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The Analysis of Technology Acceptance SIDESA Application Using the Technology Acceptance Model 2 Method

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Abstract

SIDESA is a village information system that aims to assist village governments in managing information and data related to various aspects of village life. The goal is to improve administrative efficiency, community services, and decision-making at the village level. On the other hand, the digital divide in society affects the acceptance of technology in rural communities. Application technology acceptance analysis is necessary to understand how users and related parties will accept technology applications. This is done to identify technology applications' potential success or failure before they are widely launched. This research uses the TAM 2 technology acceptance model; data collection is done by distributing questionnaires online via google forms to the system user community. The data obtained were 133 respondents, and data processing was carried out using SmartPLS tools. The results showed a significant influence between Subjective Norm on Image, Output Quality on Perceived Usefulness, Perceived Ease of Use on Perceived Usefulness, Perceived Usefulness on Intention to Use, Perceived Ease of Use on Intention to Use, Intention to Use on Usage Behavior, and Experience on Intention to Use so that the acceptance of the SIDESA application has an effect based on the factors of usefulness (Perceived Usefulness), ease (Perceived Ease of Use), experience (Experience), Interest (Intention to Use), and the accuracy of the information presented (Output Quality).

Keywords: *SIDESA, TAM 2, Technology Acceptance*

1. INTRODUCTION

SIDESA is a village information system that aims to assist village governments in managing information and data related to various aspects of village life. The aim is to improve administrative efficiency, community services, and decision-making at the village level. Some possible developments at the time included using the latest technologies, such as mobile applications and cloud computing, which can accelerate the access and distribution of information for villagers and village government[1]. Data Integration: Data integration between various entities within the village government, such as community groups, governing bodies, and institutions, allows for easier and more comprehensive access to necessary information[2], [3].

The development of Village Information Systems also often involves efforts to convert physical documents into digital form to improve accessibility and facilitate data management. Protecting personal data and other sensitive information is a significant concern in developing Village Information Systems, given the importance of privacy in managing community data. Village communities must be encouraged to develop digital literacy to understand and utilize the Village Information System properly. Some Village Information System projects use an open-source model, allowing villages with limited budgets to use and adapt these systems economically. The successful development of Village Information Systems

depends on villagers' active participation and engagement in using these systems[4]–[6].

The acceptance analysis of village information system technology is essential because it helps ensure that the village information system can be accepted and appropriately used by the village community, users, and related parties. System implementation will be more successful and effective by understanding user needs and expectations. Users' needs and preferences for the village information system can be better identified through an acceptance analysis[7], [8]. By understanding these needs, developers can direct resources to features and functions that are truly desired and relevant to the village community. Without adequate acceptance analysis, there is a risk that villagers will reject or avoid using the information system. By understanding the factors that influence technology acceptance, steps can be taken to increase the adoption rate and widespread use of the system[9]–[11]. An acceptance analysis helps identify barriers and challenges while implementing a village information system. This allows developers to prepare suitable solutions and mitigation strategies to address such issues.

By considering the needs and preferences of the village community, information systems can be designed to increase citizen participation and involvement in various activities and decision-making at the village level. Appropriate training and mentoring can be provided by understanding the level of technological readiness of village communities and their ability to use information systems. By understanding user expectations and preferences, village information systems can be designed to provide a better experience for users. Higher satisfaction levels will result in broader adoption of the technology and continued use[12], [13]. Acceptance analysis helps in planning more effective marketing and socialization strategies. Information about the target group and their preferences will help direct more appropriate and persuasive messages and campaigns.

Before the TAM model emerged, there was a theory known as the Theory of Reasoned Action (TRA) developed by Martin Fishbein and Icek Ajzen (1975, 1980)[9]. Derived from previous research that started from the theory of attitudes and behavior, the emphasis of TRA at that time was on attitudes from a psychological point of view. The principle is: determining how to measure relevant behavioral attitude components, distinguishing between beliefs or attitudes, and determining external stimuli. The TRA model causes the user's reaction and perception of the information system to determine the user's attitude and behavior. The purpose of TAM is to explain the determinants of acceptance of information-based technology in general and explain the behavior of end-users of information technology with a reasonably wide variety and population of users[14]–[16]. Ideally, a model is a prediction accompanied by an explanation so that researchers and practitioners can identify why specific systems may not be accepted so that corrective steps are needed to overcome them.

A key objective of TAM is to provide a basis for determining the influence of external factors on internal beliefs, attitudes, and intentions. A subjective Norm is a person's perception of other people's thoughts that will support or not in doing something. Image is the degree to which information technology is perceived to

increase one's status in customers' eyes. Image can directly affect the usefulness of an information system or technology, and subjective norms can influence its level. Job Relevance is the human perception of how vital information or technology is in helping or affecting their work. Output Quality is the level of individual human belief that an information system can help work. Result Demonstrability relates to using Information Technology that can be measured[7]–[10].

