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Technology Readiness and Acceptance Model in the Evaluation of the Singmanfaat System at the West Java Provincial Forestry Service

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ABSTRACT

Using the Technology Readiness and Acceptance Model (TRAM) approach, the research investigates the readiness and acceptance of the SINGMANFAAT application among users working for the West Java Provincial Forestry Service. Optimism and insecurity were discovered to have a substantial influence regarding perceived utility and simplicity of use, according to the findings of the research that involved 88 employees. The only thing that was affected by innovativeness was the convenience of use; pain was not altered. According to the findings of the survey, enhancing user comfort and bolstering faith in data security are two of the most important factors in ensuring successful adoption of technology. The findings can serve as a reference for the implementation of information systems that are based on technology in government entities.

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1. INTRODUCTION

Effective information technology is absolutely essential in the digital age to raise public service effectiveness and efficiency. Designed by the West Java Province, the Geological Information and Water Management System (GIS) is meant to handle waste and water statistics [1]. New technology's adoption and user acceptance in particular present difficulties, though, and these are common across all applications [2][3]. Employee opposition to implementing new systems is one main obstacle; old approaches and lack of digital capabilities have been causing a deteriorating trend for more than 40 years [4].

Using user viewpoints, the Technology Readiness and Acceptance Model (TRAM) assesses the value of information technology and communication [5]. It combines Technology Management (TRI) with Technology Research (TAM) to grasp the link between personal traits and technology use as well as the evolution of new technologies [6][7]. Focusing on optimism, creativity, discomfort, and insecurity, the Technology Readiness Index (TRI) evaluates each person's degree of openness to embrace new technology [8]. Fred Davis proposed the Technology Acceptance Model (TAM) in 1989 with an eye toward perceived usefulness and simplicity of use, attitudes toward using, behavioral intention to use, and actual system use [9][10]. Focusing on elements influencing attitudes, behavioral intention to use, and actual system use, TAM is a popular model in studies of technology adoption [9][11].

Many times, used to assess a system's dependability and efficiency is TRAM. Research indicates that although technology adoption greatly influences system efficiency and user pleasure, its effectiveness does not necessarily significantly affect Odoo users; so, the main determinant of the user experience and favorable outcome in technology adoption is its acceptance [3]. According to the study [4], optimism and creativity in technology use favorably affect convenience and benefits for users; nonetheless, it also brings elements like entrepreneurship that could impede the acceptance of new technology, hence allowing schools to create better plans [12].

The evaluation of the Singmanfaat System at the West Java Province Forestry Service will mostly rely on Technology Readiness and Acceptance Model.

2. METHOD

Research methods are the ways in which researchers gather data and information to conduct research on a research subject or research question, aiming to obtain high-quality results from the data.

2.1. Framework Of Thought

The study will utilize the Technology Readiness and Acceptance Model (TRAM) to evaluate user satisfaction and retention of the SINGMANFAAT application.

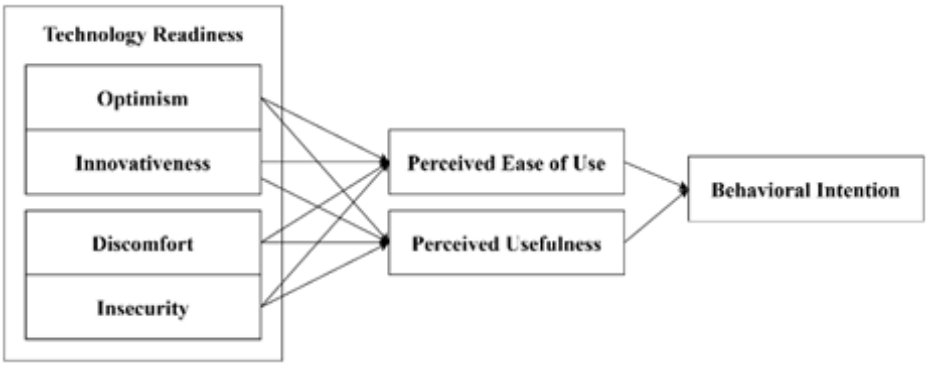

Figure 1. Framework Of Thought

Employing the Technology Readiness Index (TRI) and the Technology adoption Model (TAM), the Technology Readiness and Acceptance Model (TRAM) evaluates user preparedness and adoption of information technology. Three key components make up it: input from TAM's two main variables, perceived ease of use (PEU) and perceived usefulness (PU); and input from TRI's four dimensions: optimism, innovativeness, discomfort, and insecurity. These factors affect consumers' evaluation of the simplicity and advantages of a technology, so guiding its degree of acceptance. The outcome of the model is the degree of user acceptability of fresh technologies together with their goal. A good view of the simplicity and advantages of technology raises its aim of constant use. TRAM provides a complete method for assessing technology acceptability and readiness in many different business sectors and contexts [7][13].

2.2. Population And Sample

Covering the CDK I-IX area with 486 participants, the survey sent questionnaires to Jawa Barat Province residents using Google Form. With 113 questionnaires answered and applied as a study sample, the data collecting process was more effective.

Using the Slovene rubric, one might ascertain representative responses without polling the whole population and thereby lowering margin of error [5].

$$n = \frac{N}{1+N.e^2} \quad \text{..... (1)}$$

The sample size was 1,2825 with a margin of error 5%, and the sample size was 88,109, resulting in 88 respondents for good accuracy and sensitivity in the study.

2.3. Respondent Characteristics

There were 88 people who participated in this study, with 41 women (46.59 percent) and 47 men (53.41 percent) making up the participants. As a reflection of their mature job experience, the majority of them were between the ages of 41 and 60 (82.96%). Participants came from a wide range of work units within the West Java Provincial Forestry Service, indicating that they were representative of the entire organization. They held a variety of responsibilities, such as those of forestry extension workers, Principal Environmental Health Officers, forest product analysts, administration, and heads of SPTH.

