Analysis of User Acceptance Levels of the e-Rapor System Users in Junior High Schools in Rembang District Using The TAM 3 And DeLone & McLean

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ABSTRACT
Education is a human right that is important for nation development. Entering the 21st century, education must adapt to digital technology. One important innovation is the e-Report system, a web-based student grade processing application introduced by the Ministry of Education and Culture in 2017. This research aims to analyze the level of user acceptance of the e-Report system in Rembang. Regency Middle School uses the Technology Acceptance Model (TAM) 3 method and the DeLone & McLean method. This research used a quantitative approach by distributing questionnaires to teachers in four junior high schools in Rembang Regency involving 93 samples from a total of 1,201 teachers. The number of samples was calculated using the Slovin formula with a significance error level of 10%. The results of the analysis show that perceived ease of use and perceived usefulness have a significant influence on the acceptance of e-Report technology. Factors such as information quality, self-efficacy, and perceived enjoyment also influence the perceived ease and usefulness of using e-Reports. However, system quality and service quality do not show a significant influence on the acceptance of this technology. This research provides important insights into the factors that influence the acceptance and success of implementing e-Report systems in junior high schools. It is hoped that the research results can become a reference for policy makers in improving administrative efficiency and supporting the learning process through modern technology.

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1. INTRODUCTION

Education is a human right and an important foundation for the development of a nation (Kusumawati et al., 2023). However, access to quality education in Indonesia is still unequal, there are gaps between urban and rural areas and between socio-economic classes. Increasing access and quality of education is an important issue for advancing Indonesia in the future. Entering the 21st century, education must transform conventional systems to be more relevant to developments in digital technology. Technological advances have changed the world of education significantly, for example in preparing student reports which can now be done through the e-Report system. This system helps teachers process grades and school administration quickly, increasing efficiency and effectiveness in the teaching and learning process (Falahi et al., 2023).

The e-Report system, a web-based application launched by the Ministry of Education and Culture in 2017, has been integrated with basic education data. This system aims to increase the efficiency of school administration, facilitate access and monitoring of student learning outcomes, and increase transparency and accountability. In Rembang Regency, the implementation of e-Report is part of efforts to increase the effectiveness and efficiency of reporting student learning outcomes, creating a fairer and more equal learning environment for all students (Agustini et al., 2020).

However, the implementation of the e-Report system is not without obstacles. Users often face a difficult learning curve, data security issues, and limited technology accessibility. Apart from that, resistance to changing from manual methods to digital systems is also an obstacle (Hidayah et al., 2020). To overcome this, this research analyzes the factors that influence user acceptance of e-Reports using the Technology Acceptance Model (TAM) 3 and the DeLone & McLean method.

TAM introduced by Davis (1989) explains users attitudes towards technology based on perceived usefulness and perceived ease of use. TAM 3 adds variables of self-efficacy and perceived enjoyment that are relevant for analyzing information system acceptance (Venkatesh & Bala, 2008). The DeLone & McLean method measures system success based on system quality, information quality and service quality (DeLone & McLean, 2003). By combining these two methods, this research aims to provide an in-depth picture of the acceptance of the e-Report system and the success of digital transformation in the secondary school environment (Hidayah et al., 2020).

A number of previous studies show that the implementation of the e-Report system received a positive response from users, although there were differences in the influence of perceived usefulness and perceived ease of use on technology

acceptance (Gunawan & Zulkarnain, 2021; Hidayah et al., 2020; Rahmawati et al., 2019). This research focuses on analyzing user acceptance, including psychological aspects and evaluating the level of success in implementing e-Report, in order to identify areas that need to be improved to ensure the success of the system in schools.