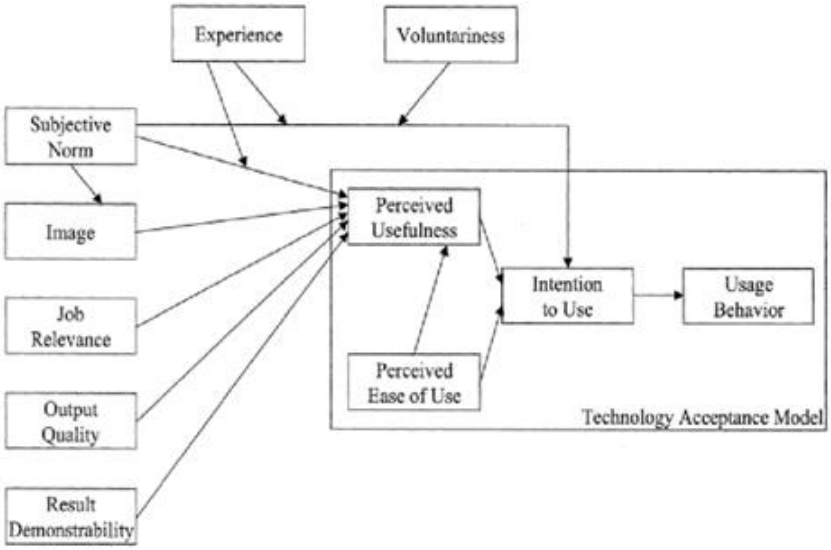

Figure 1. TAM 2

Perceived Usefulness is the Usefulness that the user feels when using an information system will help him improve work performance. Perceived Ease of Use is the ease users feel when using information systems. Intention to Use The behavioral tendency to keep using Information Technology. Usage Behavior Human behavior when using an information system. Experience is a variable that becomes a benchmark for determining when subjective norms will determine the perceived Usefulness of an information system or technology, which will also directly determine behavioral intention to use. Voluntariness affects subjective norms in determining intention to use, as shown in Figure 1. This research focuses on analyzing the acceptance of village information system technology using the TAM 2 framework.

2. RESEACH METHODOLOGY

The population in this study is the community using SIDESA. Calculate the number of samples using the Slovin formula with a tolerable error rate (margin of error) of 10%. From the calculation results, the minimum number of populations that can be taken and used as a research sample is 133 respondents.

The questionnaire was distributed online using google forms, and the weighting technique used a Likert scale. The Likert scale was used to measure the opinions of community respondents. Respondents can choose five alternative answers available, namely: Strongly Disagree (STS), Disagree (TS), Neutral (N),

Agree (S), and Strongly Agree (SS) with a weighting of Strongly Disagree (1) to Strongly Agree (5).

This research uses quantitative descriptive research methods, so at this stage, statistical tests are carried out by testing validity and reliability using the help of SmartPLS (Smart Partial Least Square) software version 3.3.3. The validity test was carried out in two stages, namely convergent and divergent validity tests. The validity test is carried out to measure whether a questionnaire is valid. A questionnaire is valid if the questions or statements can reveal something that the questionnaire will measure. The convergent validity test can be seen from the outer loading value, and the divergent validity test of the questionnaire in this study is seen from the AVE value. The reliability test indicates that an indicator is unbiased and the extent to which an indicator is reliable at different times, places, and people. The reliability test can be seen from the Composite Reliability value.

Table 1. Testing Indicator Variable

Variable	Code	Indicator
Subjective Norm	SN1	Other people's advice
Image	IMG1	Increasing care
	IMG2	Support efforts
Job Relevance	JR1	Effective and Efficient
Output Quality	OQ1	Presentation of up-to-date information
	OQ1	Presentation of accurate information
Result Demonstrability	RD1	Result of use
Perceived Ease of Use	PEOU1	Easy to login
	PEOU2	Easy to do attendance
	PEOU3	Easy to check the schedule
	PEOU4	Easy to access
	PEOU5	Difficulty in use
Perceived Usefulness	PU1	Benefits of use
	PU2	Feature benefits
	PU3	Overall benefits
Intention to use	ITU1	Fit for purpose
	ITU2	Easy to use
	ITU3	More efficient and effective
	ITU4	Can help
Usage Behavior	UB1	Use of attendance feature
	UB2	Use of the schedule check feature
	UB3	Usage in time
Experience	EXP1	Interesting experience
	EXP2	Usage problem

The conceptual model framework underlying the hypothesis that explains the relationship between variables in the study is shown in Figure 2.

