

# MEASURING APPLICATION AUGMENTED REALITY TO INCREASE MSME PERFORMANCE USING TECHNOLOGY ACCEPTANCE MODEL

JAM

20, 4

Received, June '22

Revised, July '22

September '22

November '22

Accepted, November '22

**Noni Setyorini**

Management, Universitas PGRI Semarang, Indonesia

**Qristin Violinda**

Management, Universitas PGRI Semarang, Indonesia

**Arisul Ulumuddin**

Study Program of Primary School Teacher, Universitas PGRI Semarang, Indonesia

**Erandi Jinadari Wattagama**

Banking and Finance, Wayamba University of Srilanka, Srilanka

**Abstract:** This study aimed to examine the effect of perceived usefulness and perceived ease to use on the performance of MSMEs in Ngerangan Village, Klaten, with trust as a mediator. The data collection method used is probability sampling with a saturated sampling technique. The total respondents in the study were 100 respondents, which is MSME in Ngerangan Village. Hypothesis testing using smartPLS software. The study results are perceived usefulness and perceived ease of use affect trust. Likewise, trust influences the performance of MSMEs in Ngerangan Village. However, perceived usefulness does not directly affect the performance of MSMEs. In contrast to perceived ease to use, which directly influences the performance of MSMEs. The practical implications of this research are that the technology adopted by MSMEs must be easy to use and have many benefits for business development.

**Keywords:** MSME, Perceived Usefulness, Perceived Easy to Use, Performance, Trust

**Cite this article as:** Setyorini, N., Q. Violinda, A. Ulumuddin, and E. J. Wattagama. 2022. Measuring Application Augmented Reality to Increase MSME Performance using Technology Acceptance Model. *Jurnal Aplikasi Manajemen*, Volume 20, Number 4, Pages 768–781. Malang: Universitas Brawijaya. <http://dx.doi.org/10.21776/ub.jam.2022.020.04.02>.

The growth of internet users in Indonesia continues to increase. Based on a survey conducted by the Association of Indonesian Internet Service Providers, data shows that every year, internet users in Indonesia continue to experience a constant increase. Based on technological advances that are increasingly rapidly increasing, gadgets and mobile phones can now be used for product promotion purposes so that they can be used for business activities of companies and MSMEs. Safitri (2020) stated that the MSME strongly influences Indonesia's economic development. It will be important in developing IT-based MSME and optimally utilizing Augmented Reality (AR). Augmented Reality (AR) is one of the modern technologies sellers can use to promote goods to potential buyers. Augmented Reality/AR enriches an object or space in the physical



Journal of Applied Management (JAM)  
Volume 20 Number 4,  
December 2022  
Indexed in DOAJ -  
Directory of Open Access  
Journals, ACI - ASEAN  
Citation Index, SINTA -  
Science and Technology  
Index, and Google  
Scholar.

---

*Corresponding Author:*  
Qristin Violinda, Management,  
Universitas PGRI Semarang,  
Indonesia, DOI: <http://dx.doi.org/10.21776/ub.jam.2022.020.04.02>

world by adding virtual three-dimensional elements from a computer (Altinpulluk, 2017). Currently, AR is one of the technologies that is widely spread in society because its use is already connected to mobile devices. AR is also one of the technologies that support the birth of the Industrial Revolution 4.0 because it is disruptive or able to replace various human works and creates efficiency and effectiveness (Van Krevelen and Poelman, 2010). AR is a digital technology that can be used in various activities, including in the marketing of a product (Gallardo et al., 2018). The technology is considered capable of providing its own experience for users in enjoying digital content about a product compared to other digital media. Augmented Reality (AR) is a digital technology that has provided many benefits in various activities, including marketing (Carmigniani et al., 2011). As a technology that can be accessed via mobile devices, AR is considered to be an effective technology for conducting marketing communications. Not only increasing a person's intention to buy products, but AR technology on mobile devices is also considered a communication medium that provides solutions according to customer needs, can be used anywhere, and encourages competitive advantage from customers. As one of the technologies supported by mobile devices, AR is considered to be able to support marketing and IMC communication activities on a product. By using AR, consumers will be more interested in buying a product (Mekni and Lemieux, 2014). In fact, users of the AR application can provide comments in the review column on the Apps Store, which can function as a Word of Mouth (WoM). Augmented Reality (AR) is currently not only used for large companies but augmented reality is also very useful if used for MSMEs in Indonesia. The Ngerangan Village area, Bayat District, is one of the potential tourist villages owned by Klaten Regency. The area has a beautiful landscape and can be used to encourage the local economy, which attracts tourists to visit. Ngerangan Village has many MSMEs that are already running, such as Angkringan, Fertilizer MSMEs, Handicraft MSMEs, Doelanan MSMEs, etc. BUMDES Nerangjaya has managed all MSMEs operating in Ngerangan Vil-

