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The Effect of Using the Simpatik Application on Performance of Pump Operator at Perumda Tirta Kanjuruhan Malang Regency Using Technological Approach Acceptance Model (TAM)

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Abstract
Productivity is directly related to human resources and one of the factors that influence employee performance is the use of technology (Handoko, 2010). Lamb, et al (2014) stated that one of the most important actors is the user (user). Researchers took research subjects at Perumda Tirta Kanjuruhan, as a Regional Owned Enterprise in Malang Regency for the provision of quality drinking water services to meet the community's drinking water needs. In 2022 an application called SIMPATIK (Tirta Kanjuruhan Pump Monitoring System) based on an app sheet has been built which is used to access data related to water pump performance more quickly and in real time. To determine the effect of the SIMPATIK application on the performance of pump operator, researchers used the Technology Acceptance Model (TAM) approach (Davis, 1985). The variables in this study are perceived ease of use (X), perceived usefulness (M1), behavioral intention to use (M2) and pump operator performance (Y). The results showed that perceived ease of use has a positive effect on perceived usefulness, perceived usefulness has a positive effect on behavioral intention to use, perceived usefulness has a positive and significant effect on pump operator performance, behavioral intention to use has a positive and significant effect on pump operator performance, perceived ease to use has a positive and significant effect on the performance of pump operators with perceived usefulness mediating partially, perceived ease to use has a positive and significant effect on pump operator performance with perceived usefulness and behavioral intention to use partially mediating.
Keywords: Simpatik Application, perceived ease of use, perceived usefulness, behavioral intention to use, pump operator performance
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1. Introduction

Productivity is directly related to human resources and one of the factors that influence employee performance is the use of technology (Handoko, 2010). The requirement for information systems and technology to have a positive impact on individual performance is that the technology must be used appropriately and must be compatible with the task (Ellyana et al, 2009). Analysis of application needs is the first step in determining the software to be used. According to Lamb, et al (2014) that one of the most important actors in an information system is the user.

The researcher took the research subject at Perumda Tirta Kanjuruhan because it is a Regional Owned Enterprise of Malang Regency which is tasked with providing quality drinking water services to fulfill people's livelihood needs and in 2022 has built an application called SIMPATIK (Tirta Kanjuruhan Pump Monitoring System) with using an Android cellphone and based on an appsheet prepared by Perumda Tirta Kanjuruhan employees. By using the SIMPATIK application, data related to raw water pump performance and pump operator performance can be accessed more quickly and in real time every day.

To determine the effect of using the SIMPATIK application on performance, in this case pump operators, researchers chose to use the Technology Acceptance Model (TAM) approach because it is a theory that can explain how individuals accept the use of information technology systems (Jogiyanto, 2008). According to Davis (1985), the Technology Acceptance Model (TAM) has 5 main constructs, namely perceived usefulness, perceived ease of use, attitude toward using technology, behavioral intention to use and actual technology use. Some research related to this is research conducted by Nurariansyah I (2019), Pratiwi V.U (2020), Sayuda (2020), Ariadi (2020), Simeru OAI et al (2020), Setyawan MYH et al (2022), Susilo J , et al (2019).

The formulation of the problem for this research is as follows (1) What is the description of perceived ease of use, perceived usefulness, behavioral intention to use and pump operator performance?, (2) How does perceived ease of use influence the perceived usefulness factor of the SIMPATIK application?, (3) How does the perceived usefulness of the SIMPATIK application affect behavioral intention to use?, (4) How does perceived usefulness influence the performance of pump operators?, (5) How does behavioral intention to use the SIMPATIK application influence pump operator performance?, (6) How does perceived ease influence of use of the SIMPATIK application on pump operator performance mediated by perceived usefulness? , (7) and What is the influence of perceived ease of use of the SIMPATIC application on the performance of pump operators which is mediated by perceived usefulness and behavioral intention to use?

2. Conceptual Framework

The conceptual framework in this research is described as follows:

