

Evaluation and analysis of virtual tour application acceptance in Cau Belayu Tabanan Village using Technology Acceptance Model (TAM)

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ABSTRACT

Tourism villages are required to be innovative and creative in promoting their village if it want to survive in the midst of the COVID-19 pandemic situation. Utilise one part of virtual reality, namely virtual tours, can be used to promoting tourism villages, one of them is the Cau Belayu Tourism Village. Virtual tour is a new technology, therefore it is necessary to analyze the virtual tour that was developed with the aim of measuring the level of usefulness and level of user acceptance of the Virtual Tour of Cau Belayu Tourism Village. The purpose of this research is to evaluate and analyze the level of user acceptance of the Cau Belayu Tourism Village Virtual Tour so that in its implementation it can attract tourists to visit the village and increase the tendency of tourists to visit tourist villages directly. This research uses the Acceptance Model (TAM) evaluation model which has been proven to be effective in evaluating the level of acceptance of other technologies, therefore it is also used to evaluate the developed virtual tour. Several constructs used as test variables from the TAM model are used, namely Perceived Ease of Use (PEOU), Perceived Enjoyment (ENJ), Perceived Usefulness (PU), and Tendency to visit Actual Sites (TenAs). The results of hypothesis testing show that the four hypotheses are proven, namely H1: PEOU has a positive effect on PU with a significance value of $0.0030 < 0.05$, H2: PEOU has a positive effect on ENJ with a significance value of $0.0030 < 0.05$, H3: PU increased TenAs with a significance value of $0.007 < 0.05$ and H4: ENJ increased TenAs with a significance value of $0.00 < 0.05$.

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1. Introduction

The lowering in the number of tourist visits to both tourist objects and tourist villages in Bali is one of the impacts of the COVID-19 Pandemic [1]. Based on data from the Central Bureau of Statistics, the number of foreign tourist arrivals to Bali decreased by 82.96% while for domestic tourists it reached 56.41%. The impact of the COVID-19 pandemic from 97 tourist villages was around 92.8% so that it can be said that almost all of them were affected [2]. In order to survive amid the COVID-19 pandemic, tourist villages are required to be innovative and creative in promoting their villages. Utilization of existing technology is one way that can be done to bridge and promote tourism villages. The technology that can be utilized for the promotion of tourist villages is one type of virtual reality, namely virtual tours [3].

A technology that gives users an authentic experience as if they were in a location by displaying images and videos that include a 360-degree view is called a virtual tour [4]. Even though it has not

entirely shifted the tour experience directly, virtual tours can provide a new tourist experience that can increase the user's desire to visit in person as well as promotional media [5].

The virtual tour was then developed for Cau Belayu Tourism Village, which is one of the tourist villages in Tabanan Regency. Virtual tour is a new technology that is used as media for tourism village promotion, therefore it is necessary to analyze the virtual tour that has been developed. This analysis is intended to measure the level of usefulness and the level of user acceptance of the Cau Belayu Tourism Village Virtual Tour. The evaluation model used in this study is the Technology Acceptance Model (TAM). Analysis of user behavior in accepting and using information technology can use this TAM model [6]. TAM testing has been carried out in several previous studies which resulted in TAM being better than the TRA (Theory of Reason Action) and TPB (Theory of Planned Behavior) models [7]. TAM has been widely used in research such as in the field of education, construction, transportation, hospitality, financial [8]–[31].

The use of the TAM method was carried out in previous research by [32] with a case study of e-learning programming based on gamification where the research results show that it is based on gamification with the result that Intention of Engagement (IOE) is strongly influenced by Perceived Social Influence (PSI) and Perceived Enjoyment (PE) inversely proportional to Usefulness (PU) and Perceived Ease of Use (PEU). In addition, Elearning Gamification Attitude (EGA) is heavily influenced by PU, PSI, PE and IOE in contrast to PEU.

The other research by [33] with the Mojoagung Community Health Center Management Information System (SIMPUS) case study, where the relationship between PEU and SIMPUS acceptance is significant with a p-value (Sig.) of 0.012 and in general the significance value is smaller than the p-value (Sig.), namely 0.031.

Research by [34] with case studies of e-Payment on e-Marketplace resulted in the conclusion that the level of use is also influenced by satisfaction.

Research by [35] with the case study of the MasjidLink application, where the TAM variable has a positive influence with a percentage of 72.68% for perceived user convenience, 72.68% for perceived usefulness and 71.31% for technology acceptance.