2. RESEARCH FRAMEWORK

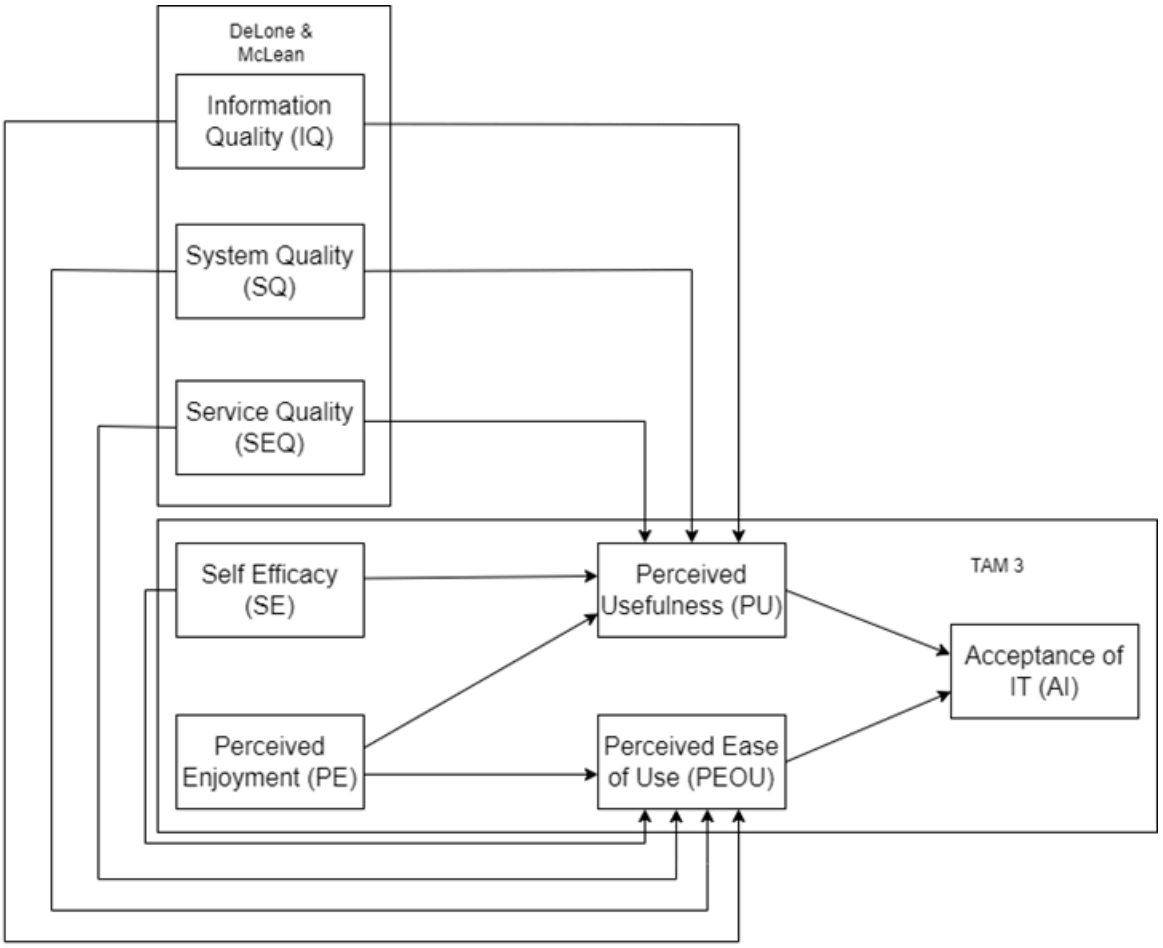

Figure 1. Research Framework

Analysis of the level of technology acceptance in this research uses the variables PU (Perceived Effectiveness) and PEOU (Perceived Ease of Use) as benchmarks for acceptance of the e-Report system. According to Hidayah et al. (2020), PU and PEOU have an influence on AI (Acceptance of IT). Previous research also shows that PU and PEOU have a significant influence on AI (Gómez-Ramirez et al., 2019; Mohr & Kühl, 2021). In this research, the variables SQ (System Quality), IQ (Information Quality), and SEQ (Service Quality) were used to determine their effect on PU and PEOU. According to Hidayah et al. (2020), SQ, IQ, and SEQ directly or indirectly influence AI through PU and PEOU. Apart from that, the SE (Self-Efficacy) and PE (Perceived

Enjoyment) variables from TAM 3 were also analyzed to see their effect on PU and PEOU (Almulla, 2021).

Quality systems, accurate information, and supporting services can increase the usability and ease of use perceived by users. Based on this literature, the hypothesis of this research is as follows:

H1: IQ has a positive and significant effect on PU

H2: IQ has a positive and significant effect on PEOU

H3: SQ has a positive and significant effect on PU

H4: SQ has a positive and significant effect on PEOU

H5: SEQ has a positive and significant effect on PU

H6: SEQ has a positive and significant effect on PEOU

H7: SE has a positive and significant effect on PU

H8: SE has a positive and significant effect on PEOU

H9: PE has a positive and significant effect on PU

H10: PE has a positive and significant effect on PEOU

Using e-Report can provide significant benefits if the system is easy to use and the user has sufficient technological skills. Therefore, the additional hypothesis is:

H11: PU has a positive and significant effect on AI

H12: PEOU has a positive and significant effect on AI

3. RESEARCH METHOD

3.1 Sample

This research focuses on the population of secondary school teachers in Rembang Regency who use the e-Report system, totaling 1,201 teachers. Population is a group of subjects who have certain characteristics which are the focus of research (Sugiyono, 2017; Swarjana, 2022). To determine the number of samples, the Slovin formula was used with an error tolerance of 10% to obtain a calculation of 93 samples from the existing population. Sampling was carried out using purposive sampling, namely a sample selection technique using certain criteria that are relevant to the research objectives (Setiawan et al., 2020).

3.2 Research Instrument

Research variables are objects related to the subject and can be measured and observed in research (Ulfa, 2021). In this research the independent variables used are perceived ease of use (PEOU) and perceived usefulness (PU) which influence the intention to accept (AI). In addition, other variables such as self-efficiency (SE), perceived enjoyment (PE), system quality (SQ), information quality (IQ), and service quality (SEQ) influence PU and PEOU. These variables are used to measure the level of acceptance of the e-Report system in Rembang Regency secondary schools. PEOU and PU function to assess ease of use and perceived usefulness of the system, while SE, PE, SQ, IQ, and SEQ help in understanding the aspects that influence these two variables. This approach ensures that the various factors influencing user acceptance of the technology are taken into account in a comprehensive manner.

3.3 Data Analysis

PLS-SEM analysis involves two sub models, namely the outer model and the inner model. This test is used to validate and test the reliability of the data as well as test the list of questions on the questionnaire that respondents have filled out to determine whether data collection is appropriate or not (Janna & Herianto, 2021). The outer model is used to evaluate the relationship between indicators and latent constructs, ensuring that the indicators used can reflect the construct well. Meanwhile, the inner model is used to test the relationship between latent constructs, evaluate the strength and direction of influence between variables in the research model. Thus, PLS-SEM ensures that the data collected is valid and reliable for further analysis.

4. RESULTS AND DISCUSSION

4.1 Demographic Analysis

This demographic profile provides important context for understanding the characteristics of e-Report system users. This can help in designing implementation, training, and system development strategies that better suit the needs and capabilities of diverse user groups.

The majority of respondents were women (73%) compared to men (27%). This predominance of female respondents may reflect the general gender composition in the teaching profession, especially at the primary and secondary education levels. These differences can influence the perspective and needs in using the e-Report system.

The age distribution of respondents is quite even, with the largest concentration in the productive age group. 43% of respondents were aged 30-50

years, showing a balance between experience and openness to technology. 40% of respondents are over 50 years old, representing senior teachers with extensive teaching experience. Only 17% of respondents were under 30 years old, reflecting the proportion of younger teachers who may be more familiar with technology. This age variation can influence the level of adaptation and perception of the e-Report system.

The majority of respondents (92%) had a bachelor's degree, indicating a general educational qualification standard for the teaching profession. Meanwhile, 8% of respondents with a Master's degree may have additional roles or responsibilities at an educational institution. This difference in education level can affect the ability to adapt and understand the e-Report system.

Table 1. Demographic Profile of Respondent

Respondent Profile	Total	Persentage
Gender		
Male	25	27%
Female	68	73%
Age		
<30 years	16	17%
30-50 years	40	43%
>50 years	37	40%
Educational stage		
S1	86	92%
S2	7	8%

4.2 Measurement Model Test Result (Outer Model)

This research instrument was tested for validity through two types of validity, namely convergent validity and discriminant validity. Convergent validity evaluates the consistency between question items and the construct being measured. To be declared valid, the loading factor value must be above 0.6 and the AVE value must exceed 0.5 (Darmawan & Pamungkas, 2019). Meanwhile discriminant validity evaluates the ability of question items to differentiate different constructs. An instrument is said to have good discriminant validity if the cross loading value of each item is greater on the appropriate variable than other constructs (Darmawan & Pamungkas, 2019). This test ensures that the question items in the questionnaire are able to measure the intended construct accurately, thereby producing valid data for further analysis.

