is free of effort. PEOU, unlike PU, is more related to individual intrinsic motivation. The concept of perceived ease of use shows the level at which someone believes that the use of an information system is easy and does not require the effort of the user to be able to use it. This concept includes the clarity of the purpose of using an information and convenience system for users. In a study related to information systems, the higher of ease to use received by users information system, will increase level of perceived usefulness by the users of system. [11]

**3. METHODOLOGY**

The method used in this research is descriptive method of analysis with quantitative approach. Descriptive method of analysis is a method that aims to describe or give an idea of a research object that is examined through samples or data that have been. Descriptive research is a research conducted to determine the value of independent variables, either one or more variables (independent) without making comparisons or connecting with other variables [12]. In combining data, the author uses a questionnaire with the Likert Scale. Likert scale is used by researchers due to its simplicity in applying it to social science. Likert scale can be used in measuring individual collaboration by using variables: ideological understanding, perspective and training results. [13]. This questionnaire adopt from davis research. Responding in the research is SAP users in the Division of Spare Part Unit, responding to approve or disagree with those who ask researchers based on the perceptions of each respondent. The answer consists of four choices, namely: Strongly Agree (SS), Agree (S), Disagree (TS), and Strongly Disagree (STS). Scoring for Strongly Agree (SS) answers are given a value of 4, and so on decreases until the Strongly Disagree (STS) answer is given a value of 1.

**3. RESULTS AND DISCUSSION**

**3.1. Description of Respondents**

*3.1.1. Age Category*

Figure 2 Age

Based on the above data, it can be seen information related to the age of twenty-seven respondents. 88.9% of respondents or 24 people were in the age range of 20-30 years. Then as many as 7.4% or two people are at the age of 31-40 years and as many as 3.7% or one person is in the range of ages 41-50 years. It can be concluded that most employees at PT United Tractors who use SAP are still in the productive age category

*3.1.2. Sex*

Figure 3. Sex

Based on the data above, it can be seen information regarding the sex of 27 respondents. A total of 23 people or about 85.2% of the total respondents were men. Then as many as 4 people or around 14.8% are women. Based on the percentage value, the SAP information system is more widely used by male employees than women in the Spare Parts division.

*3.1.3. Education*

Figure 4. Education

Based on the data above, it can be seen the education data of SAP users at PT United Tractors. One person or 3.7% only attend high school education. Then, 16 people or 59.3% graduated from D3 education of the total respondents. Then, 8 people or 29.6% graduated from the S1 education level and 2 people or 7.4% graduated from the S2 education level. Based on the percentage value, average education taken by SAP users in the Spare Parts division is the Diploma III level.

*3.1.4. Job Position*

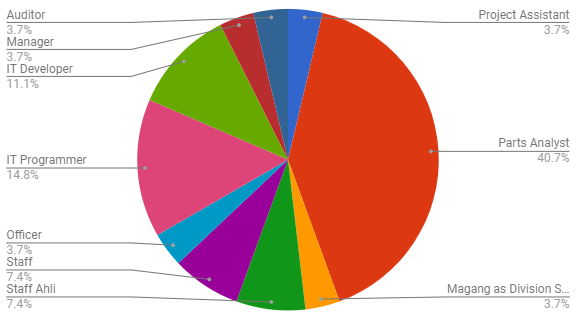


Figure 5 Job Position

Based on the data above, it can be seen the job position of SAP user in PT United Tractors. There is 3.7% or 1 person has the position of Auditor of the total respondents. Then, 3.7% or about 1 person has a position as Project Assistant from the total respondents. Then, 3.7% or 1 person has a position as manager, 11.1% or 3 people have positions as IT Developers from the total respondents. Then, 14.8% or 4 people have positions as IT Programmers and 3.7% or 1 person has a position as Officer of the total respondents. Then as many as 7.4% or 2 people have positions as Staff and 7.4% or 2 people have positions as an expert staff of the total respondents. Then, 3.7% or 1 person has the position as Internship Officer and 40.7% or as many as 11 people have positions as Parts Analyst in PT United Tractors' Spare Parts division.

*3.1.5. Length of Work*

Figure 6. Length of Work

Based on the data above, it can be known that the Working Length of SAP users at PT United Tractors. 40.7% or 11 new people have been working at PT United Tractors for less than 6 months. Then, 18.5% or 5 people have been working at PT United Tractors for 6-12 months and 40.7% or 11 people have been working at PT United Tractors for more than 12 months. Based on the percentage value, it is known that most SAP users come from employees who have been working for less than 6 months.

**3.2. Perceived usefulness of SAP Information Systems**

Figure 7 Degree of Perceived Usefulness

Based on the data above, it can be interpreted in general that SAP software is a management information system that is useful in processing activities, data collection in the Spare Parts unit. The six indicators mostly refer to the "Strongly Agree" answer. But there are 4 indicators that get the answer "disagree", the value is below <10%. SAP software is proven to be able to help users in completing work in the office, increase the effectiveness and productivity in work and can minimize errors and help to complete the work faster.