lage to be more competitive. Applications such as applied augmented reality are also very useful in assisting MSMEs in Ngerangan Village, providing information, and assisting customers. In AR technology, users can visualize objects in 3 dimensions. AR has the advantage of being interactive and real-time, so AR is widely implemented in various fields. Although it is popular and often spoken about, augmented reality technology is rarely used by MSMEs (Businesses, Micro, Small, and Medium Enterprises) and small business actors (Kristian et al., 2020). Limited capital for equipment procurement, video production, and investment in augmented reality technology are the main obstacles. AR has the benefit of getting more customers, namely the use of AR for MSMEs, so that customers feel a trying experience that attracts consumers to shop at MSMEs so that customers do not need to go directly to MSME locations. Still, before consumers can see products, AR can provide information about products instantly to customers (Fitzgerald et al., 2013). Based on this condition, this study uses the Technology Acceptance Model (TAM) theory based on the theory expressed by Venkatesh and Davis (2000) showed that TAM is a concept that is considered the best in explaining user behavior toward new information technology systems. TAM is a model that is considered the most appropriate in explaining how users receive a system. The TAM factor used in this study is perceived usefulness and perceived ease of use, following the theory of Davis (2013), which stated that perceived usefulness and perceived ease of use are basic determinants of user acceptance. Perceived usefulness is a measure where technology is believed to benefit people who use it. In contrast, the perceived ease of technology is a measure where a person believes computers can be understood and used easily. Perceived ease of use is the extent to which users believe using the system will not find difficulties (Davis, 2013). Based on previous research, (Wahyudi and Pawestri, 2006) stated that perceived usefulness and ease of use impacted performance. Aboelmaged and Gebba (2013) also explained the influence of technology adoption on fintech performance in banking. Chuang et al. (2016) showed the impact of adopting fintech

services with a TAM perspective. Based on some of these previous studies, Technology Acceptance Model (TAM) is used as the basic construction of research because TAM has been studied and has proven to be one of the most effective theories in predicting or explaining technology acceptance. Therefore, this study examines whether TAM can be used to identify the factors influencing technology acceptance toward using Augmented Reality in MSMEs in Ngerangan Village.

## LITERATURE REVIEW

### Technology Acceptance

Technology acceptance is “a user’s willingness to employ technology for the tasks it is designed to support.” Technology acceptance can be defined as the willingness of users to use technology to support the tasks that have been designed (Teo, 2011). Technology Acceptance Model (TAM) This model was originally proposed by Davis and has become the most widely used model to explain user acceptance of new technologies (He et al., 2018). TAM was developed from the Theory of Reasoned Action and provided a basis for tracking how external variables influence beliefs, attitudes, and intentions to use new technologies (Venkatesh and Davis, 2000). This model has been used to predict acceptance of new IT and has proven reliable in explaining acceptance behavior in several areas of information systems (Kamal et al., 2020).

### Perceived Ease of Use

Perceived ease of use means an individual’s belief that using an information technology system will not be inconvenient or require great effort when used (free of effort) (Tahar et al., 2020). Perceived ease is related to how easy it is to access a technology system and its display. Based on the Technology Acceptance Model (TAM) model introduced by Davis (2013), users’ perceived ease of use is one of the most critical factors in their acceptance of a system.

### Perceived Usefulness

Perceived usefulness is a person’s tendency to use technology and believe it will help him do a bet-

ter job (Subramanian, 1994). According to Chawla and Joshi (2019), Perceived Usefulness is the belief that using technology will improve user performance. Perceived usefulness (PU) – Fred Davis defined this as “the degree to which a person believes that using a particular system would enhance their job performance.” It means whether or not someone perceives that technology to be useful for what they want to do (Kamal et al., 2020).

### Trust

Trust is often defined as personality-based trust because it refers to a person’s general tendency to trust or distrust others. According to (Chuang et al., 2016), trust is a willingness to be loyal to a service provider based on positive expectations of the service provider’s behavior in the future. Trust is one of the factors that influence the acceptance of technology. It is based on several research results, including Zakwannur, which concluded that trust affects e-commerce transactions and will improve company performance (Haning, 2021).

### Performance

Performance is the achievement obtained by a person or company in achieving a goal. Maximum performance is the main expectation of a business unit in running its business. Performance is the success of personnel, teams, or organizational units in realizing predetermined strategic goals with the expected behavior (Armstrong et al., 2004). Good, maximum, and optimal performance is the goal of all MSMEs. Good performance in all sectors, including finance, production, distribution, and marketing, is an absolute requirement for MSMEs to survive (Chuang et al., 2016). With good performance, an MSME is also expected to become the backbone of the economy and will play an increasingly important role in the national economy.

## HYPOTHESIS DEVELOPMENT

### Perceived Easy to Use toward Trust

Consumer convenience is defined as easy to make a purchase transaction. Perceptions of convenience include the ease of making purchase transactions in a way, the ease of comparing product

prices, and the ease of procedures in online shopping. The convenience of the intended procedure is how easy it is to make payment transactions to buy products of interest. Individual perception related to the ease of using the application (perceived ease of use) is the degree to which individuals believe that using a particular system will be error-free. Gefen (2003) analyzed the effect of perceived ease of use on trust, showing that perceived ease of use had a positive and significant effect on trust. (Bartov et al., 2018) said perceived ease of use had an impact on trust. It means that the higher the perceived ease of use perceived by consumers, the higher the level of trust will also be.

H1: Perceived Easy to Use has a positive impact toward Trust

### **Usefulness to Trust**

(Davis, 1989) stated that the perception of usefulness is the degree to which a person believes that using a particular system would enhance their job performance, i.e., a person's level of confidence in the use of a certain technological system will increase that person's work performance (Erasmus et al., 2015; Mauro and Afonso-Mazzon, 2007). This concept describes the system's benefits for users related to productivity, task performance, effectiveness, the importance of a task, and overall usefulness (Rafique et al., 2020). Suki and Suki (2011) showed a positive and significant effect of perceived benefits on trust. Perception of convenience is also a consideration to build trust that arises in the minds of consumers. Perceived ease of use and perceived usefulness were positively and significantly related to trust (Henderson and Divett, 2003). It means that the higher the perceived usefulness of the consumer, the higher the level of trust will be.