Evaluation of the external model is carried out by paying attention to the external loading and AVE value. A good outer loading value is >0.7, but values between 0.6 and 0.7 are still acceptable (Fussell & Truong, 2022; Hair et al., 2006; Salloum et al., 2019). An AVE value >0.5 indicates good convergent validity (Binyamin

et al., 2019; Yang & Wang, 2019). In this research, there is one indicator, namely IQ1, which has an outer loading of 0.471, which is below the threshold of 0.6, so it is recommended to be removed from the measurement model (Al Hakim, 2022; Michella & Meilani, 2023). However, the AVE value of all latent variables is above the threshold of 0.5, which indicates that the measurement model has good convergent validity. Overall, the variables in this research are valid and able to measure what they should measure (Hair et al., 2017). Outer model evaluation also involves cross loading values, where each indicator must have a higher variable value than other indicators (Lattu & Jatmika, 2022). In this study, the variables AI, PU, PEOU, IQ, SQ, SEQ, SE, and PE showed good consistency and met discriminant validity.

Table 2. Convergent Validity Result

Variabel	Item	Outer Loading	AVE
Acceptance of IT	AI1	0.914	0.707
	AI2	0.761	
Information Quality	IQ1	0.471	0.604
	IQ2	0.610	
	IQ3	0.863	
	IQ4	0.897	
	IQ5	0.885	
	IQ6	0.835	
Perceived Enjoyment	PE1	0.685	0.705
	PE2	0.920	
	PE3	0.894	
Perceived Ease of Use	PEOU1	0.812	0.712
	PEOU2	0.776	
	PEOU3	0.885	
	PEOU4	0.834	
	PEOU5	0.900	
	PEOU6	0.848	
Perceived Usefulness	PU1	0.870	0.768
	PU2	0.864	
	PU3	0.850	
	PU4	0.933	
	PU5	0.885	
	PU6	0.853	
Self Efficacy	SE1	0.903	0.738
	SE2	0.936	
	SE3	0.688	
	SE4	0.888	
Service Quality	SEQ1	0.823	0.708
	SEQ2	0.906	
	SEQ3	0.791	

System Quality	SQ1	0.634	0.558
	SQ2	0.688	
	SQ3	0.754	
	SQ4	0.765	
	SQ5	0.829	
	SQ6	0.797	

Reliability testing measures the accuracy and consistency of indicators in measuring variables. Reliability was tested using composite reliability and Cronbach's alpha, with a specified minimum threshold. All latent variables in this study have a composite reliability value of more than 0.7, which indicates good reliability (Lattu & Jatmika, 2022; Wati & Indriyanti, 2021). Apart from that, all latent variables also have Cronbach's alpha values exceeding 0.6, which indicates good reliability (Natasia et al., 2022). Thus, all latent variables in this study were declared reliable based on these two measures.

Table 3. Reliability Test Result

Variable	Cronbach's Alpha	Composite Reliability
AI	0.602	0.827
IQ	0.860	0.898
PE	0.789	0.876
PEOU	0.918	0.937
PU	0.939	0.952
SE	0.878	0.918
SEQ	0.792	0.879
SQ	0.841	0.883

4.3 Structural Model Test Result (Inner Model)

The data analysis test in this study used the PLS-SEM structural model with R-square, Q-square, effect size and path coefficient tests. The research results show that the R-square value ranges from 62% to 77.3%, which shows that the model can explain the variance of the dependent variable well, with values approaching or exceeding 0.7 indicating good goodness-of-fit. The Q-square test was also used to evaluate the relevance of model predictions, with results showing values greater than 0, indicating good prediction accuracy. Specifically, the PEOU variable has a Q-square value of 0.530 and the AI variable of 0.409, indicating that the model has acceptable predictive relevance.

Table 4. Results of R-Square and Q-Square

Variable	R-Square	Q-Square
AI	0.620	0.409
PEOU	0.773	0.530
PU	0.646	0.479

Effect size measures the magnitude of the influence of exogenous variables on endogenous variables, with an f^2 of 0.02 considered small, 0.15 medium, and 0.35 large. This research found that the greatest influence was between the PU and SQ variables with an effect size of 0.622, which shows a large influence. The smallest influence occurs in the relationship between the PU variable and SEQ with an effect size value of 0.002, and the PE variable with PEOU with a value of 0.009. Some relationships such as the IQ variable on PEOU with a value of 0.001 have an effect size of less than 0.02, indicating that there is no significant influence.

