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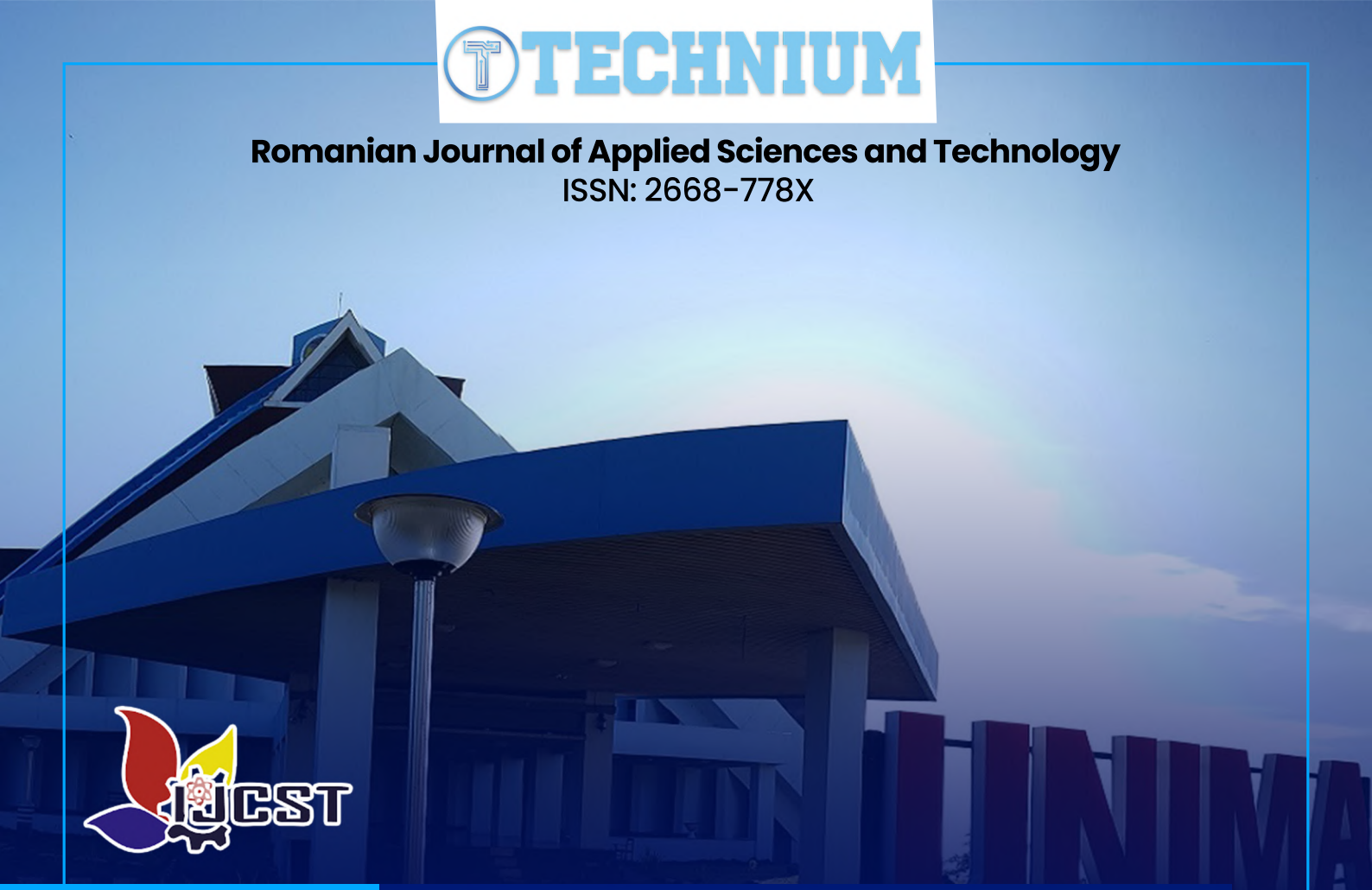

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Information Systems Analysis using the Technology Acceptance Model approach. Case Study: Faculty of Engineering, Manado State University

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ABSTRACT

The information system is a technology application that provides information using the web. The Faculty of Engineering, Manado State University is an educational institution that has implemented an Information System as one of the conveniences in the student administration process starting from information on course grades received in each semester, grade point average, to filling out the Semester Plan. The use of this information system also requires both positive and negative responses. TAM is a model that is often used to measure user acceptance. With the TAM theory, it can be seen the response from users of the information system. The results of the analysis show that Perceived Usefulness, Perceived Ease of Use, and Intention are the main variables that influence User Acceptance of the information system. So, based on the analysis using TAM it can be concluded that the TAM variables are able to be a determining factor in the level of user acceptance of information systems at the Faculty of Engineering, Manado State University.