H2: Perceived Usefulness has a positive impact toward Trust

### **Trust to MSMEs Performance**

Chuang et al. (2016) are all consumer knowledge and all conclusions about objects, attributes, and benefits. Trust is the individual's willingness to depend on other parties involved in the exchange because the individual has confidence in the other

party. Building trust in long-term relationships with customers is an important factor. Kamal et al. (2020) showed that trust positively affects buying interest. This trust is built on the trust of business relationships with partners. Greater consumer confidence motivates customers to produce more intention to buy at shopping centers via the internet. Haning (2021) also emphasized that trust must be built to improve the performance of MSMEs Performance.

H3: Trust has a positive impact toward MSMEs' Performance

### **Perceived Easy to Use to MSMEs Performance**

Perceived ease of use is an understanding that refers to the extent to which a person believes that using a particular system will be free from effort (Davis, 2013). If an information technology system is difficult to operate, users will spend a lot of energy to be able to use the information technology system. An information technology system, in general, must be easy to use by all parties, including the application, so its users can accept it. Performance is the achievement obtained by a person or company in achieving a goal. Maximum performance is the main expectation of a business unit in running its business. Performance is the success of personnel, teams, or organizational units in realizing predetermined strategic goals with the expected behavior (Armstrong et al., 2004).

H4: Perceived easy-to-use has a positive impact toward MSMEs Performance

### **Perceived Usefulness to MSMEs Performance**

Perceived usefulness is also defined as a measure of the use of a technology that is believed to bring benefits to the people who use it, which states that this perceived usefulness is associated with an increase in individual performance, which has an impact on the opportunity to obtain benefits, both material and non-material (Davis, 1989). The information system developed by MSMEs is expected to have usefulness values so that they can improve MSME performance. Good, maximum, and optimal performance is the goal of all MSMEs. Good performance in all sectors, including finance, pro-

duction, distribution, and marketing, is an absolute requirement for MSMEs to survive (Venkatesh and Davis, 2000). With good performance, an MSME is also expected to become the backbone of the economy and will play an increasingly important role in the national economy.

H 5: Perceived Usefulness has positive impact toward MSMEs' Performance

**The Mediation Role of Trust**

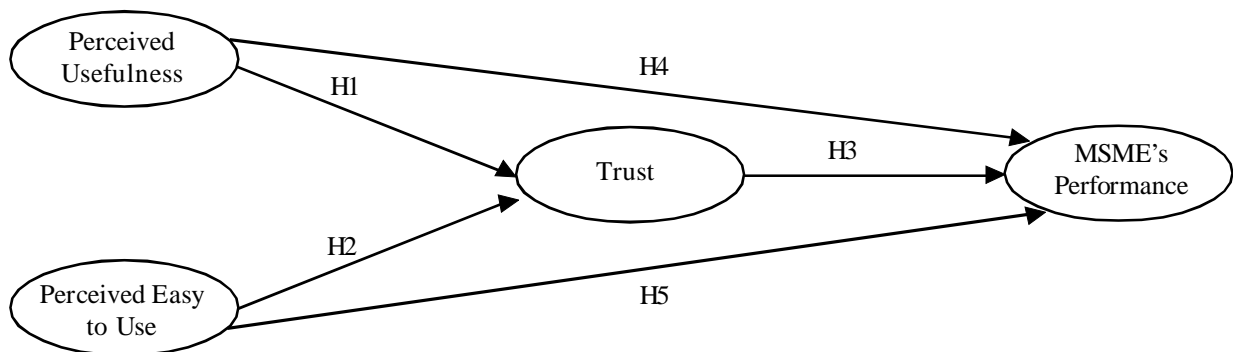
Transactions carried out through e-commerce have a relatively high-risk potential, so trust has an important role in transactions. Consumers will feel safe in transactions if marketers can maintain privacy, and product quality, be honest and keep promises about the products offered and the time promised. Venkantesh and Davis (2000) explained that perceived usefulness describes individual interactions with the system that are felt to provide benefits and make buying and selling activities easier. It will increase consumer confidence, so this will

have an impact on increasing MSME's performance.

H6: Trust mediates the effect of perceived usefulness on MSME's performance

Trust is a certain party's belief in another in a transaction relationship that the person he trusts will fulfill all his obligations properly as expected. Trust is the foundation of business. A business transaction between two or more parties will occur if each trusts the other. If a customer no longer trusts a service company, then most likely, that person will no longer use the services of that company. Venkantesh and Davis explained that perceived easy to use describes individual interactions with systems that are perceived as easy to use so that it will increase consumer confidence. It will have an impact on increasing Micro, Small Medium Enterprise (MSMEs)

H7: Trust mediates the effect of perceived usefulness on MSME's performance



**Figure 1. Research Model**

**METHOD**

This study uses quantitative methods. The quantitative method is one way of research that adopts the flow of positivism (Neuman, 2014). This research uses a probability sampling method with a saturated sampling technique. The research respondents were MSMEs in Ngerangan Village, with as many as 100 respondents. The selection of MSMEs in Ngerangan Village was chosen because MSMEs in Ngerangan

Village have the characteristics of angkringan and are the initiators of Angkringan Village, so they have many MSMEs in the form of angkringan that have been established and managed by BUMDES. BUMDES which manages angkringan SMEs already have three stars. Namely, BUMDES has been formed and has institutional foundations but is not yet strong. Data was collected using a questionnaire. While data processing using SmartPLS 3.0.

