Self-Efficacy a Critical Factor of Information System: An Investigation using DeLone McLean

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***Abstrac*– This paper examines what influences Attitude towar usage (ATU) as the expectation of the application of Employee Information System (EIS) with high success rate, this research is observed through cognitive value using approach theory of information system success model DeLone and McLean Model (DMM) and affective value using the Human Resource quality theory (HRQ) and the Self-Efficacy (SE) model. The overall data was obtained by providing questionnaires to employees at the Higher Education and using WarpPLS and SEM as a method of analysis. This study found that, because the EIS was positioned as a compulsory system, our study showed that only Self-Efficacy would affect Attitudes toward the Use of EIS. The quality of human resources, as other Affective factors, has no effect on Attitudes towards usage of EIS.**

Keyword–Employee Information System, DeLone and McLean Model, Attitude toward Usage, Self-efficacy.

I. INTRODUCTION

News and information changing process from analog to digital format have been invading many Higher Education. Moreover, digitalization is a must, and it requires Higher Education to prepare the critical information system such as Communication and Information Service (CIS) which can simplify their employee's workload.

Employee Information Sistem (EIS) is a vital information system which built for reducing employee's workload to fix employee management issues. In a short, Employee Information Sistem (EIS) can be used to raise employee's performance [1] [2] [3].

The previous scholar reported that many advantages could be obtained. However many studies show that some treatment should be performed. Therefore some research should be conducted before. Since applying EIS can be failed when it is utilized because there is retention from some employee who is doesn't able or doesn't want to re-learn something digitalized. Age and education background is an example of the understanding gap about EIS implementation at the Higher Education.

This research is aimed to investigate the specific problems at implementing EIS. The structured point of view also is performed particularly about implementation EIS and the Higher Education, by using DeLone and McLean Model (DMM) theory [4] [5] which is modified by other researchers [1] [2] [3] [6] [7] [8] [9]. It is crucial and common to get an appraisal from an employee who is working with EIS at the Higher Education, so Attitude toward Ussage (ATU) has to be highlighted [10] [11] [12] [13] [14], especially for limited research in Higher Education. Shortly, is research is aiming for testing and analyzing empirical evidence about factors which influencing ATU to EIS.

II. LITERATURE REVIEW

At the beginning of the information success study, the system applied in the organization is commonly decided to succeed or fail to supply. In many research objects, there is a lot of evidence about successful information system applied research using ISS DeLone dan McLean model theory [4] [5]. ISS DMM is a model adoption framework to provide a definition of success in the application of IS that comprehensively covers many different perspectives to evaluate IS, then provides appropriate action recommendations [6] [7]. It is vital that Investation of Information Technology (IT/IS) should be aligned to the operation in the organization. The owner expects that the goals of the implementation are achieved correctly. However, there are many problems IT/IS regarding investation of IT/IS in organizations, so the application of IT/IS fails. It is caused by retention of the user. The previous researchers show how important the examination of user's behavior. Furthermore, the user's behavior should be viewed as the usefulness and affective point of view.

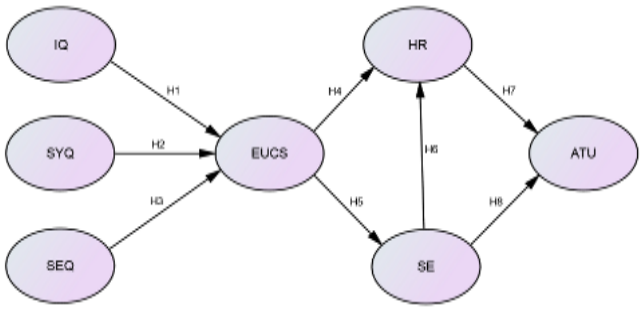
According to the problem of finding strong factors of IT/IS, many portions, particularly on the personal aspect, should be taken into consideration. This portion includes user's satisfaction about the system applied [15] [16], personal human resource qualities [17], the ability to believe

about their skill to finishing their works [18] [19] and their attitude about IT/IS applied. [10] [11] [12] [13] [14].

According to the result of the previous researcher, this study is developed and performed. Furthermore, the some of them are used as a foundation of the model when the investigation is done.