Keywords : *Information System*, *Technology Acceptance Model*, *Manado State University*.

1. INTRODUCTION

The development of human life today has been accompanied by technology as a tool that provides many conveniences for human activities. The increasing number of technology users from all walks of life makes this tool very much needed as a fast information search engine. So that in terms of presenting information, technology is believed to be able to provide extensive sources and information [1] and can be accessed from anywhere.

Human activity today has made the system as a tool to achieve certain goals. The system is interpreted as a network that has interrelated procedures to achieve certain goals [2]. One of the system components is as a liaison between sub-systems. Then the linkages between the sub-systems produce output that is received by system users.

Lecture activities also use the system as an administrative convenience, starting from completing courses, grades from lectures each semester, to academic performance indexes. Students can easily get information every semester just by accessing the Information System website.

An information system is a technology application that presents information using the web. Information systems offer convenience for users to be accessed from anywhere. Academic information systems are application systems used by educational institutions to improve administrative services to their students [3]. The source of the information presented by the system is recognized as real and accurate information [4].

The Faculty of Engineering, Manado State University is an educational institution that has implemented technology in the student administration process every semester. The academic information system site used can be accessed via si.unima.ac.id. The appearance of the information system used in Manado State University, especially the Faculty of Engineering, can be seen in Figure 1.

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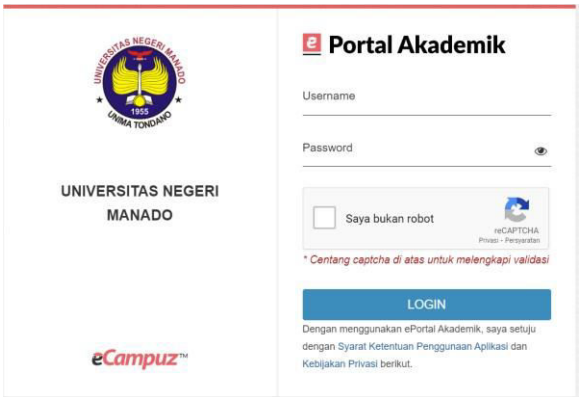

Figure 1. Display of the UNIMA Information System login page

The UNIMA information system has a function as a tool that integrates or combines various academic information as a means of information for users between academics in departments/study programs and faculties.

This information system provides services to several categories of users, one of which is students. Through this site, students can easily see the lecture grades they receive each semester, their achievement index, and fill out their Semester Plan Card. So with this site, it makes it easier for students to carry out the administration process every semester by utilizing the technology they have.

The use of this information system also requires both positive and negative responses. This response is of course generated by the user. This response also then becomes a recommendation for system developers, if users find it difficult to access the system, perhaps the developer needs to review and evaluate menus in the system that are considered complicated for users to understand. However, if the system is well received based on its function, then this system can be a recommendation for further research related to this topic.

To answer the responses generated by students as the target users, a special study is needed to fully assess the user's attitude towards accepting the system. Acceptance of technology can be interpreted as encouraging users to use technology in work that is designed as a support [5].

The complexity of adopting new technology was first popularized in the theory of diffusion and innovation by Rogers in 1983 [6]. Rogers summarizes the influence of user acceptance behavior as relative advantage, complexity, compatibility, trialability, and observability. TAM is a model developed and modified by Davis 1989 [7] from the theory of diffusion and innovation by Rogers (1983). Both of these theories measure user acceptance of technology based on three main factors, namely the user's trust factor in technology, the user's intention or intention factor, and the user's real attitude factor.

TAM is a model that is often used to measure user acceptance. TAM is analyzed through factors that are considered to have contributed to the acceptance of a particular technology application [8]. In this case, TAM will measure the level of user acceptance of the application of the information system. According to TAM, the benefits and ease of access to a system or technology are the most fundamental determining factors [9] of attitudes towards intention to use and use of technology [10].

2. RESEARCH MODELS

TAM is a type of technology acceptance study that is widely used by detecting the theory of user behavior [11]. In this case TAM predicts user behavior towards the technology used. So that the use of TAM is expected to be able to explain the behavior of information system users in the Faculty of Engineering, Manado State University.

The core variables of TAM that influence system user behavior are Perceived Usefulness and Perceived Ease of Use. Davis stated that "the degree to which a person believes that using a particular system would enhance his or her job performance". Davis's statement means that there is a level of confidence that using the system can improve one's work performance. The assumption is that if users believe that the system is useful, they will continue to use it. On the other hand, if users do not believe then they will definitely not use the system [11].