This study conducted the test in two stages. The first stage is evaluating the measurement model, which aims to ensure that the research instrument used is valid and reliable. Meanwhile, in the second

stage, the evaluation of structural model testing was carried out. This test consists of the goodness of fit testing, statistical t-test, R square test, and path coefficient.

**Table 1. Variable Operational Definition**

<b>Variable</b>	<b>Concept</b>	<b>Indicator</b>	<b>Example</b>
Perceived usefulness	Davis (1989) defines the perception of usefulness as the degree to which a person believes that using a particular system would enhance their job performance	Perceived usefulness is measured using 5 indicators	The augmented reality application is useful for obtaining information on MSME products
Perceived ease of use	Perceived ease of use is an understanding that refers to the extent to which a person believes that using a particular system will be free from effort (Davis, 1989).	Perceived easy-to-use is measured using 4 indicators	I find it easy to use the facilities available in investment applications
Trust	(Su et al., 2013), trust is a willingness to be loyal to a service provider based on positive expectations of the service provider's behavior in the future	The trust variable is measured using 7 indicators.	An augmented reality application that I choose to be trusted
MSME's performance	MSME's performance is the achievement obtained by a person or company in achieving a goal.	MSME's performance is measured using 7 indicators	An augmented reality application has been developed to have good performance and follow current business developments.

**RESULTS**

Respondents in this study were AR (Augmented Reality) users at several MSMEs managed by BUMDES Nerangjaya Bayat Klaten after the AR (Augmented Reality) program was developed. The process of distributing questionnaires is carried out by distributing questionnaires directly to the field for approximately one month. The details of the frequency and characteristics will be explained in the following table:

Based on the table, the average augmented reality user is male. Whereas in the age range of AR applications, users are dominated by the age of 31-45 years, then the age of 21-30 years as much as 32%, and the least is the age of <17 years, as much as 11%. Meanwhile, in terms of education, the average AR application users are respondents

with a high school education of as much as 47%, then a diploma education level of as much as 23%, an undergraduate education level of 18%, and junior high school education level as much as 12%. The frequency of respondents buying MSME products in BUMDES is mostly 3-10X a month, as much as 49%, with products in great demand being culinary at as much as 48%, entertainment at 32%, fertilizer at 15%, and handicrafts at 5%.

Tests in this study are divided into two categories. The first is the evaluation of measurement testing. The measurement evaluation is divided into two tests: the validity test and the reliability test. The validity test uses convergent validity using the AVE and outer loading values. At the same time, the reliability test uses composite reliability and Cronbach alpha values. Validity testing using AVE has an as-

assessment standard. Namely, the AVE value must be above 0.5. Let's look at the AVE value of each variable. We can see that the AVE value of the perceived usefulness, perceived easy to use, trust, and performance variables are above 0.5 so that all vari-

ables are declared valid (Hair et al., 2009). As for the next, when viewed using the outer loading value, it can be seen in figure 1. The results of the outer loading values in Figure 2 each have a value greater than 0.7, so all indicators are declared valid.

**Table 2. Characteristics of Respondents**

Characteristic		Frequency	Percentage
<b>Gender</b>	Male	56	56%
	Female	44	44%
<b>Age</b>	< 20 years old	11	11 %
	21-30 years old	32	32 %
	31-40 years old	45	45%
	41-50 years old	12	12%
	>50 years old	0	0%
<b>Education</b>	Junior High School	12	12 %
	Senior High School	47	47 %
	Vocational Degree	23	23 %
	Bachelor Degree	18	18%
<b>Shopping frequency in a month</b>	<3 times a year	27	27%
	3-10 times a year	49	49%
	>10 times a year	24	24%
<b>Frequently purchased products</b>	Culinary	48	48%
	Fertilizer	15	15%
	Crafting	5	5%
	Entertainment	32	32%

If the validity test has been met, the next step is reliability testing using the Cronbach alpha value and the composite reliability value. The results of reliability testing can be seen in the following table. Reliability testing in terms of the value of Cronbach alpha and composite reliability. The variable is declared reliable if the Cronbach alpha value is above 0.7 while the composite reliability value is above 0.7 (Ghozali, 2015). From the Cronbach alpha value of each variable, it can be concluded that the Cronbach alpha and composite reliability values have been above the required standard, so the variables perceived usefulness, perceived ease to use, trust, and performance are reliable variables. Second, testing the evaluation of the structural model.

Testing in this stage ensures that the research model developed is a good one, and then the research hypothesis is tested. The test consists of testing the fit model, r-square test, statistical t-test, and path coefficient (Cooper and Schindler, 2009). The model fit test in this research model is seen from the SRMR, Chi-Square, and NFI values. In order for the model to meet the model fit criteria, the SMSR value must be less than 0.05 (Cangur and Ercan, 2015). However, based on the explanation from the SMART PLS website, the limitations or criteria for the fit model include RMS Theta value or Root Mean Square Theta < 0.102, SRMR value or Standardized Root Mean Square < 0.10 or < 0.08 and NFI value > 0.9.