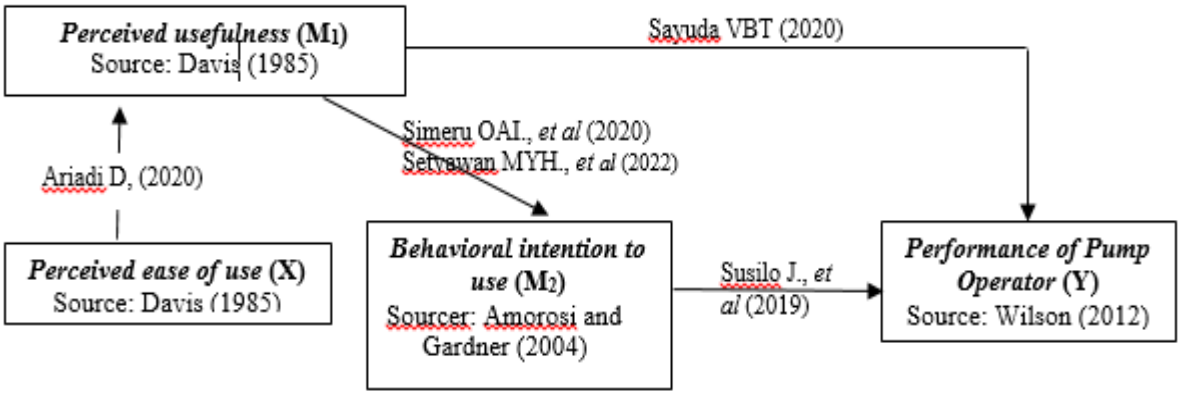

Figure 1. Conceptual Framework

3. Hypothesis

H1 : Perceived ease of use has a positive effect on the perceived usefulness of the SIMPATIK application
H2 : Perceived usefulness has a positive effect on behavioral intention to use the SIMPATIK application
H3 : The perceived usefulness of the SIMPATIK application has a positive effect on the performance of pump operator
H4 : Behavioral intention to use the SIMPATIK application has a positive effect on pump operator performance
H5 : Perceived ease of use of the SIMPATIK application has a positive effect on pump operator performance with perceived usefulness as mediation
H6 : The SIMPATIK application has a positive effect on the performance of pump operator with perceived usefulness and behavioral intention to use as mediation

4. Research Methods

The research instrument was a questionnaire distributed to pump operators to answer which was measured using a Likert scale. The sampling technique was carried out using a total sampling or census technique with a population in the study of 37 pump operators as samples. The analytical methods used are descriptive analysis and linear regression analysis.

5. Result

5.1. Validity and Reliability Test

The validity test results show that the instrument used is valid.

Table 1. Validity Test Results

Variable	Items	Correlation coefficient	r table	Sig	Remarks
Perceived ease of use (X)	X.1.1	0,727	0,325	0,000	Valid
	X.1.2	0,621	0,325	0,000	Valid
	X.2.1	0,515	0,325	0,001	Valid
	X.2.2	0,560	0,325	0,000	Valid
	X.3.1	0,540	0,325	0,001	Valid
	X.3.2	0,623	0,325	0,000	Valid
	X.4.1	0,542	0,325	0,001	Valid
	X.4.2	0,746	0,325	0,000	Valid
	X.5.1	0,645	0,325	0,000	Valid
	X.5.2	0,575	0,325	0,000	Valid
	X.6.1	0,552	0,325	0,000	Valid
	X.6.2	0,695	0,325	0,000	Valid
Perceived usefulness (M_1)	M1.1.1	0,650	0,325	0,000	Valid
	M1.1.2	0552	0,325	0,000	Valid
	M1.2.1	0,608	0,325	0,000	Valid
	M1.2.2	0,607	0,325	0,000	Valid
	M1.3.1	0,669	0,325	0,000	Valid
	M1.3.2	0,592	0,325	0,000	Valid
	M1.4.1	0,717	0,325	0,000	Valid
	M1.4.2	0,356	0,325	0,031	Valid
	M1.5.1	0,473	0,325	0,003	Valid
	M15.2	0,542	0,325	0,001	Valid
	M1.6.1	0,566	0,325	0,000	Valid
	M1.6.2	0,607	0,325	0,000	Valid
Behavioral intention to use (M_2)	M2.1.1	0,712	0,325	0,000	Valid
	M2.1.2	0,737	0,325	0,000	Valid
	M2.2.1	0,844	0,325	0,000	Valid
	M2.2.2	0,509	0,325	0,001	Valid
Performance of Pump Operator (Y)	Y.1.1	0,547	0,325	0,000	Valid
	Y.1.2	0,659	0,325	0,000	Valid
	Y.2.1	0,614	0,325	0,000	Valid
	Y.2.2	0,534	0,325	0,001	Valid
	Y.3.1	0,655	0,325	0,000	Valid
	Y.3.2	0,669	0,325	0,000	Valid
	Y.4.1	0,497	0,325	0,002	Valid
	Y.4.2	0,733	0,325	0,000	Valid
	Y.5.1	0,729	0,325	0,000	Valid
	Y.5.2	0,685	0,325	0,000	Valid

The results of the reliability test show that the questionnaire can produce reliable data. So, the research instruments used in this research are reliable and can be used as measuring tools.