The second variable is Perceived Ease of Use which is interpreted as the user's belief that the system is easy to use. In this case, the perceptions of information system users within the Faculty of Engineering at UNIMA will be examined to see whether the system that has been implemented is easy to use and meets user needs or not.

Furthermore, from these two determining variables, the intentions of users of the information system can be measured. Then, from the intention, the usefulness of the system can be determined from the

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results of the analysis of the level of technology acceptance.

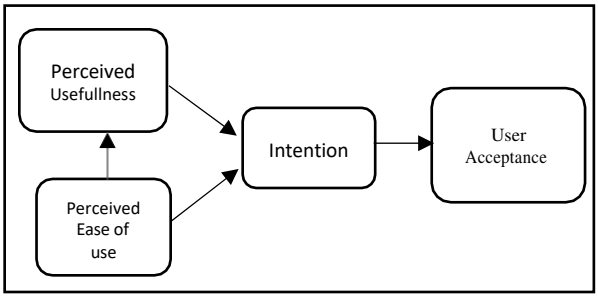

Figure 2. Research Model System Information

The hypothesis that can be formulated from the research model is:

Hypothesis 1: Perceived usefulness has a positive effect on user intention

Hypothesis 2: Perception Ease of Use has a positive effect on Intention

Hypothesis 3: Perception Ease of Use has a positive effect on Perceived Usefulness

Hypothesis 4: Intentions has a positive effect on User Acceptance

3. METHOD

The method applied in this research is a quantitative method with an ex-post facto approach. With research subjects are students of the Faculty of Engineering who are active. The study was conducted to determine the perceptions of system users based on the variables offered.

Research data was collected by distributing questionnaires to research subjects. Then the results of the questionnaire were analyzed to measure the relationship between the variables determined in this study using Multiple Linear Regression Analysis.

Before applying multiple regression analysis, a classic assumption test is first performed to ensure that the data to be analyzed is feasible to proceed to hypothesis testing.

3.1. Classical Assumption Test

The classic assumption test is carried out to see the feasibility of the relationship between variables in the research. In this research, three types of classical assumption tests were applied, namely the normality test, linearity test and multicollinearity test (see tables 1 and 2). The criteria for saying that research data is normal is if the significance value is greater than the alpha value (Sig. > α). Likewise with the linearity test, if the significance value in the test results has a value greater than the alpha value (Sig. > α), then the data is said to have a linear relationship. Furthermore, in the multicollinearity test, the data is said to be good or multicollinearity does not occur if the VIF value is less than 10 (VIF <10). After the three assumption tests are met, the data can be continued in multiple regression testing to answer the research hypothesis.

Table 1. Normality Test Results

Variable		Normality
Dependent	**Independent**	
INT	PU	0,958
	PEOU	0,905
PU	PEOU	0,107
UA	INT	0,846

Table 2. Linearity and Multicollinearity Test Result

Variable		Linearity	Multicol-linearity
Dependent	**Independent**		
INT	PU	0,105	1,000
	PEOU	0,083	1,000
PU	PEOU	0,403	1,000
UA	INT	0,374	1,000

The results of the classic assumption test explain that the Normality and linearity values for all direction variables have exceeded the alpha value (Sig. > 0.05). Furthermore, in the multicollinearity test in all variable directions, the VIF value was smaller than 10 (VIF < 10). So the analysis can continue with hypothesis testing.

3.2. Multiple Regression Analysis

The four hypotheses formulated in this study are answered by carrying out multiple linear analysis. The criterion is to see the significance value as a decision-making standard. If the Sig value > 0.05 then H0 is accepted, conversely if the results of the analysis prove that the Sig value <0.05 then H0 is declared rejected. A summary of the results of this analysis is described in table 3.

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Table 3. Simultaneous influence between variables

Variable		R	R^2	F_{count}	Sig.
dependent	Independent				
INT	PU	0.667	0.446	10,848	0.000
	PEOU				
PU	PEOU	0.572	0.327	13,591	0.001
UA	INT	0.626	0.391	17,998	0.000

The results of the multiple regression analysis test described in Table 2 show that the significance value for the Perceived Usefulness variable and the Perceived Ease of Use variable towards the Intention variable is 0.000, which means it is smaller than 0.05. The direction of the Perceived Ease of Use variable towards Perceived Usefulness has a significance value of 0.001 which also means it is smaller than 0.05. Furthermore, the intention variable for the user acceptance variable has a significance value of 0.000. It can be concluded that the multiple regression analysis states that all variable directions have a value lower than 0.05, which means that H0 is rejected.