2.4. Data Collection Techniques

Designed methodically with questions pertinent to the study objectives, a questionnaire is a research tool in the form of a list of written questions used to gather data from respondents, either multiple choice, Likert, or open questions [14].

Table 1. Likert Scale

Category	Score
Strongly Agree (SS)	4
Agree (S)	3
Disagree (TS)	2
Strongly Disagree (STS)	1

The study's findings are crucial in the neutral category as they provide clearer data, aid in research, understand respondents' opinions more accurately, and reduce data interpretation and analysis. Data Analysis Techniques

2.4. Data Analysis Techniquess

In the PLS-SEM concept, the outer model is used to evaluate the prediction model, ensuring that each item accurately represents the construct being used. This involves several steps, including validation of convergence, validity of discrimination, reliability, and composite reliability. Validity of convergence involves comparing the cross loading of an indicator with the total of the items in the model. Validity of discrimination involves using the Fornell-Lacker criteria, which compares the square root of the AVE with the correlation between the two variables. Reliability ensures that the instrument or data used can be interpreted and provides a stable and consistent result when the experiment is conducted.

Structural Equation Modelling based on Partial Least Square (PLS-SEM) model is evaluated using matrix analysis, including R^2 (explained variance), f^2 (effect size), Q^2 (predictive relevance), and coefficient path coefficients. R^2 evaluates the predictability of a model, with R^2 values ranging from 0 to 1, with higher values indicating better predictions or more accurate model estimates.

Predictive relevance (Q2) is determined using the Stone-Geisser Q Square test, with Q2 values ranging from 0 to 1, indicating that the model has a predictive relevance of 0.02 (small), 0.15 (medium), and 0.35 (large) for the endogen variable. The effect size (f2) is the contribution of the endogen variable to the R2 value of the endogen variable.

Path coefficients (path coefficients) are estimates of the relationship between variables in the model based on the SEM-PLS algorithm [7][15][16].

3. RESULT AND DISCUSSION

3.1. Reliability Measurement

The construction construct has a Cronbach's Alpha of 0.70, indicating good internal consistency, while the behavioral intention construct has a low Alpha of 0.059, indicating a serious reliability issue.

Table 2. Cronbach's alpha

	Cronbach's alpha
Behavioural intention	0,059
Discomfort	0,796
Ease to Use	0,809
Innovativeness	0,787
Insecurity	0,783
Optimism	0,802
Usefulness	0,819

3.2. Hypothesis Testing Results

The testing process was carried out by applying the bootstrapping method with the Partial Least Squares Structural Equation Modeling (PLS-SEM) method. Determination of the significance of the relationship between variables is carried out based on the t-statistic and p-value. A hypothesis is considered accepted if the t-statistic value is > 1.96 at a significance level of 5% and p-value < 0.05.

Table 2. Hypothesis Testing Results

	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Discomfort -> Ease to Use	0,083	0,486	0,627
Discomfort -> Usefulness	0,105	1,231	0,219
Ease to Use -> *Behavioural intention*	0,209	3,315	0,001
Innovativeness -> Ease to Use	0,079	5,493	0,000
Innovativeness -> Usefulness	0,096	1,222	0,222
Insecurity -> Ease to Use	0,114	2,789	0,005
Insecurity -> Usefulness	0,127	3,654	0,000
Optimism -> Ease to Use	0,090	4,029	0,000
Optimism -> Usefulness	0,109	4,429	0,000
Usefulness -> Behavioural intention	0,266	0,291	0,771

a. Optimism has a positive and significant influence on perceived usefulness, meaning that higher user optimism leads to a greater perception of the application's usefulness.
b. Optimism also has a positive and significant effect on perceived ease of use, indicating that more optimistic users perceive the application as easier to use.
c. Innovativeness does not significantly affect perceived usefulness, suggesting that a user's level of innovation does not directly influence their perception of the application's usefulness.
d. Innovativeness has a positive and significant impact on perceived ease of use, meaning that more innovative users find it easier to use the application.
e. Discomfort does not significantly affect perceived usefulness, indicating that user discomfort does not influence their perception of the application's usefulness.
f. Discomfort also does not significantly impact perceived ease of use, meaning that discomfort does not affect how easy users perceive the application to be.
g. Insecurity has a positive and significant influence on perceived usefulness, suggesting that users who feel insecure about technology tend to perceive the application as more useful.
h. Insecurity also has a positive and significant impact on perceived ease of use, indicating that users with higher insecurity levels associate it with their perception of ease of use.

i. Perceived usefulness does not significantly affect behavioural intention, meaning that the usefulness of the application does not directly influence users' intention to use it.
j. Perceived ease of use has a positive and significant impact on behavioural intention, showing that the easier the application is to use, the stronger the users' intention to continue using it.

4. CONCLUSION

Research on user readiness and acceptance of the SINGMANFAAT Website using the TRAM method shows that optimism has a positive effect on the perception of usefulness and ease of use, where optimistic employees are more likely to feel the benefits of the application. Innovation also has a positive impact on ease of use, although it does not directly affect the perception of usefulness. Discomfort does not have a significant effect, while insecurity has an impact on the perception of usefulness and ease of use, indicating that despite concerns, users still consider this application to be in accordance with their needs. In addition, ease of use plays a greater role in increasing behavioral intentions than the benefits of the application itself. Employees who feel the application is easy to use are more motivated to continue using it. Meanwhile, the inconvenience experienced by employees can encourage them to understand how to use the application in more depth.

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