The path coefficient test results presented in the table provide important insights into the relationships between variables in the research model. Of the 12 hypotheses proposed, 7 hypotheses were accepted (H2, H4, H8, H9, H10, H11, and H12) based on a t-statistic value that exceeded 1.65 and/or a p-value less than 0.10, indicating an influence significant among the variables tested. Meanwhile, 5 hypotheses were rejected (H1, H3, H5, H6, and H7) because they did not meet the specified significance criteria. The strongest influence is shown by hypothesis H8 (SE→PEOU) with the highest t-statistic value (7.117) and the lowest p-value (0.000), followed by H9 (PE→PU) and H11 (PU→AI) which also show a very strong influence. strong. important. On the other hand, the weakest influence is seen in hypothesis H1 (IQ → PU) with the lowest t-statistic value (0.019) and the highest p-value (0.985). The results of this analysis provide a comprehensive picture of the factors that influence the acceptance of e-Report technology, highlighting aspects that have a significant impact and those that are less influential in the context of this research.

Table 5. Path Coefficients Result

Hypothesis	Relationalships	*Original Sample*	t-Statistics	p-Values	Information
H1	IQ→PU	-0.003	0.019	0.985	Rejected
H2	IQ→PEOU	0.129	1.784	0.077	Accepted
H3	SQ→PU	0.228	1.124	0.264	Rejected
H4	SQ→PEOU	0.239	1.956	0.053	Accepted

H5	SEQ→PU	-0.045	0.362	0.718	Rejected
H6	SEQ→PEOU	0.071	0.950	0.344	Rejected
H7	SE→PU	0.113	1.212	0.228	Rejected
H8	SE→PEOU	0.478	7.117	0.000	Accepted
H9	PE→PU	0.588	3.812	0.000	Accepted
H10	PE→PEOU	0.189	1.811	0.073	Accepted
H11	PU→AI	0.455	5.147	0.000	Accepted
H12	PEOU→AI	0.394	4.052	0.000	Accepted

5. DISCUSSION

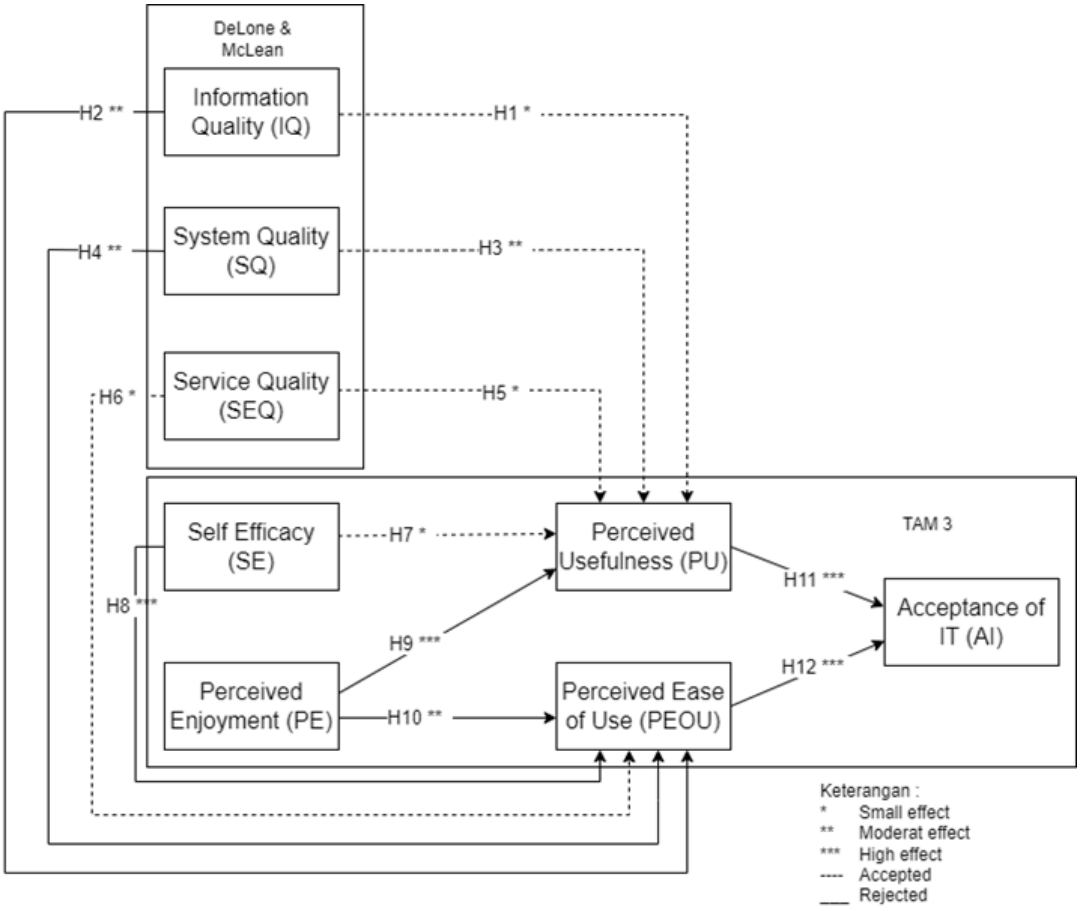

Figure 2. Overview of Analysis Result

Based on the results of hypothesis analysis from H1 to H12, there are various significant findings regarding the influence of the variables perceived usefulness