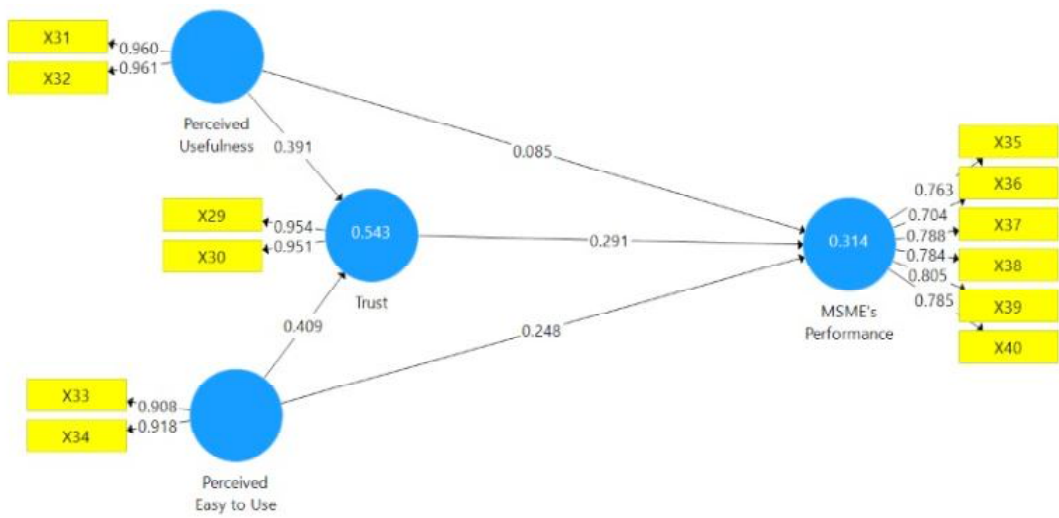


Figure 2. Result of Validity Testing using Outer loading Value

Table 3. Validity Testing using AVE Value

Variable	AVE Value	Conclusion
Perceived Usefulness	0.923	Valid
Perceived Easy to Use	0.834	Valid
Trust	0.907	Valid
MSME's Performance	0.596	Valid

Table 4. Reliability Testing

Variable	Cronbach Alpha	Composite Reliability
Perceived Usefulness	0.916	0.960
Perceived Easy to Use	0.801	0.909
Trust	0.865	0.898
Performance	0.897	0.951

Following the fit model image above, the RMS Theta or Root Mean Square Theta value is  $0.064 < 0.102$ , the NFI value is  $0.762 < 0.9$ , the model belongs to the marginal fit category, the SRMR or Standardized Root Mean Square value is  $0.064 < 0.10$ . So based on the two assessments of the model, it is concluded that the model fits the data. After testing the fit model, then testing the R Square value. The R square test is used to explain the magnitude of the proportion of variation of the dependent variable explained by the independent variable. The results of the R Square test are as follows (Table 6). The R Square value of the effect of X1 and X2 simultaneously on Y is 0.543 with an adjusted r-square value of 0.533. So, it can be explained that all exogenous constructs (X1 and X2) simultaneously affect Y by 0.533 or 53.3%. Because Adjusted R

Square is more than 33% but less than 67%, the effect of all exogenous constructs X1 and X2 on Y are moderate. While the R Square value of the influence of X1, X2, and Y simultaneously on Z is 0.314 with an adjusted r-square value of 0.290. So, it can be explained that all exogenous constructs (X1, X2, and Y) simultaneously affect Z by 0.290 or 29%. Because Adjusted R Square is more than 33%, the effect of all exogenous constructs X1, X2, and Y on Z is weak. Furthermore, testing is carried out to test the research hypothesis as seen from the t-statistic value or p-value to determine whether or not the hypothesis is supported. In addition, it is also necessary to look at the path coefficient value to see the direction and magnitude of influence between research variables. The following are the results of testing the research hypothesis (Table 7).



**Table 5. Model Fit**

Parameter	Saturated Model	Estimated Model
SRMR	0.064	0.064
Chi-Square	170.493	170.493
NFI	0.762	0.762
RMS theta	0.275	0.275

**Table 6. R Square Test**

Variable	R Square	Adjusted R Square
Trust	0.543	0.533
Performance	0.314	0.290

**Table 7. Hypothesis Testing**

	O	M	STDEV	T statistics	P value
Perceived Usefulness => Trust	0.391	0.384	0.102	3.842	0.000
Perceived Easy to Use => Trust	0.409	0.413	0.102	4.000	0.000
Trust => Performance	0.291	0.286	0.129	2.258	0.024
Perceived Usefulness => MSME's Performance	0.085	0.086	0.104	0.823	0.411
Perceived Easy to Use => MSME's Performance	0.248	0.251	0.117	2.126	0.034
Perceived Usefulness => Trust => MSME's Performance	0,114	0,114	0,059	1,933	0,054
Perceived Easy to Use => Trust => MSME's Performance	0,119	0,122	0,063	1,896	0,059

The effect of perceived easy to use on trust is 0.410 with a t-statistic value of 4.095 > 1.96 and a p-value < 0.05, so the hypothesis is supported. Perceptions of the ease of use of Augmented Reality software are needed to continue to make improvements and adjustments related to providing information to consumers. Therefore, the software must be easy to use by MSMEs. If the software can facilitate and assist MSME business processes, it will create confidence to continue using the AR software. The effect of trust on performance is 0.521 with a t-statistic value of 6.629 > 1.96 and a p-value < 0.05, so the hypothesis is supported. The trust of MSMEs using AR for the benefits of using this technology will make MSMEs use the software so that they will be able to improve their MSME performance. It is because using this software makes MSMEs become recognized as a bridge between