III. Research Method

The variables compiled obtained from the results of the literature study are then built to become a hypothesis model seen in Figure 1, this process needs to describe variables and answer research questions, we use a quantitative data collection model.



Pict 1. Research Model Hypothesis

A. Survey Participant

Both primary and secondary data are used using Hair formula [20] and stratified random sampling method, we got 100 respondents who are Higher Education employee.

B. Measurement Scale

Implemented success scale proposed by DeLone and McLean Model [4] [5] which in next situation is adapted by [1] [2] [6] [7]. At the measurement of ATU evolving research is done by [11] [10], so in the end, it has many variables which are concluded in this research using three reflective variables about ATU.

C. Instrument

As explained above, this research instrument is designed and built by modified DMM theory which makes 3 supported variable of DMM which is information quality has five indicators; system quality has 5 indicators service quality has 5 indicators, and EUCS has 5 indicators. The modification used in this theory is by adding HR Variable which has 3 instruments and SE which has 5 instruments. The last one is ATU variable which used as an investigated variable in this research, it has 5 instruments.

IV. Result and Discussion

After the amount of the sample is determined, we spread the questionnaire, then the data collected is discussed and displayed in this part.

A. Data Analysis

In table 1 we display respondent's background summary that we collected from offline spreading by probability sampling technique and doing disproportionate stratified random sampling closure which producing 100 respondents. The amount of sample used here is the minimal sample amount which has counted before by Hair Closure [20].

Table 1. Respondent's background

Personal data	%
Age	
< 30	49
31 until 40	20
41 until 50	14
> 50	17
Gender	
Female	41
male	59
Education	
Doctorate	7
Master	50
Bachelor	39
Senior high school	4
Profession	
Campus officials	10
Lecturer	48
Staff	42
Ability computer	
Distress	11
Average	61
Satisfying	28

As we can see at table 1, the summary of respondent's background is mostly male by 59%, the average age of the respondents is 20-33 which is millennial age, where millennial generation in the digital era is a productive age for using and understanding Communication and Information technology well. The education background of our respondents get a perfect point by 50% respondents is post graduated, by average 48% respondents is lecturer who has a post-graduate degree and having the ability to using a computer for work as much as 61%. Self-efficacy or ability to feel able to complete the task of using a computer contributes fully in the process of collecting data obtained from interviews and questionnaires. So that we can conclude that the results of the respondents collected are suitable for research purposes.

B. Measurement Model

This research is using WarpPLS closure to doing evaluating and observing measuring instruments reliability and determining construct validation. Also determining significance level of a coefficient model to testing the hypothesis [21] [22] [23].

Tabel 2. Model Fit

Figuring	Outcome	Perception
Average path coefficient	0.296	Acceptance
Average R-squared	0.357	Acceptance
Average adjusted R-squared	0.345	Acceptance
Sympson's paradox ratio (SPR)	1.000	Acceptance
R-squared contribution ratio (RSCR)	0.987	Acceptance
Statistical suppression ratio (SSR)	0.875	Acceptance
Nonlinear bivariate causality direction ratio	0.938	Acceptance
Average block VIF (AVIF)	1.948	Ideally
Average full collinearity VIF (AFVIF)	2.730	Ideally
Tenenhaus GoF (GoF)	0.485	Ideally

Tabel 3. Combined loadings

	InQ	SyQ	SeQ	EUCS	HR	SE	ATU
InQ1	0.823						
InQ2	0.831						
InQ3	0.840						
InQ4	0.834						
SyQ1		0.739					
SyQ2		0.773					
SyQ3		0.807					
SyQ4		0.761					
SyQ5		0.776					
SeQ1			0.813				
SeQ2			0.806				
SeQ3			0.824				
SeQ4			0.791				
SeQ5			0.743				
EUCS1				0.792			
EUCS2				0.861			
EUCS3				0.765			
EUCS4				0.775			
EUCS5				0.755			
HRQ1					0.830		
HRQ2					0.834		
HRQ3					0.757		
SE1						0.759	
SE3						0.877	
SE3						0.801	
ATU1							0.876
ATU2							0.861
ATU3							0.893
ATU4							0.793
ATU5							0.904

In table 2 and 3, to set multi-colinearity from the collected, we do observation by using Average Full Variance co-linearity Inflation Factor (AFVIF) [24] [25]. By observing AFVIV, we get 2.98 points which means if AFVIF points are below 3.3. Accordingly, there is no multi-collinearity in the hypothetical model. Moreover, the used data have no bias. It is important to notice that in table 2, the score gained by APC, ARS, and AARS is accepted, and another important point is AFVIF and GoF is fulfilled by the model. In figure 3 combined loading is presented as a validation measurement with the terms> 0.70, from all available indicators that meet confirmatory research testing.