(PU), perceived ease of use (PEOU), information quality (IQ), system quality (SQ), service quality (SEQ), self-efficacy (SE), and perceived enjoyment (PE) regarding the acceptance and use of the e-Report system. The first hypothesis (H1) which tests the effect of IQ on PU is rejected, with a t-statistic value of 0.019 and p-values of 0.985. This is in line with research by Kumar dan Reinartz (2018); Kurniawan (2019) which shows that the quality of the information produced does not have a significant influence on the perception of system usefulness. However, the second hypothesis (H2) is accepted which shows that good IQ has a positive and significant effect on PEOU with a t-statistics value of 1.784 and p-values of 0.077, in line with the research of Hidayah et al. (2020); Kafabih (2024).

The third hypothesis (H3) which tests the effect of SQ on PU is rejected, with a t-statistic value of 1.124 and p-values of 0.264, indicating that system quality does not have a significant influence on perceived usability, in accordance with Alotaibi dan Alshahrani (2022). However, the fourth hypothesis (H4) was accepted which shows that SQ has a significant effect on PEOU with a t-statistics value of 1.956 and p-values of 0.053, supporting the research findings of Alotaibi dan Alshahrani (2022). The fifth hypothesis (H5) which tested the effect of SEQ on PU was also rejected, with a t-statistics value of 0.362 and p-values of 0.718, in line with research by Alotaibi dan Alshahrani (2022). The sixth hypothesis (H6) which tests the effect of SEQ on PEOU is rejected with a t-statistics value of 0.950 and p-values of 0.344, supporting the research of Hidayah et al. (2020).

Furthermore, the seventh hypothesis (H7) which tests the effect of SE on PU is rejected with a t-statistics value of 1.212 and p-values of 0.228, this is in line with research by Kumar et al. (2020). However, the eighth hypothesis (H8) was accepted which shows that SE has a significant effect on PEOU with a t-statistics value of 7.117 and p-values of 0.000, supporting the research of Al-Adwan et al. (2023). The ninth hypothesis (H9) was accepted which shows that PE has a significant effect on PU with a t-statistics value of 3.812 and p-values of 0.000, in line with research by Al Kurdi et al. (2020). The tenth hypothesis (H10) which tests the influence of PE on PEOU is also accepted with a t-statistics value of 1.811 and p-values of 0.073, supporting the research findings of Al-Adwan et al. (2023).

The eleventh hypothesis (H11) was accepted which shows that PU has a significant effect on IT (AI) acceptance with a t-statistics value of 5.147 and p-values of 0.000, supporting the research of Al Kurdi et al. (2020); Hidayah et al. (2020). Finally, the twelfth hypothesis (H12) was accepted which shows that PEOU has a significant effect on AI with a t-statistics value of 4.052 and p-values of 0.000, in line with the research of Al Kurdi et al. (2020). Overall these findings provide important insights into the factors that influence the acceptance and use of e-Report systems,

indicating that perceived usefulness and ease of use play a key role in the acceptance of this technology.

6. CONCLUSION

Based on the results of the analysis of the variables perceived usefulness (PU), perceived ease of use (PEOU), information quality (IQ), system quality (SQ), service quality (SEQ), self-efficacy (SE), and perceived enjoyment (PE) on acceptance and using the e-Report system, it can be concluded that perceived usefulness and perceived ease of use have a significant influence on acceptance of information technology (acceptance of IT). Although information quality (IQ), system quality (SQ), and service quality (SEQ) do not have a significant effect on perceived usefulness, they have a positive effect on perceived ease of use. In addition, self-efficacy and perceived enjoyment have a significant influence on perceived usefulness and perceived ease of use. These results indicate that increasing perceived usefulness and ease of use is critical to increasing acceptance and use of e-Report systems, with particular attention to increasing user comfort and confidence in operating the system.

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