Research by [36] with a virtual tour case study of the UPN Veteran campus, where the most influencing factor is the task technology fit factor with the most excellent path coefficient value of 0.465. At the same time, other factors are perceived usefulness, perceived ease of use, attitude toward using, telepresence.

Several previous research related to evaluating technology acceptance using the TAM method can be briefly seen in the research roadmap on Fig. 1.

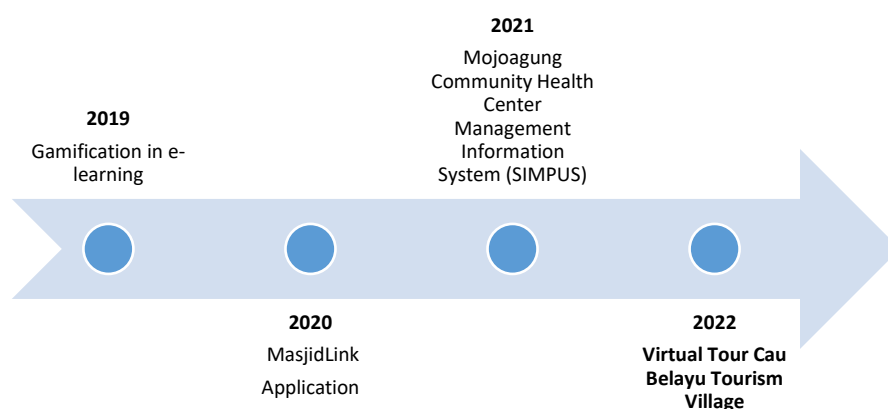


Fig. 1. Research Roadmap

Fig. 1 displays a research roadmap from previous studies to the present that uses the TAM method in system evaluation. Referring to the problems and research that has been done before, this study evaluates and analyzes the level of acceptance and usefulness of the Cau Belayu Tourism Village Virtual Tour which affects the level of user tendency to visit the tourist village directly. From the

TAM model, several constructs are used as testing variables, namely perceived ease use Perceived Ease of Use (PEOU), perceived enjoyment of Perceived Enjoyment (ENJ), perceived usefulness of Perceived Usefulness (PU), and added a new construct based on previous research by (El-Said and Aziz, 2021), namely the tendency to visit Actual Sites (TenAS) directly. The purpose of this study is to evaluate and analyze the level of user acceptance of the Cau Belayu Tourism Village Virtual Tour so that its implementation increases the desire of tourists to visit the village directly.

2. Literature Review

2.1. Virtual Tour

A collection of panoramic photos, images, and videos with a 360-degree viewing angle connected by hyperlinks that form a simulation of a real place is called a virtual tour [37]. Other elements used can be in the form of sound effects, music, narration, and virtual tour text [38]. Utilization of this virtual tour can provide an experience for users as if they were in a real place [39]. Virtual tour can be used as a promotional medium because it displays in detail the location in 360 degrees and can connect information and promotion needs in this very rapid technological development [40].

2.2. TAM (Technology Acceptance Model)

In 1989 Fred D. Davis introduced TAM for user acceptance of information systems which was the development of an adaptation of Theory of Reasoned Action (TRA). Venkatesh & Davis in 2000 introduced TAM 2 which was the result of developing a theoretical test from TAM. Perceived usefulness and perceived ease of use. are two variables in TAM 2. Subjective norm (SN), image (IMG), job relevance (REL), output quality (OUT), result demonstrable (RES), and perceived ease of use (PEOU) are six determinants of perceived usefulness. TAM 3 was introduced by Venkatesh & Bala in 2008, in which the determinants of perceived ease of use (PEOU) were identified experience and voluntariness are additional variables in TAM 3 [41].

TAM aims to determine the basis of the influence of external factors on users' beliefs, attitudes, and goals. Perceived ease of use Perceived Ease of Use (PEOU) and perceived usefulness Perceived Usefulness (PU) are TAM variables that determine individual acceptance of information technology systems. Attitude Towards Using (ATU), Behavioral Intention to Use (BU), and Actual Technology Use (AU) are other variables from TAM [42].

3. Method

The research method generally consists of six stages: literature study, instrument preparation, data collection, analysis, and conclusions. The research method can be seen in Fig. 2.