Table 4 is the outer from Latent Variable Coefficients which giving the results about the critical point from R-squared, Composite reliability, Cronbach's alpha, Average variances extracted, and Full collinearity VIFs. R-squared point gained is concluded as every endogen variables are accepted and also suitable for the rules agreed in the R-squared coefficient point which has been customized is above 0.02 [26] [27].

Tabel 4. Latent Variable Coefficients

	InQ	SyQ	SeQ	EUCS	HR	SE	ATU
R-squared coefficients				0.756	0.210	0.425	0.038
Adjusted R-squared coefficients				0.749	0.194	0.419	0.018
Composite reliability coefficients	0.900	0.88	0.896	0.892	0.849	0.854	0.937
Cronbach's alpha coefficients	0.787	0.83	0.855	0.849	0.732	0.743	0.916

In the CR and CA point we got the suitable point which is CR and CA point is as much as or above 0.6-0.7 [20] [28] [29]. Meanwhile, the other important point is AVE get a good point which makes it acceptable and the research can be continued as well. This means that in Table 4 it provides a numerical explanation that the reliability of the question is considered capable of representing the respondent's will and the variables used are considered appropriate to explain the model

Table 5. Correlation Variable

	InQ	SyQ	SeQ	EUCS	HR	SE	ATU
InQ							
SyQ							
SeQ							
EUCS	0.241	0.360	0.155				
HR				0.205		0.005	
SE				0.425			
ATU					0.003	0.035	

Effect size [22] [23] is the part to explaining the impact caused by testing important parameter. Referring to effect size, Cohen categories (1988) stated that there are 4 effect size categories, i.e. weak d=0.00-0.10, medium d=010-0.25, strong d=0.25-0.40, and very strong d= >0.40. Furthermore, we can see an effect sizes on Table 6, i.e., variable InQ → EUCS, variable SyQ →EUCS, and effect size variable SeQ → EUCS, by means the connection between SyQ and EUCS is make the strongest connection between three exogen variables.

Table 6. Result Hypothesis

H	Correlation	β	P	Result
H1	InQ → EUCS	0.316	<0.001	Support
H2	SyQ → EUCS	0.441	<0.001	Support
H3	SeQ → EUCS	0.202	0.025	Support
H4	EUCS → HR	0.447	<0.001	Support
H5	EUCS → SE	0.652	<0.001	Support
H6	SE → HR	0.017	0.451	Not Support
H7	HR → ATU	-0.094	0.186	Not Support
H8	SE → ATU	0.203	<0.001	Support

In the other side, the role of EUCS variable to influencing variable HR and variable SE, variable EUCS has the more significant impact to variable SE with effect size score as much as 0.425 compared by its impact to HR which gaining effect sizes score as much as 0.205. By this, we need to pay more attention to the connection between EUCS and HR variable.

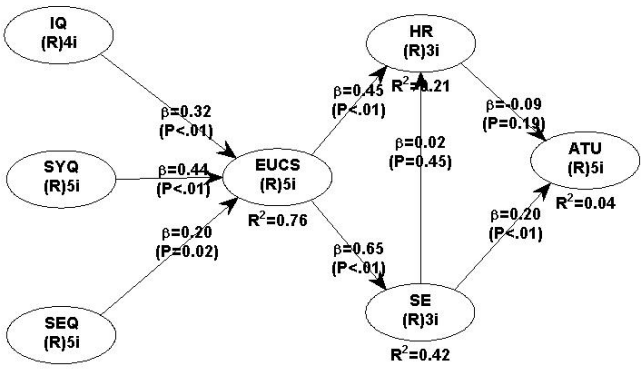
Table Result of Hypothesis Testing is explaining the connection between exogen variables, moderating variables, and endogen variables. To make it more comprehensive, we display it also in Results of Evaluating Model Hypothesis picture. It has been discussed before that H1 has a positive impact and also influencing, empirical evidence between InQ →EUCS shows that H1 point is (β =0.32, p<0.01) which means H1 is acceptable.