**3.3. Perceived ease of SAP Information Systems**

Figure 8 Degree easy to use

Based on the diagram above, it can be interpreted that basically, SAP software is a management information system that is easy to use and learn. The six indicators of related questions are easy to use, the majority give "Agree" answers. In short, SAP Software is proven to provide the information needed, easy to use and learn, and can be used on a different PC or computer

**3.4. Acceptance of IT**

Figure 9. Acceptance of IT

For IT acceptance indicators, the author adopted from the Actual Use indicators. Based on the diagram above, it was concluded that respondents accept the application of SAP information systems in the Spare Parts Unit. It can be seen from majority of the respondents that answers "agree".

**4. Conclusion**

Based on the research results above on the indicators of the Task Acceptance Model (TAM) with 3 indicators, namely; perceived ease to use, perceived usefulness and Acceptance of IT, majority of the respondents answered between "agree" to "Strongly agree". It can be simply stated that respondents accept the application of SAP management information systems at United Tractor. The discussion in this paper is a prefix, namely a descriptive explanation. This paper needs to proceed to the statistical discussion stage (multiple regression), especially the influence of PEOU and PU on IT acceptance.

# **References**

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| [1] | S. Obeid and M. A. Ahmad, "A theoretical discussion of electronic banking in Jordan by integrating technology acceptance model and theory of planned behavior.," *International Journal of Academic Research in Accounting, Finance and Management Sciences,* vol. 6, pp. 272-284, 2016. |
| [2] | T. K. Yu, M. L. Lin and Y. K. Liao, "Understanding factors influencing information communication technology adoption behavior: The moderators of information literacy and digital skills," *Computers in Human Behavior,* vol. 71, pp. 196-208, 2017. |
| [3] | G. Wikramanayake, "Impact of Digital Technology on Education," in *24th National Information Technology Conferenc*, Colombo, 2004. |
| [4] | M. Yusliza and T.Ramayah, "Determinants of Attitude Towards E-HRM: an Empirical Study Among HR Professional," *Procedia - Social and Behavioral Sciences,* vol. 57, pp. 312-319, 2012. |
| [5] | H. Chen, W. Rong, X. Ma, Y. Qu and Z. Xiong, "An Extended Technology Acceptance Model for Mobile Social Gaming Service Popularity Analysis," *Hindawi Mobile Information Systems,* vol. 2017, 2017. |
| [6] | D. Kurniawan, H. Semuel and E. Japarianto, "Analisis Penerimaan Nasabah Terhadap Layanan Mobile Banking Dengan Menggunakan Pendekatan Technology Acceptance Model Dan Theory Of Reasoned Action," *Jurnal Manajemen Pemasaran,* vol. 1, no. 1, pp. 1-13, 2013. |
| [7] | T. Hendrawati, "Analisa Penerimaan Sistem Informasi Integrated Library System (INLIS): Studi Kasus di Perpustakaan Nasonal RI," *Visi Pustaka,* vol. 15, no. 3, pp. 153-164, 2013. |
| [8] | N. N. A. Seni and N. M. D. Ratnadi, "Theory Of Planned Behavior Untuk Memprediksi Niat Untuk Berinvestasi," *E-Jurnal Ekonomi dan Bisnis Universitas Udayana,* vol. 6, no. 12, pp. 4043-4068, 2017. |
| [9] | N. Pindeh, N. M. Suki and N. MohdSuki, "User Acceptance on Mobile Apps as an Effective Medium to Learn Kadazandusun Language," *Procedia Economics and Finance,* vol. 37, pp. 372-378, 2016. |
| [10] | M. M. Misron, Z. A. Shaffiei, S. R. Hamidi and N. M. Yusof, "Measurement of User’s Acceptance and Perceptions towards Campus Management System (CMS) Using Technology Acceptance Model (TAM)," *International Journal of Information Processing and Management (IJIPM),* vol. 2, no. 4, pp. 34-46, 2011. |
| [11] | Z. A. T. R. A. M. M. &. I. A. Osama Isaac, "Perceived Usefulness, Perceived Ease of Use, Perceived Compatibility, and Net Benefits: an empirical study of internet usage among employees in Yemen," in *7th International Conference On Postgraduate Education*, Universiti Teknologi MARA (UiTM), Malaysia, 2016. |
| [12] | Sugiyono, Metode Penelitian Kuantitatif, Kualitatif dan R&D, Bandung: Alfabeta, 2009. |
| [13] | W. Budiaji, "Skala Pengukuran dan Jumlah Respon skala," *Jurnal Ilmu Pertanian dan Perikanan,* vol. 2, no. 2, pp. 127-133, 2013. |