



# Analysis of Augmented Reality Technology to Influence Purchase Intention Using Tam Approach

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**Abstract.** The development of digital technology and the rapidly increasing number of smartphones and internet users in Indonesia, are potential factors for business actors in utilising digital technology in running their businesses. Business actors in marketing their products can utilise the emergence of many marketplaces, e-commerce or digital platforms. In addition, in increasing competition, business actors must also be able to maximise the presence of technology that can help improve the experience for potential customers. One of them is the use of Augmented Reality (AR) technology. AR is an interactive technology that combines the real and virtual worlds and is projected simultaneously. AR technology has started to be used in e-commerces and will continue to grow in the future. Quantitative research methods will be used in this study, in which the data collection technique uses a questionnaire with a Linkert scale. The number of respondents studied was 210 people. Furthermore, the testing technique uses the Structural Equation Model (SEM) and Path Analyst. The results of this study indicate that all dimensions of the technology acceptance model, except the enjoyment dimension, have a positive and significant effect on purchase intention. Technology such as Augmented Reality is expected to have the main function (usefulness). In addition, the analysis results found that the Technology Acceptance Model is a mediator between Augmented Reality and Purchase Intention.

**Keywords:** Augmented Reality · Structural Equation Model · Technology Acceptance Model

## 1 Introduction

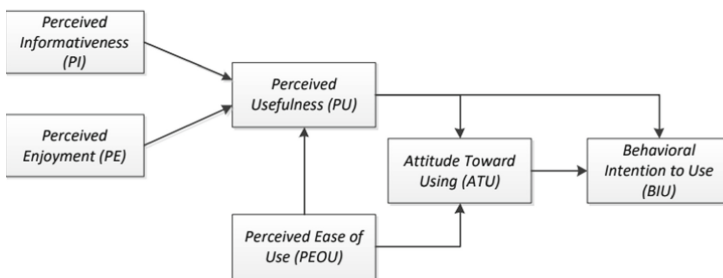
The concept of this research uses a technology acceptance model (TAM). This model states that users will be more likely to choose a system if the system is easy to use and useful. The Technology Acceptance Model can be used to describe and estimate the acceptance of a system or application. This method has a fundamental basis for knowing the factors that influence the acceptance of a system and then explaining how the causal relationship relates to the benefits of an information system and its ease of use.

The Digital Market Outlook report states that e-commerce users in Indonesia in 2021 are predicted to grow 15% from a total of 138 million users in 2020, reaching 159 million users in 2021. Thanks to a growing ecosystem, e-commerce users are predicted to

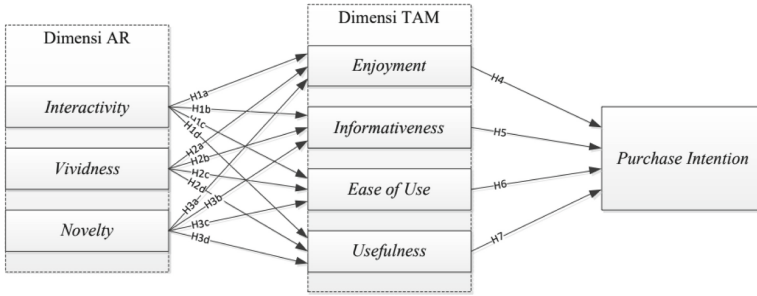
continue to grow in the next few years. Google's e-Conomy SEA 2020 report found that 93% of respondents in Indonesia alone said they would return to using digital services such as e-commerce even after the Covid19 pandemic ended. Business competition in e-commerce is getting tougher every day, requiring business people always to develop features that are felt to improve the experience optimally. The latest technology that is considered capable of optimising customer experience in increasing the purchase intention of a product is augmented reality technology. The implementation of augmented reality technology in e-commerce is now seen as a way of shopping for the future.

According to Kotler & Armstrong [1], e-commerce is an online channel and digital platform that can be reached by a person through a computer with an internet connection, which is used by business people in carrying out their business activities and used by consumers to obtain information by using the help of digital platforms media which in the process begins with providing services. Information to consumers in making choices. Augmented Reality is able to produce a clear representation of a product [2]. The use of Augmented Reality can create effectiveness and efficiency in explaining products to customers. The advantages of Augmented Reality technology in the industry can increase the number of customer visits and enhance the shopping experience. The uniqueness of Augmented Reality technology produces three main characteristics, namely AR Interactivity, AR Vividness, and AR Novelty [3]. Purchase Intention is a tendency to purchase a product that can be measured by the level of probability that will occur [1]. Purchase Intention is obtained from a process of thinking and learning that forms a perception. In addition to perception, Purchase Intention can also create a motivation to make a purchase. The benefits that can be felt if you can map purchase intentions are that it can increase revenue in marketing activities. Technology Acceptance Model (TAM) is a model used to analyze whether a system is accepted or not, especially information systems [4]. Initially, the TAM model was developed as a simple model and relied on 4 (four) basic constructs, namely perceived ease of use (PEOU), perceived usefulness (PU), attitude toward using (ATU), and Behavioral Intention to Use (BIU) [5]. TAM construct variable show by Fig. 1 as follow:

The formulation of the research problem is "Does the Technology Acceptance Model (TAM) become the mediator and have a relationship between the presence of Augmented Reality (AR) technology and increase purchase intention (purchase intention)? Based on the formulation of the research problem, the objectives of this study are as follows:



**Fig. 1.** TAM Construct Variables



**Fig. 2.** Theoretical Framework & Hypotheses

1. Identify the effect of Augmented Reality (AR) technology on the Technology Acceptance Model (TAM)
2. Identify the effect of the Technology Acceptance Model (TAM) on purchase intention (purchase intention).

## 2 Method

### 2.1 Testing Technique

The testing technique used in this study is to use the Structural Equation Model (SEM). The steps used in the PLS-SEM method include the Measurement Model and Structural Model Testing.

The first step that needs to be done in the PLS-SEM method is to check the measurement model first. If the measurement model can meet all the criteria, then the research can be continued to the structural model stage. On the measurement model stage are testing Face Validity, Outer Loading, convergent validity, discriminant validity & reliability testing.

structural model test which is a continuation after evaluation of the measurement model. This test is used to see the relationship between the construct variables. The stages of testing the structural model are testing for collinearity, coefficient of determination, & path coefficients.

### 2.2 Theoretical Framework & Hypotheses

Figure 2 show the theoretical framework and hypotheses proposed for this research as follow:

## 3 Result and Discussion

### 3.1 Colinearity

In the first structural model test, the collinearity check on the construct variables. The table below proves that there is no collinearity problem in the structural model of this research because all construct variables have a VIF value < 5.

**Table 1.** Coefficient of Determination.

Variable	R Square
Enjoyment	0.585
Informativeness	0.406
Ease of Use	0.663
Usefulness	0.673
Purchase Intention	0.641

### 3.2 Coefficient of Determination

The next test is to see the value of R2 which can explain the proportion of variation in the value of the affected variable (endogenous) which can be explained by the variable that influences it (exogenous). The criteria are:

- If the value of R2 = 0.75 - > substantial (big/strong)
- If the value of R2 = 0.50 - > moderate (medium)
- If the value of R2 = 0.25 - > weak (small)

Table 1 show coefficient of determination as follow:

Based on Table 1, it is found that most all variables have an R2 value above 0.50, which means that to be in moderate (medium) category, the endogenous variable can be explained by exogenous variable.

### 3.3 Path Coefficients

Path coefficients are used to test the hypothesis, in this study the method used is SEM, and is assisted by the SMARTPLS application with a 95% confidence level, and a significance of 5%. Path coefficients show by Table 2 as follow:

The results of hypothesis testing based on Table 2 there are 9 hypotheses, namely H1d, H2c, H3a, H3b, H3c, H3d, H5, H6, and H7 that meet the requirements for the acceptance of a hypothesis, so the 9 hypotheses can be said to have a strong and positive relationship between the construct variables. Path Analysis show by Fig. 3 as follow:

Then in the following Table 3 shows the results of testing the dimensions of the TAM mediator variable that connects the effect of augmented reality and purchase intention:

Based on Table 3, there is a very strong relationship between Novelty - > Informativeness - > Purchase Intention because it has a large coefficient value of

0.102 and has a positive relationship.

In the next stage, calculations are carried out using the Sobel test, which is used to determine the relationship passed by the mediating variable. Figure 4 is the Sobel test model and calculations as follow:

$$z = \frac{ab}{\sqrt{(b^2 SE_a^2) + (a^2 SE_b^2)}} \quad (1)$$

**Table 2.** Path Coefficients

	Original Sample	t values	P values	Hypothesis Desicion
Interactivity - > Enjoyment	0.072	0.754	0.451	Not supported
Interactivity - > Informativeness	0.115	1.094	0.274	Not supported
Interactivity - > Ease of use	0.063	0.767	0.443	Not supported
Interactivity - > Usefulness	0.180	1,981	0.048	Supported
Vividness - > Ejoyment	0.170	1,661	0.097	Not supported
Vividness - > informativeness	0.146	1,146	0.252	Not supported
Vividness - > ease of use	0.312	3,628	0.000	Supported
Vividness - > Usefulness	0.064	0.561	0.575	Not supported
Novelty - > Enjoyment	0.558	5,341	0.000	Supported
Novelty - > interactiveness	0.413	3,123	0.002	Supported
Novelty - > Ease of us	0.483	4,393	0.000	Supported
Novelty - > Usefulness	0.614	5,959	0.000	Supported
Enjoyment - > Purchase Intention	0.118	1,562	0.118	Not supported
Informativeness - > Purchase Intention	0.246	3,676	0.000	Supported
Ease of use - > Purchase Intention	0.207	2,188	0.029	Supported
Usefulness - > Purchase Intention	0.344	3,587	0.000	Supported

SPSS AR output towards TAM show by Table 4 as follow:

Based on Table 4 it is known that the significance value of the Augmened Reality variable is 0.000 (<0.05), so it can be concluded that Augmented Reality has a significant effect on the Technology Acceptance Model.