Table 2. Variable Reliability Coefficient Value

Variable	Reliability Coefficient	Remarks
Perceived ease of use (X)	0,845	Reliabel
Perceived usefulness (M_1)	0,819	Reliabel
Behavioral intention to use (M_2)	0,665	Reliabel
Performance of Pump Operator (Y)	0,825	Reliabel

5.2. Classic Assumption Test

The results of the classical assumption test are shown in the table 3.

Table 3. Classic Assumption Test Result

No	Classic Assumption Test	Result
1	Model 1 (variabel *perceived ease of use* and *perceived usefilness)*	
	a. Normality	The data distribution spreads around and approaches the diagonal line, indicating that the data is normally distributed.
	b. Heteroscedasticity	The data is spread randomly above and below the 0 line on the Y axis, indicating that there is no heteroscedasticity disturbance.
	c. Autocorrelation	The Durbin Watson (DW) value of 2.142 is between 1.5 3 and 2.47, indicating that there is no autocorrelation.
2	Model 2 (variabel *perceived usefilness* and *behavioral intention to use)*	
	a. Normality	The data distribution spreads around and approaches the diagonal line, indicating that the data is normally distributed.
	b. Heteroscedasticity	The data is spread randomly above and below the 0 line on the Y axis, indicating that there is no heteroscedasticity disturbance.
	c. Autocorrelation	The DW value of 2.121 is between 1.5 3 and 2.47, indicating that there is no autocorrelation.
3	Model 3 (variabel *perceived usefilness behavioral intention to use* dan kinerja operator pompa)	
	a. Normality	The data distribution spreads around and approaches the diagonal line, indicating that the data is normally distributed.
	b. Heteroscedasticity	The data is spread randomly above and below the 0 line on the Y axis, indicating that there is no heteroscedasticity disturbance.
	c. Autocorrelation	The DW value of 2.225 is between 1.5 3 and 2.47, indicating that there is no autocorrelation.
	d. Multicollinearity	The VIF value is 40 74 < 10, indicating there is no multicollinearity problem

Path analysis, it is known that the values of b1, b2, b3, e1, e2 and e3 are as follows:

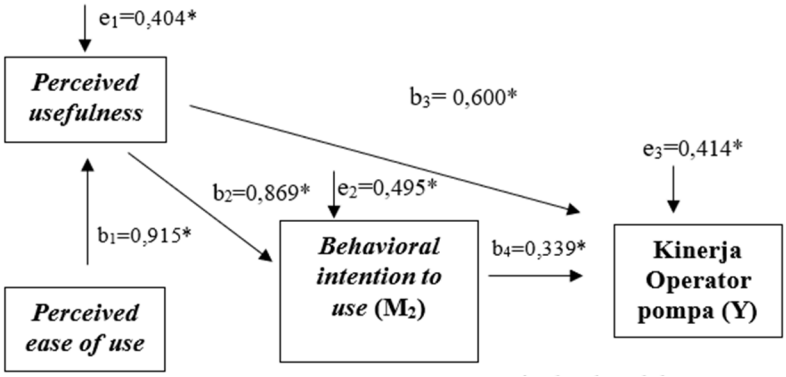

Figure 2. Results of Path Analysis Model 1, 2, 3

The coefficient of determination for the influence of the perceived ease of use variable on the perceived usefulness variable is 83.7%, while 16.3% of the perceived usefulness variable is influenced by other variables. The influence of the perceived usefulness variable on the behavioral intention to use variable is 75.5%, while 24.5% of the behavioral intention to use variable is influenced by other variables. The influence of perceived usefulness and behavioral intention to use variables on pump operator performance is shown by the summary model, where the Adjusted R Square value is 82.9% and the magnitude of the influence of other variables is 17.1%.

5.3. Hypothesis Test

Table 4. Hypothesis Testing Results

Variable	Direct Effect	In-Direct Effect	Result	Hypothesis
X → M_1	0,915	-	Influential	**H_1** accepted
M_1 → M_2	0,869	-	Influential	**H_2** accepted
M_1 → Y	0,600	-	Influential	**H_3** accepted
M_2 → Y	0,339	-	Influential	**H_4** accepted
X → M_1 → Y	-	0,549	Partial mediation	**H_5** accepted

6. Discussion

The perceived ease of use variable is formed by indicators that are easy to use, easy to learn, easy to control, application interactions are clear and easy to understand, flexible and easy to get skilled at. Overall an average of 4.07 indicates respondents agree that the main perceived ease of use is formed by a system that is easy to control, application interactions are clear and easy to understand and flexible.