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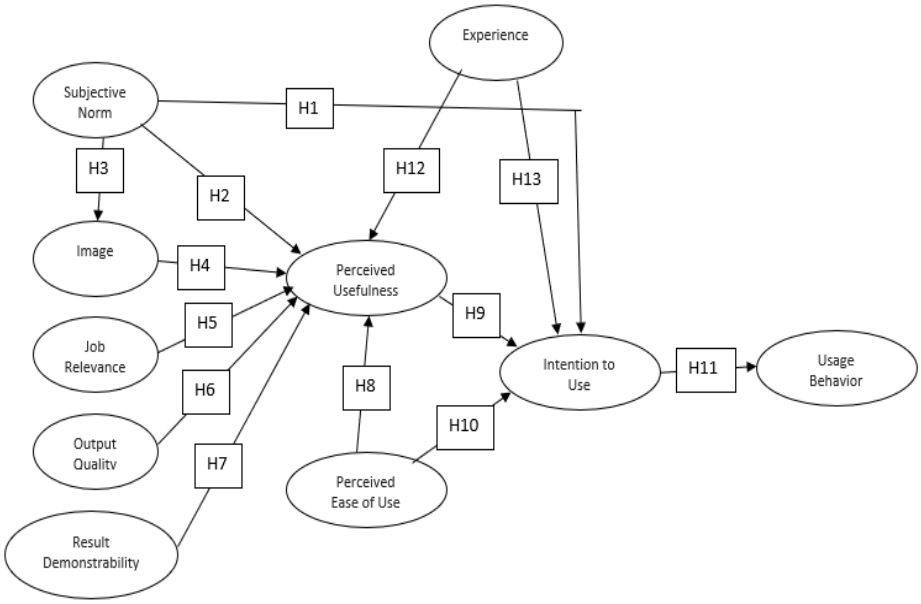

Figure 2. Conceptual Model

Based on the conceptual model above, the hypotheses in this study are:
Hypothesis 1: Subjective norm has a significant effect on Intention to use.
Hypothesis 2: Subjective norm has a significant effect on Perceived usefulness.
Hypothesis 3: Subjective norm has a significant effect on Image.
Hypothesis 4: Image has a significant effect on Perceived usefulness.
Hypothesis 5: Job relevance has a significant effect on Perceived usefulness.
Hypothesis 6: Output quality has a significant effect on Perceived usefulness.
Hypothesis 7: Result demonstrability has a significant effect on Perceived usefulness.
Hypothesis 8: Perceived ease of use significantly affects Perceived usefulness.
Hypothesis 9: Perceived usefulness has a significant effect on Intention to use.
Hypothesis 10: Perceived ease of use significantly affects Intention to use.
Hypothesis 11: Intention to use has a significant effect on Usage Behavior.
Hypothesis 12: Experience has a significant effect on Perceived usefulness.
Hypothesis 13: Experience has a significant effect on Intention to use.

3. RESULTS AND DISCUSSION

3.1. Convergent Validity

Convergent validity is the correlation between the indicator score and the construct score. An indicator is said to be convergently valid if the value of the outer loading is above 0.7. The results of the Convergent Validity Test as shown in Table 2.

Table 2. Convergent Validity Test

Indikator	*Outer Loading*	Description
SN1	1.000	Valid
IMG1	0.896	Valid
IMG2	0.893	Valid

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Indikator	*Outer Loading*	Description
JR1	1.000	Valid
OQ1	0.892	Valid
OQ2	0.887	Valid
RD1	1.000	Valid
PEOU1	0.767	Valid
PEOU2	0.760	Valid
PEOU3	0.802	Valid
PEOU4	0.860	Valid
PEOU5	-0.396	Invalid
PU1	0.762	Valid
PU2	0.915	Valid
PU3	0.910	Valid
ITU1	0.858	Valid
ITU2	0.865	Valid
ITU3	0.809	Valid
ITU4	0.898	Valid
UB1	0.753	Valid
UB2	0.808	Valid
UB3	0.654	Invalid
EXP1	0.831	Valid
EXP2	-0.637	Invalid

The test results show several indicators have an outer loading value below 0.7. From the table above, the indicators with an outer loading value below 0.7 are PEOU5, UB3, and EXP2. Because they are declared invalid, these indicators are removed or removed from the analysis process. Furthermore, re-analysis was carried out to ensure all indicators were declared convergently valid, as shown in Table 3.