SPSS AR output towards purchase intention (TAM as Mediation) show by Table 5 as follow:

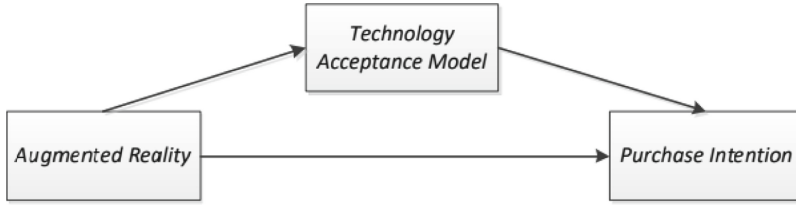
Based on Table 5 it is known that the significance value of the Technology Acceptance Model variable is 0.000 (<0.05), so it can be concluded that the Technology Acceptance Model has a significant effect on Purchase Intention.

Result of Sobel test calculation show by Table 6 as follow:

The results of calculations with the Sobel test based on Table 6, obtained that the z value is 8.124 which is greater than 1.96 (8,124 > 1.96), it can be concluded that the Technology Acceptance Model mediates Augmented Reality with Purchase Intention.

Final research model show by Fig. 5 as follow:





**Fig. 4.** Variable of relationship model.

**Table 4.** SPSS AR output towards TAM

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constants)	13.	2.440		5.630	.000
	Augmented Reality	1.0	0.43	.564	24.801	.000

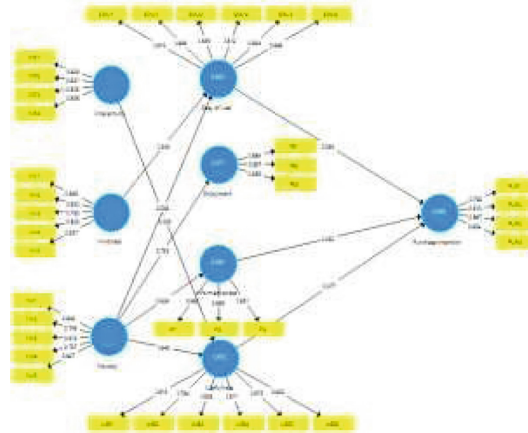
**Table 5.** SPSS AR Output towards Purchase Intention (TAM as Mediation)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constants)	0.44	.856		.052	.959
	Augmented Reality	0.29	.028	.085	1.020	.309
	Technology Acceptance Model	.198	.023	.725	8.723	.000

If viewed based on the relationship between variables, it is known that the Technology Acceptance Model is a mediator in the relationship between Augmented Reality and Purchase Intention. So it can be said that the Augmented Reality technology that has been applied by Watson Id Mobile Apps through the #ColourMe feature has been accepted by consumers and indirectly affects their purchase intention.

**Table 6.** Sobel Test Calculation Results

		Test Statistics	Std. Error	P Value
a	1.069	8.124	0.026	0
b	0.198			
SEa	0.043			
SEb	0.023			



**Fig. 5.** Final Research Model

## 4 Conclusion

Result of testing the collected data, it is known that:

- a. Interactivity has a positive and significant effect on Perceived Usefulness on #ColourMe feature in Watson ID Mobile Apps.
- b. Vividness has a positive and significant effect on Perceived Ease of Use on the #ColourMe feature in Watson ID Mobile Apps
- c. Novelty has a positive and significant effect on Perceived Enjoyment on the #ColourMe feature in Watson ID Mobile Apps  
Novelty has a positive and significant effect on Perceived Informativeness on the #ColourMe feature in Watson ID Mobile Apps
- d. Novelty has a positive and significant effect on Perceived Ease of Use on the #ColourMe feature in Watson ID Mobile Apps
- e. Novelty has a positive and significant effect on Perceived Usefulness on the #ColourMe feature in Watson ID Mobile Apps
- f. Perceived Informativeness has a positive and significant effect on Purchase Intention and became the mediator between Augmented Reality and Purchase Intention
- g. Perceived Ease of Use has a positive and significant effect on Purchase Intention and became the mediator between Augmented Reality and Purchase Intention



- h. Perceived Usefulness has a positive and significant effect on Purchase Intention and became the mediator between Augmented Reality and Purchase Intention
- i. TAM variables proved that the mediator between Augmented Reality and Purchase Intention.

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