Further, H2 is positive and giving the impact also; empirical evidence shows that the connection between SyQ →EUCS showing the H2 point is as much as (β =0.44, p<0.01) which means H2 is acceptable. Further, H3 is positive and giving impacts, the empirical evidence between SeQ →EUCS shows the score of H3 is as much as (β =0.20, p<0.01) which means H3 is acceptable.

Further, H4 is positive and giving impacts, the empirical evidence between EUCS→HR showing the result H4 point as much as (β =0.45, p<0.01) which means H4 is acceptable. Further, H5 is positive and giving impacts, the empirical evidence between EUCS→ SE is showing the score H5 is as much as (β =0.65, p<0.01) which means H5 is acceptable.

In H6, it’ s positive and giving impacts also, the empirical evidence is showing the connection between SE→ HR is showing H6 score as much as (β =0.02, p<0.45) which means H6 is not acceptable. Further, H7 is positive and giving impacts also, the empirical evidence between the connection of HR→ATU showing H7 score is as much as (β =-0.09, p<0.19) which means H7 is not acceptable. H8 is positive. It implies that SE will influence ATU. The connection of SE→ATU is reflected by H8. Since, the result H8 point is (β =0.20, p<0.01), it means that H8 is acceptable.

From the explanation that has been done before, the following is a picture from the calculation of the model using the WarpPLS 5.0 tool.



Pict 2. Results of Evaluating Model Hypotesis

C. Findings and Discussion

The critical result of this research is how DMM theoretic models [4] [5] can give the impacts to Attitude toward Usage (ATU). This result is established by observing the affective point, i.e., Human Resource Quality (HRQ) [17] and Self-Efficacy (SE) [18]. Both of them is derived from Technology Acceptance Model Theoretical Model (TAM) [12] [13] [14].

There is no previous research which is focused on developing countries such as Indonesia particularly on discussing the impact of the use of Employee Information System (EIS) DMM to HR, and SE and finally at ATU. This research's result is in line with the previous result especially the scientific contribution concerning user satisfaction when they use Information System [1] [2] [3] [9]. This study shows that the perception of system quality, information quality, and service quality experienced are the important factors in the point of view the user. In the end, these factors can be used to encourage the employees to reach the satisfaction while using EIS as work tools. Another finding of this research, the connection between HR and SE is proven, and they have significant impacts. This research's result is in line with the previous result [1] [2] [17].

At the other observation from this research’s results, we find that the connection between SE is not determining of human resource quality is raising and also HR that proven that has not many impacts to ATU which means an employee doesn’t need higher educational level only to use mandatory EIS system. It is different than SE which have the specific contribution to ATU, SE is having significant impacts scoring and also tent to be useful to expand, which means a confident employee can finish their works is giving the contribution to successful implied EIS.

V. Managerial Implications

In general, the study found that computer user satisfaction and Self-Efficacy had a positive relationship with Attitudes to Use, but specifically Self-Efficacy was the most dominant effect on attitudes toward use. Therefore, the Higher Education that will implement our EIS is very supportive to be able to pay attention to the Employee's Self-Efficiency, just as providing EIS pre-implementation and training implementation as a self-development program that is implemented periodically The self-development can be programed such as increased confidence, increased computer skills, and increased knowledge about IT / IS will greatly assist employees to improve Self-Efficacy and ultimately enhancing the Self-Efficacy capability in employees greatly fosters development Higher Education.

VI. Conclution

Investigation of human factor in the evaluation using the DeLone and McLean model is still interesting. In our research, Affective factor is one of human variable, which is closed to DMM model. Furthermore we find that there are two affective factors in DMM i.e. self-Efficacy and Human resource quality. Since EIS is positioned as a mandatory

system, our study shows that only Self-Efficacy which will influence the Attitude toward Usage of EIS. Human resource quality, as the other Affective factor, has no influence to Attitude toward Usage of EIS.

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