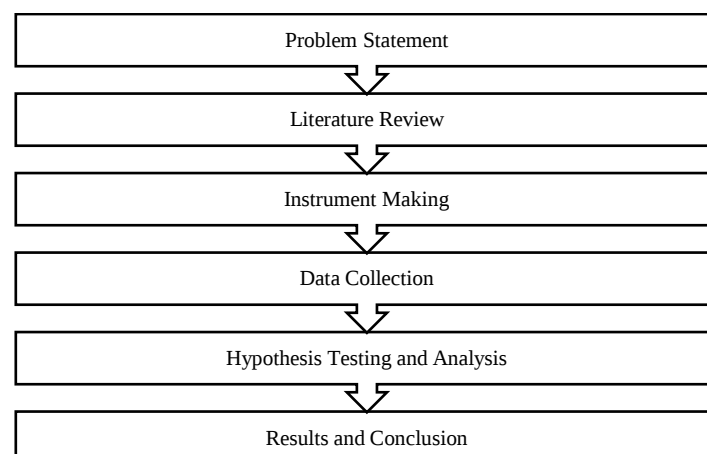


Fig. 2. Research Method

Fig. 2 displays the research method, which is explained as follows.

- Problem Statement

This stage is the initial stage where problems are found, namely how to accept and use virtual village tourism tours from the user's side.

- Literature Review

This stage seeks references related to the use of the TAM method and constructs suitable for evaluating virtual tours from related journals. The results of the literature study will form the basis for the analysis.

- Instruments Making

This stage arranges the instrument used for research in the form of a questionnaire. Referring to research conducted previously by (El-Said and Aziz, 2021), this research uses several variables that have been adjusted to the needs of the test. The variables used are perceived ease of use (PEOU), perceived enjoyment of Perceived Enjoyment (ENJ), perceived usefulness of Perceived Usefulness (PU), and the tendency to visit actual sites (TenAS) directly.

- Data Collection

At this stage, data collection is carried out by distributing questionnaires to random users through Google Forms. After the data is collected, data processing is carried out to obtain complete data from each object for each variable studied.

- Hypothesis Testing and Analysis

In this stage, data analysis was carried out on the results of the questionnaire and testing the hypotheses made using the SPSS software.

- Results and Conclusions

This stage is carried out by drawing conclusions on the results of data analysis.

4. Results and Discussion

4.1. Instruments Making

The questionnaire used as an instrument of this research consists of 12 questions. This question has been adapted to the variables used, namely the TAM model with PU constructs: Perceived Usefulness, ENJ: Perceived Enjoyment, PEOU: Perceived Ease of Use and TenAS: Tendency to visit Actual Sites. The details of the instruments used in this study can be seen in [Table 1](#).

Table.1 Variable and Questions

Variable	Questions
PU: Perceived Usefulness	PU1: VT added to my knowledge about the tourist villages I visited PU2: VT allows me to visit tourist villages more comfortably PU3: VT allows me to visit places that I previously could not and
ENJ: Perceived Enjoyment	ENJ1: I enjoy using VT ENJ2: The experience of using VT was exciting ENJ3: The experience of using VT was pleasant
PEOU: Perceived Ease of Use	PEOU1: I can easily understand how to use VT PEOU2: Flexible VT usage PEOU3: It was straightforward for me to become skilled at using VT
TenAS: Tendency to visit Actual Sites	TenAS1: After using VT, I want to find out more information about tourist villages directly TenAS2: After using VT, I am interested in tourism villages directly TenAS3: After using VT, I would recommend visiting the tourist village in person

[Table 1](#) presents the variables and questions, where the variables are 4 with 12 detailed questions. [Fig. 3](#) displays the concept of connectedness between each variable.

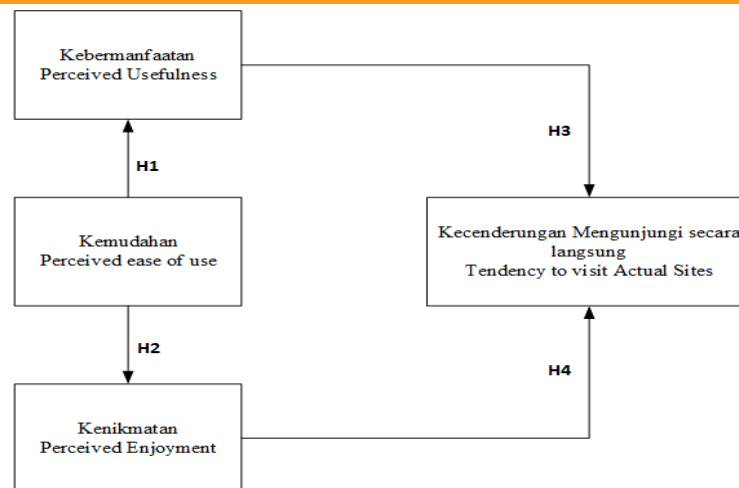
**Fig. 3.** Conceptual Model

Fig. 3 displays the conceptual model of connectedness for each variable. This is the basis for preparing the hypothesis, while the hypothesis to be tested is as follows:

- Hypothesis 1: PEOU: VT's Perceived Ease of Use in tourism villages has a positive effect on VT's Perceived Usefulness.
- Hypothesis 2: PEOU: Perceived Ease of Use VT tourism villages positively impact ENJ: Perceived Enjoyment.
- Hypothesis 3: PU: Perceived Usefulness of tourist villages increases TenAS: Tendency to visit Actual Sites.
- Hypothesis 4: ENJ: Perceived Enjoyment of tourist villages increases TenAS: Tendency to visit Actual Sites.

4.2. Data Collection

The data collection process is done online using the Google Form media. The data collection technique used was purposive sampling where the researcher ensured that the respondent's identity matched the research objectives so that they could respond to cases in the study. Referring to that, the respondents selected to test this application are tourists both from within the city and outside the city. The age range of the respondents was from 20-40 years.

4.3. Hypothesis Testing and Analysis

The target respondents in this study were tourists because they referred to one of the sampling techniques purposive sampling. The characteristics of the respondents were divided according to gender, age, and region of origin for 30 respondents. The profiles and characteristics of the tourist respondents can be seen in Table 2.

Table.2 Respondents Profile

	Quantity	Percentage
Gender		
Man	15	50%
Women	15	50%
Age		
20-30	20	66.67%
31-40	10	33.33%
Origin		
in town	17	56.67%
out of town	13	43.33%

Table 2 displays the demographic profile of the respondent. Of the 30 respondents, 66.67% were women, and 33.33% were men. Based on age, 83.33% came from the age range of 20-30 years, while

16.67% came from the age range of 31-40 years. In addition, respondents who came from within the city or came from regencies/cities in Bali amounted to 66.67%, while respondents who came from outside the city came from regencies/cities in Bali amounted to 33.33%.

They were conducting hypothesis testing with SPSS 20 to analyze 30 sets of data. Hypothesis testing and connectivity testing between two or more ordinal data can use the Kendall-Tau (τ) correlation technique. In the test, the value of the correlation coefficient and significance is sought. There is a correlation if the significance value is <0.05 [43].

The test was carried out with the help of the SPSS application by looking for the correlation value between each tested variable (count) compared to r_{table} and calculating its significance value. Hypothesis test results show as Table 3, Table 4, Table 5 and Table 6.

Table.3 Hypothesis test results H1 : PEOU $\rightarrow$ PU

		Correlations	
		PEOU	PU
PEOU	Pearson Correlation	1	.396*
	Sig. (2-tailed)		.030
	N	30	30
PU	Pearson Correlation	.396*	1
	Sig. (2-tailed)	.030	
	N	30	30

^a Correlation is significant at the 0.05 level (2-tailed).

The test obtains $r_{count} = 0.396$ and $r_{table} = 0.3610$ so that $r_{count} > r_{table}$. This indicates that H1 is accepted, which means that there is a positive relationship between the PEOU and PU variables. Likewise, the significance value (2-tailed) is 0.0030 where $0.0030 < 0.05$ means that there is a significant relationship between the PEOU and PU variables.

Table.4 Hypothesis test results H2 : PEOU $\rightarrow$ ENJ

		Correlations	
		PEOU	ENJ
PEOU	Pearson Correlation	1	.524**
	Sig. (2-tailed)		.003
	N	30	30
ENJ	Pearson Correlation	.524**	1
	Sig. (2-tailed)	.003	
	N	30	30

^b Correlation is significant at the 0.01 level (2-tailed)

The test obtained $r_{count} = 0.524$ and $r_{table} = 0.3610$ so that $r_{count} > r_{table}$, this indicates that H2 is accepted, which means that there is a positive relationship between the PEOU and ENJ variables. Likewise, the significance value (2-tailed) is 0.0030, where $0.0030 < 0.05$ means a significant relationship exists between the PEOU and ENJ variables.