Based on the results of testing the hypothesis, it can be seen that the effect of perceived usefulness on trust is 0.391 with a t-statistic value of 3.589 > 1.96 and a p-value < 0.05, so the hypothesis is supported. It is because if MSMEs feel that the AR (Augmented Reality) tool used is software that provides benefits for their business development, this will create a feeling of trust in the tool. Good software will provide information about the products offered, such as prices, product types, product content, etc. This information is very helpful for MSMEs to provide information to potential consumers so that MSMEs will have a sense of trust that the software developed will help them.

consumers and MSMEs. The effect of perceived usefulness on MSME's performance is 0.085 with a t-statistic value of 0.823 < 1.96 and p-value > 0.05, so the hypothesis is not supported. Perception of benefits does not affect the performance of SMEs. It is influenced by a readiness to use technology. If business actors and customers are not ready to use AR technology, this will not affect the performance of MSMEs. The effect of perceived usefulness on MSME's performance is 0.248 with a t-statistic value of 2.126 > 1.96 and p-value < 0.05, so the hypothesis is supported. The perception of ease of using AR applications is believed to attract consumers to seek information about the product, its benefits, and how to get the product so that it will attract consumers to make purchase transactions. The increase in transactions will impact improving the performance of MSMEs. The effect of perceived

usefulness on MSME's performance by the trust as mediating variable is 0.114 with a t-statistic value of  $1.933 < 1.96$  and p-value  $> 0.05$ , so the hypothesis is not supported. The effect of perceived easy to use on MSME's performance is 0.248 with a t-statistic value of  $2.126 > 1.96$  and p-value  $< 0.05$ , so the hypothesis is supported.

## **DISCUSSION**

### **Perceived Usefulness and Trust**

The AR application applied to MSMEs in Ngerangan Village has been able to visualize various MSME products well. Through AR technology, customers can personalize items through videos and images so that they can choose products that match their preferences and desired tastes, allowing them to make more informed purchasing decisions. It will make customers feel that this AR application is useful to help customers find the products they want. Perceived usefulness is one of the important perceptions when starting to implement a new application when consumers realize AR applications and understand their usefulness. AR applications are a way to introduce new products and provide information about locations, types of products offered, etc. It is useful for consumers to get more information about products, MSME locations, entertainment, etc. When AR is built well and continues to be updated regarding innovations made by MSMEs, it will increase consumer confidence. So that the AR application developed will be a reference for consumers.

### **Perceived Easy To Use and Trust**

MSMEs in Ngerangan Village are trying to make updates by applying augmented reality (AR) to their business. As a business entity, MSMEs in Ngerangan Village has tremendous potential in applying augmented reality (AR) technology. In addition to the large and diverse numbers, MSMEs can also target the wider community. Based on the business goal of attracting new customers and clients and retaining existing customers, AR allows new customers to find out which products are traded in MSMEs in Desa Ngerangan. Therefore, the applied

AR must make it easier for customers. If customers feel that this AR application is easy to use, then it will be able to attract and retain customers. Perceived ease of using AR applications and perceived benefits will increase customer trust in MSMEs in Ngerangan Village. It is because AR technology can improve the reputation of MSMEs in Ngerangan Village. Thus, ultimately helping to attract new buyers and retain existing customers. Technology-savvy MSMEs also offers a similar experience through the Augmented Reality application. AR applications for SMEs in Ngerangan Village can provide travel guides, maps of an area, recommendations on places to eat, and tourist attractions to help convince customers to visit Ngerangan Village.

### **Trust and MSME's Performance**

Trust in applications is important for MSMEs. A good level of trust in MSMEs will improve MSME performance. It is because trust is one of the proofs of acceptance of AR among the public. In addition, trust is central in facilitating various social interactions between community members and MSMEs, so trust is an integral requirement for maintaining successful interpersonal relationships. In addition, marketing, technology, access to capital, the effect of access to information, social networks, legality, business plans, entrepreneurship readiness, and government support simultaneously and significantly affect the performance of MSMEs. Micro, Small, and Medium Enterprises (MSMEs) are required to perform well. Performance is an issue in today's business world. It happens due to the community's demands for excellent or high-quality service. Quality is inseparable from standards because standards measure performance.

### **Perceived Usefulness and MSME's Performance**

Perceived usefulness has an impact on the performance of SMEs. Information technology readiness can primarily be seen in individuals who will use the technology and from the readiness of the technology itself. Individual readiness is the extent to which the individual can accept new technology

without any doubt about using it (Desmayanti and Zulaikha, 2012). Perceived usefulness can be a determinant in predicting the use of internet services (Gao and Bai, 2014). The same thing was expressed by Tahar et al. (2020) showed that the perceived usefulness of the system is related to the productivity and effectiveness of the system and its overall benefits to improve user performance. The more useful a technology is, the more users desire to use it. So that more consumers will use AR technology and make product purchases.

### **Perceived Easy To Use and MSME's Performance**

Perceived ease of using AR applications and perceived benefits will increase customer trust in MSMEs in Ngerangan Village. It is because AR technology can improve the reputation of MSMEs in Ngerangan Village. Thus, ultimately helping to attract new buyers and retain existing customers. Technology-savvy MSMEs also offers a similar experience through the Augmented Reality application. AR applications for SMEs in Ngerangan Village can provide travel guides, maps of an area, recommendations on places to eat, and tourist attractions to help convince customers to visit Ngerangan Village.