This multiple regression analysis also produces the influence between independent and dependent variables partially by taking into account the t value. The direction of the variable is said to be significant if the value of tcount ≥ ttable. The ttable value corresponding to the number n is 1.697 at an alpha of 0.05.

Table 4. Summary of the influence between dependent and independent variables

Variable		B	Beta (β)	t_{count}	Sig.
dependent	Independent				
INT	PU	0.203	0.438	2,507	0.018
	PEOU	0.174	0.312	1,788	0.015
PU	PEOU	0.688	0.572	3,687	0.001
UA	INT	0.738	0.626	4,242	0.000

Based on the results of the analysis described in Table 3 in the first regression, namely the direction of the PU variable to IN has a value of $t_{count} > t_{table}$, namely 2.507> 1.697, the PEOU variable to IN is 1.788> 1.697, the PEOU variable to PU is 3.687> 1.697, and the IN variable is to UA is worth 4,242>1,697. These results state that all directions from the independent variable to the dependent variable already have a significant value.

This analysis also produces path coefficient values in each direction from the independent variable to the dependent variable. This path coefficient value is a standard regression coefficient that reflects the direct effect of the independent variable on the dependent variable in a model. The path coefficient values obtained can be seen in the image of the final model of technology acceptance (Figure 3).

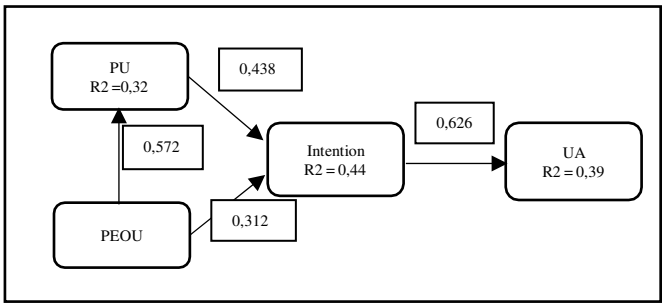

Figure 3. Final Model of User Acceptance of Information System

There are four hypotheses in this research, the results of which are obtained from analyzing the influence of the independent variables on the dependent variable partially, taking into account the significance value. The significance value obtained in the direction of the PU variable towards IN is 0.018 which means it is greater than 0.05, the PEOU variable towards IN is 0.015 which means it is greater than 0.05, the PEOU variable towards PU is 0.001 which means it is greater than 0.05, and the IN variable with respect to UA of 0.000 also means greater than 0.05.

Table 3. Summary of Hypotheses Test

Hi	Relationships	Effects	Sig. Value	B	decision
H1	PU →INT	direct	0.018	0.438	accepted
H2	PEOU →INT	direct	0.015	0.312	accepted
H3	PEOU →PU	direct	0.001	0.572	accepted
H4	INT →UA	direct	0.000	0.626	accepted

4. RESULTS AND DISCUSSION

This study aims to measure user perceptions regarding the application of technology, in this case the information system that has long been used within UNIMA, especially the Faculty of Engineering. The perceptions of users of this system are explored using the acceptance theory developed by Davis in 1989, namely the Technology Acceptance Model.

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The results of the analysis of the PU variable have a significant influence on Intention with a path coefficient value of 0.438 (hypothesis 1), PEOU has a significant influence on Intention with a path coefficient value of 0.312 (hypothesis 2), PEOU has a significant influence on PU with a gain The path coefficient value is 0.572 (hypothesis 3), and Intention also has a significant influence on UA with a path coefficient value of 0.626 (hypothesis 4).

Besides having a direct influence, each independent variable also makes an effective contribution to the dependent variable. That is, in the direction of the variable PU to IN, it contributes 43%, PEOU to IN is 32%, PEOU to PU is 57%, and IN to UA is 62% (see Figure 3).

5. CONCLUSION

The benchmark for user acceptance of the system proposed in this research is TAM Theory. After analysis, the results show that Perceived Usefulness, Perceived Ease of Use, and Intention are the main variables that affect User Acceptance of information systems [12, 15, 16, 17].

This is in line with Masrom's explanation [13] that attitude beliefs in the use of technology such as perceived ease of use and perceived benefits have a relationship, thus determining the intention of system users. This is in line with Masrom's explanation [9] that attitude beliefs in the use of technology such as perceived ease of use and perceived benefits have a relationship, thereby determining the intention of system users.

Research from Ramadhani & Monalisa [14] also revealed that by using TAM to analyze system acceptance can be obtained from usability and convenience factors. In this case, system users believe in and receive the benefits generated by the information system. Thus, these variables prove that TAM is a theory that has very good power to predict technology acceptance [18] so that TAM can be used as an appropriate recommendation in predicting acceptance of other technologies.

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