3.2. Discriminant Validity

Furthermore, the discriminant validity test is carried out to test the accuracy between the indicators and the variables. To determine if each variable is discriminantly valid, is done by looking at the Average Variance Extracted (AVE) value. The variable is declared valid if the AVE value is above 0.5, as shown in Table 4.

Table 3. Convergen Validity Test [2]

Indikator	*Outer Loading*	Description
SN1	1.000	Valid
IMG1	0.896	Valid
IMG2	0.893	Valid
JR1	1.000	Valid
OQ1	0.892	Valid
OQ1	0.887	Valid
RD1	1.000	Valid
PEOU1	0.764	Valid
PEOU2	0.755	Valid
PEOU3	0.814	Valid

Table 4. Discriminant Validity Test

Variabel	*Average Variance Extracted (AVE)*	Description
Subjective Norm	1.000	Valid
Image	0.800	Valid
Job Relevance	1.000	Valid
Output Quality	0.792	Valid
Result Demonstrability	1.000	Valid

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PEOU4	0.864	Valid
PU1	0.763	Valid
PU2	0.915	Valid
PU3	0.909	Valid
ITU1	0.860	Valid
ITU2	0.863	Valid
ITU3	0.810	Valid
ITU4	0.898	Valid
UB1	0.815	Valid
UB2	0.834	Valid
EXP1	1.000	Valid

Perceived Usefulness	0.749	Valid
Perceived Ease of Use	0.641	Valid
Intention to Use	0.736	Valid
Usage Behavior	0.680	Valid
Experience	1.000	Valid

3.3. Reliability Test

The test results show that all variables are declared discriminantly valid, with the AVE value of each variable above 0.5. At this stage, validity testing has been completed, and all indicators and variables have been declared valid convergently and divergently, so the next test can be carried out, namely reliability testing. The test results show that all variables have a composite reliability value above 0.7, so it can be stated that all these variables are reliable so that they can proceed to further testing, as shown in Table 5.

Table 5. Composite Reliability

Variabel	***Composite Reliability***	**Desc.**
Subjective Norm	1.000	Reliabel
Image	0.889	Reliabel
Job Relevance	1.000	Reliabel
Output Quality	0.884	Reliabel
Result Demonstrability	1.000	Reliabel
Perceived Usefulness	0.899	Reliabel
Perceived Ease of Use	0.877	Reliabel
Intention to Use	0.918	Reliabel
Usage Behavior	0.809	Reliabel
Experience	1.000	Reliabel

3.4. Hypothesis Test

Hypothesis testing is carried out to determine the significant level that affects a variable with other variables. There are 13 hypotheses in this study, for which analysis is carried out in the SmartPLS application using the bootstrapping function with an error rate of 5% and a confidence level of 95%. Hypotheses can be accepted or significant if the p-values are smaller than 0.05 (p-values <0.05)—the Hypothesis Test results as shown in Table 6.

Table 6. Hypothesis Testing Results

Hypothesis	**Influence**	***P Values***	**Desc.**
H1	*Subjective Norm -> Intention to Use*	0.462	Insignificant
H2	*Subjective Norm -> Perceived Usefulness*	0.403	Tidak Signifikan
H3	*Subjective Norm -> Image*	0.000	Signifikan
H4	*Image -> Perceived Usefulness*	0.369	Insignificant
H5	*Job Relevance -> Perceived Usefulness*	0.471	Insignificant

Hypothesis	Influence	*P Values*	Desc.
H6	*Output Quality -> Perceived Usefulness*	0.020	Signifikan
H7	*Result Demonstrability -> Perceived Usefulness*	0.136	Insignificant
H8	*Perceived Ease of Use -> Perceived Usefulness*	0.000	Signifikan
H9	*Perceived Usefulness -> Intention to Use*	0.000	Signifikan
H10	*Perceived Ease of Use -> Intention to Use*	0.000	Signifikan
H11	*Intention to Use -> Usage Behavior*	0.000	Signifikan
H12	*Experience -> Perceived Usefulness*	0.000	Signifikan
H13	*Experience -> Intention to Use*	0.196	Insignificant

4. CONCLUSION

From the research that has been done, the results obtained from 13 hypotheses, seven hypotheses are accepted (H3, H6, H8, H9, H10, H11, H12), and six hypotheses are rejected (H1, H2, H4, H5, H7, H13). The results show that students consider the use of the SIDESA application based adequately on aspects of convenience, experience, interest, and the accuracy of the information presented in the SIDESA application so that the more valuable the system used will have an impact on their interest in using the application, the higher the student's interest in using the system can increase their behavior to continue using the system. So the acceptance of the SIDESA application has an effect based on the factors of usefulness, convenience, experience, interest, and the accuracy of the information presented.

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