### **Mediation Role of Trust between Perceived Usefulness and MSME's Performance**

Previous research by Setyorini and Nugraha (2016) found that perceived usefulness positively and significantly influenced customers' repurchase intention through trust. Furthermore, Chiu et al. (2009) also found that customers' trust disappeared when they started to think that the new technology system brought them no advantages over the old method or system, which could alter their intention to re-buy or re-use the system of technology. This repurchase intention has also improved marketing performance (Chiu et al., 2009). Previous research by Oroh and Rumokoy (2015) found that trust positively impacted repurchase intention. Furthermore, another research by Aren et al. (2013) also found that trust could influence a customer's intention to

make another purchase decision from the same company. Further research by Setyorini and Nugraha (2016) and Wilson and Keni (2018) also confirmed that in the e-commerce sector, the trust had a positive impact on repurchase intention. Based on the results of previous studies and our research, this proves that trust mediates repeat purchases and can improve the performance of MSMEs in Ngerangan Village.

### **Mediation Role of Trust between Perceived Easy to Use and MSME's Performance**

Previous research by Aren et al. (2013) found that perceived ease of use positively impacted repurchase intention. Furthermore, a previous study by Chen (2012) also found that perceived ease of use could positively affect customers' intention to make another buying activity through the same stores. Wen et al. (2011) showed that perceived usefulness positively impacts repurchase intention. Furthermore, another research by Purnami and Nurcaya (2015) and Chen (2012) also found that perceived usefulness positively impacts repurchase intention. Ease of use of technology can give consumers the confidence to repurchase the product. If the product is sold a lot, this will also increase the performance of MSMEs (Chen, 2012).

## **CONCLUSIONS**

The TAM perspective used perceived usefulness and perceived easy-to-use variables in the technology adoption process. Based on research that has been done, the perceived usefulness variable has a positive and significant effect on trust, as well as the perceived easy-to-use variable also has a positive and significant effect on trust. Based on these conditions, when consumers know and feel the benefits of using augmented reality, consumers will create a sense of trust in MSME actors to make a purchase. At the same time, the trust variable has a positive and significant effect on the performance of MSMEs. However, perceived usefulness does not directly affect the performance of MSMEs. In contrast to perceived ease to use, which directly influences the performance of MSMEs.

## IMPLICATIONS

The results of this study are expected to help MSME to manage and create a quality customer experience by applying augmented reality to create trust in the seller and encourage the new customer so the performance of MSMEs will be better.

## LIMITATIONS

This study uses a questionnaire as a method of collecting data on respondents. However, this questionnaire can only capture the suitability of respondents' perceptions with the statements submitted to MSME actors so that the answers obtained can only answer the allegations put forward in the hypothesis. They have not been able to dig deeper into information about adopting augmented reality on MSMEs in Ngerangan Village.

## RECOMMENDATIONS

Further research needs to be carried out using other variables, such as local wisdom, local resources, local knowledge, etc., to improve the performance of SMEs in addition to testing the application of technology such as augmented reality. In addition, it is also necessary to consider research using qualitative methods to understand MSMEs more deeply so that it is easier for researchers to provide suggestions to improve MSME performance.

## ACKNOWLEDGMENTS

The researchers would like to thank the Ministry of Research and Technology - the National Research and Innovation Agency (KEMENDIKBUD-RISTEKDIKTI) for funding research through Scientific Research grants, as well as BUMDes Nerang Jaya Klaten for the support given to complete this research.

## REFERENCES

- Aboelmaged, M. and Gebba, T. R. 2013. *Mobile Banking Adoption: An Examination of Technology Acceptance Model and Theory of Planned Behavior*. International Journal of Business Research and Development, 2(1), pp. 35–50. DOI: <https://doi.org/10.24102/ijbrd.v2i1.263>.
- Altinpulluk, H. 2017. *Current Trends in Augmented Reality and Forecasts about the Future*. ICERI2017 Proceedings, 1 (November), pp. 3649–3655. DOI: <https://doi.org/10.21125/iceri.2017.0986>.
- Aren, S., Güzel, M., Kabadayý, E., and Alpkán, L. 2013. *Factors affecting Repurchase Intention to Shop at the Same Website*. Procedia-Social and Behavioral Sciences, 99, pp. 536-544.
- Armstrong, T. A., Ivers, D. J., Wagner, J. R., Anderson, D. B., Weldon, W. C., and Berg, E. P. 2004. *The Effect of Dietary Ractopamine Concentration and Duration of Feeding on Growth Performance, Carcass Characteristics, and Meat Quality of Finishing Pigs*. Journal of Animal Science, 82(11), pp. 3245–3253. DOI: <https://doi.org/10.2527/2004.82113245x>.
- Bartov, E., Faurel, L., and Mohanram, P. S. 2018. *Can Twitter Help Predict Firm-Level Earnings and Stock Returns?*. Accounting Review, 93(3), pp. 25–57. DOI: <https://doi.org/10.2308/accr-51865>.
- Carmigniani, J., Furht, B., Anisetti, M., Ceravolo, P., Damiani, E., and Ivkovic, M. 2011. *Augmented Reality Technologies, Systems and Applications*. Multimedia Tools and Applications, 51(1), pp. 341–377. DOI: <https://doi.org/10.1007/s11042-010-0660-6>.
- Cangur, S. and Ercan, I. 2015. *Comparison of Model Fit Indices Used in Structural Equation Modeling Under Multivariate Normality*. Journal of Modern Applied Statistical Methods, 14(1), pp. 14.
- Chawla, D. and Joshi, H. 2019. *Consumer Attitude and Intention to Adopt Mobile Wallet in India—An Empirical Study*. International Journal of Bank Marketing.
- Chen, Y. Y. 2012. *Why do Consumers Go Internet Shopping Again? Understanding the Antecedents of Repurchase Intention*. Journal of Organizational Computing and Electronic Commerce, 22(1), pp. 38–63.
- Chiu, C. M., Chang, C. C., Cheng, H. L., and Fang, Y. H. 2009. *Determinants of Customer Repurchase Intention in Online Shopping*. Online Information Review, 33(4), pp. 761-784.
- Chuang, L. M., Liu, C. C., and Kao, H. K. 2016. *The Adoption of Fintech Service: TAM Perspective*. International Journal of Management and Administrative Sciences (IJMAS, 3(07), pp. 1–15. [www.ijmas.org](http://www.ijmas.org).