The perceived usefulness variable is formed by indicators of work done quickly, improving performance, increasing productivity levels, increasing performance effectiveness, facilitating work and being useful. The overall average of 4.05 indicates that respondents agree that the main perceived usefulness is improving individual performance, which is reflected in the SIMPATIK application being able to improve individual performance.

The behavioral intention to use variable is formed by indicators of system use to complete work and planned utilization in the future. Overall, the average of 4.01 shows that respondents agree that the main behavioral intention to use is formed by future utilization plans which are reflected in plans to continue using the SIMPATIK application in the future to complete work.

Pump operator performance variables are formed by indicators of quality of work, quantity of work, time, attendance, and relations between employees. Overall, the average of 4.10 shows that respondents agree that the performance of pump operators is primarily shaped by the quantity of work and attendance which is reflected in the achievement of the amount of work that can be completed in accordance with company expectations and the presence of respondents according to working hours as an obligation that must be fulfilled to carry out and get the job done.

Perceived ease of use has a positive effect on perceived usefulness, showing that the two variables (perceived ease of use and perceived usefulness) have an important role in an individual's acceptance of the use of a technology. Based on theory, the two variables, namely perceived ease of use and perceived usefulness are the core constructs of the Technology Acceptance Model (TAM) (Jogiyanto, 2008).

Perceived usefulness has a positive effect on behavioral intention to use, indicating that pump operators have felt the benefits of using the Simpatik application, which causes positive behavioral intentions to use the application because pump operators feel helped in carrying out their work so that they can provide strategic information as material and consideration in making a decision, as stated by Dalle J., et al (2020).

Perceived usefulness has a positive and significant effect on the performance of pump operators, indicating that pump operators have felt the benefits of using the Simpatik application, which has resulted in increased pump operator performance. As stated by (Davis 1985).

Behavioral intention to use has a positive and significant effect on the performance of pump operators, indicating that pump operators have a positive behavioral intention to use the Sympathetic application, which causes increased performance, as stated by Davis (1985).

Perceived ease of use has a positive and significant effect on the performance of pump operators with perceived usefulness partially mediating, showing that pump operators feel the ease of use and benefits of the Simpatik application, thereby influencing the increase in pump operator performance, as stated by Davis (1985).

Perceived ease of use has a positive and significant effect on the performance of pump operators with perceived usefulness and behavioral intention to use providing partial mediation, showing that pump operators feel the ease of use and benefits of the Simpatik application as well as positive use intentions, thus influencing the increase in pump operator performance.

The results of the research on testing the indirect effect hypothesis show that the fifth hypothesis has the highest value, namely 0.549, which means that in this study the results obtained were that the effect of perceived ease to use with perceived usefulness as a mediation for the use of the SIMPATIC application was very capable of increasing pump operator performance.

7. Conclusion

Based on the results of the research and discussion that has been carried out, the following conclusions can be drawn:

a. Descriptive statistical results show that the main perceived ease of use variable is formed by a system that is easy to control, application interactions are clear and easy to understand and flexible. The main variable of perceived usefulness is improving individual performance, which is reflected in the Simpatik application being able to improve individual performance. The main behavioral intention to use variable is formed by future utilization plans which are reflected in plans to continue using the Simpatik application in the future to complete work. The main pump operator performance variables are formed by the quantity of work and attendance which is reflected in the achievement of the amount of work that can be completed in accordance with the company's expectations and the presence of respondents according to working hours as an obligation that must be fulfilled to carry out and complete the work.
b. Perceived ease of use influences the perceived usefulness of the Simpatik application, which means that the easier it is for the pump operator to use the Simpatik application, the more benefits will be felt from using the

application.

c. Perceived usefulness influences the behavioral intention to use the Simpatik application, which means that the more the benefits of using the Sympathetic application are felt, the more positive the pump operator's behavioral intention to use the application.
d. Behavioral intention to use affects the performance of pump operators, which means the more interested in using the Simpatik application, the better the performance of pump operators.
e. Perceived ease to use affects the performance of pump operators with perceived usefulness as mediation, which means the more pump operators have confidence in the benefits of the Simpatik application, the more confidence pump operators have in the ease of use of the application so that they can improve pump operator performance.
f. Perceived ease to use affects the performance of pump operators with perceived usefulness and behavioral intention to use as mediation, which means the more employees believe in the benefits of the Sympathetic application and are interested in using it, the pump operator has more confidence in the ease of use of the application so that it can improve the performance of pump operators.
g. The results of this research show that perceived ease of use with perceived usefulness as mediation is very capable of improving the performance of pump operators.

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