Table.5 Hypothesis test results H3: PU $\rightarrow$ TenAS

		Correlations	
		PU	TenAS
PU	Pearson Correlation	1	.485**
	Sig. (2-tailed)		.007
	N	30	30
TenAS	Pearson Correlation	.485**	1
	Sig. (2-tailed)	.007	
	N	30	30

^c Correlation is significant at the 0.01 level (2-tailed)

The test obtained $r_{count} = 0.485$ and $r_{table} = 0.3610$ so that $r_{count} > r_{table}$, this indicates that H3 is accepted, which means that there is a positive relationship between PU and TenAS variables. Likewise, the significance value (2-tailed) is 0.007, where $0.007 < 0.05$ indicates a significant relationship between PU and TenAS variables.

Table.6 Hypothesis test results H4: ENJ → TenAS

Correlations			
		ENJ	TenAS
ENJ	Pearson Correlation	1	.680**
	Sig. (2-tailed)		.000
	N	30	30
TenAS	Pearson Correlation	.680**	1
	Sig. (2-tailed)	.000	
	N	30	30

^d Correlation is significant at the 0.01 level (2-tailed).

The test obtained $r_{count} = 0.680$ and $r_{table} = 0.3610$ so that $r_{count} > r_{table}$. This indicates that H4 is accepted, which means that there is a positive relationship between the ENJ and TenAS variables. Likewise the (2-tailed) significance of 0.00 0.00 < 0.05 means that there is a significant relationship between the variables ENJ and TenAS.

The results of proving the hypothesis based on hypothesis testing can be seen in [Table 7](#).

Table.7 Hypothesis Proving Results

	Hypothesis	Testing Result	Conclusion
1	PEOU has a positive effect on PU	Significant. The relationship between the ease and usefulness of VT produces a significance value of $0.0030 < 0.05$ so that this hypothesis can be proven	Accepted
2	PEOU has a positive effect on ENJ	Significant. The relationship between the ease and enjoyment of VT produces a significance value of $0.0030 < 0.05$, so this hypothesis can be proven	Accepted
3	PU increases TenAs	Significant. The relationship between the usefulness of VT and the tendency to visit directly produces a significance value of $0.007 < 0.05$, so this hypothesis can be proven	Accepted
4	ENJ increases TenAs	Significant. The relationship between VT enjoyment and the tendency to visit directly produces a significance value of $0.00 < 0.05$, so this hypothesis can be proven	Accepted

[Table 7](#) presents the results of proving the hypothesis from research where all of this hypothesis are proven. A more detailed explanation of the test results is as follows:

- Hypothesis 1, namely PEOU: Perceived Ease of Use (Convenience) VT tourism village, has a positive effect on PU: Perceived Usefulness (Usefulness) VT is proven. So, it can be concluded that according to respondents, the ease of using VT has a positive effect on the usefulness of VT.
- Hypothesis 2, namely PEOU: Perceived Ease of Use (Convenience) VT tourism village, has a positive impact on ENJ: Perceived Enjoyment (Enjoyment) VT is proven. So it can be concluded that according to respondents the ease of using VT has a positive effect on enjoyment of VT.

- Hypothesis 3, namely PU: Perceived Usefulness (Usefulness) of tourist villages increases TenAS: Tendency to visit Actual Sites (Tendency to visit in person) is proven. So it can be concluded that according to respondents, the usefulness of VT increases the tendency to visit tourist villages directly.
- Hypothesis 4, namely ENJ: Perceived Enjoyment (Enjoyment) of tourist villages increases TenAS: Tendency to visit Actual Sites (Tendency to visit in person) is proven. So, it can be concluded that according to respondents, the enjoyment of VT increases the tendency to visit tourist villages directly.

The results of testing all hypotheses proved significant, so it could be concluded that the level of acceptance and usefulness of the Cau Belayu Tourism Village Virtual Tour application was good.

5. Conclusion

In this study, the acceptance analysis of the Cau Belayu Tourism Village Virtual Tour Application consists of four hypotheses, namely H1: PEOU has a positive effect on PU, H2: PEOU has a positive effect on ENJ, H3: PU increases TenAs and H4: ENJ increases TenAs. All the hypotheses tested proved significant, so the results obtained were that the ease of using VT had a positive effect on the usefulness of VT, the ease of using VT had a positive effect on the enjoyment of VT, the usefulness of VT increased the tendency to visit tourist villages directly, and the enjoyment of VT increased the tendency to visit villages direct travel. Overall, the acceptance and usefulness of the Cau Belayu Tourism Village virtual tour application is good.

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