- Davis, F. D. 1989. *Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology*. MIS Quarterly: Management Information Systems, 13(3), pp. 319–339. DOI: <https://doi.org/10.2307/249008>.
- Davis, F. D. 2013. *Information Technology Introduction*. 13(3), pp. 319–340.
- Desmayanti, E. and Zulaikha, Z. 2012. *Faktor-Faktor yang Mempengaruhi Penggunaan Fasilitas E-Filling oleh Wajib Pajak sebagai Sarana Penyampaian SPT Masa secara Online dan Realtime (Kajian Empiris di Wilayah Kota Semarang)*. Doctoral dissertation, Fakultas Ekonomika dan Bisnis.
- Erasmus, E., Rothmann, S., and van Eeden, C. 2015. *A Structural Model of Technology Acceptance*. SA Journal of Industrial Psychology, 41(1). DOI: <https://doi.org/10.4102/sajip.v41i1.1222>.
- Fitzgerald, E., Ferguson, R., Adams, A., Gave, M., and Yishay-Mor, R. T. 2013. *Augmented Reality and Mobile Learning: The State of the Art*. International Journal of Mobile and Blended Learning, 5(4), pp. 43–58.
- Gallardo, B., Bogan, A. E., Harun, S., Jainih, L., Lopes-Lima, M., Pizarro, M., Rahim, K. A., Sousa, R., Viridis, S. G. P., and Zieritz, A. 2018. *Current and Future Effects of Global Change on a Hotspot's Freshwater Diversity*. Science of the Total Environment, 635, pp. 750–760. DOI: <https://doi.org/10.1016/j.scitotenv.2018.04.056>.
- Gao, L. and Bai, X. 2014. *A Unified Perspective on the Factors Influencing Consumer Acceptance of Internet of Things Technology*. Asia Pacific Journal of Marketing and Logistics.
- Gefen, D. 2003. *TAM or just Plain Habit: A Look at Experienced Online Shoppers*. Journal of Organizational and End User Computing (JOEUC), 15(3), pp. 1-13.
- Ghozali, I. and Latan, H. 2015. *Partial Least Squares Konsep, Teknik dan Aplikasi Menggunakan Program Smartpls 3.0 untuk Penelitian Empiris*. Semarang: Badan Penerbit UNDIP.
- Hair, J. F. 2009. *Multivariate Data Analysis*.
- Haning, M. T. 2021. *Pengaruh Trust dan Perceived Ease of Use terhadap Intention Kaum Milenial dalam Menggunakan Aplikasi E-Commerce Shopee yang Dimediasi oleh Perceived of Usefulness*. Jurnal Ilmiah Manajemen Kesatuan, 9(1), pp. 1–8. DOI: <https://doi.org/10.37641/jimkes.v9i1.416>.
- He, Y., Chen, Q. and Kitkuakul, S. 2018. *Regulatory Focus and Technology Acceptance: Perceived Ease of Use and Usefulness as Efficacy*. Cogent Business and Management, 5(1). DOI: <https://doi.org/10.1080/23311975.2018.1459006>.
- Henderson, R. and Divett, M. J. 2003. *Perceived Usefulness, Ease of Use, and Electronic Supermarket Use*. International Journal of Human Computer Studies, 59(3), pp. 383–395. DOI: [https://doi.org/10.1016/S1071-5819\(03\)00079-X](https://doi.org/10.1016/S1071-5819(03)00079-X).
- Kamal, S. A., Shafiq, M., and Kakria, P. 2020. *Investigating Acceptance of Telemedicine Services through an Extended Technology Acceptance Model (TAM)*. Technology in Society, 60(November 2019), pp. 101212. DOI: <https://doi.org/10.1016/j.techsoc.2019.101212>.
- Kristian, M., Fitri, I., and Gunaryati, A. 2020. *Implementation of Augmented Reality for Introduction to Android-Based Mammalian Animals using the Marker-Based Tracking Method*. JISA (Jurnal Informatika Dan Sains), 3(1), pp. 1–6. DOI: <https://doi.org/10.31326/jisa.v3i1.623>.
- Mauro, J. and Afonso-Mazzon, J. 2007. *Adoption of Internet Banking: Proposition and Implementation of an Integrated Methodology Approach*. International Journal of Bank Marketing, 25(2), pp. 72–88. DOI: <https://doi.org/10.1108/02652320710728410>.
- Mekni, M. and Lemieux, A. 2014. *Augmented Reality/: Applications, Challenges, and Future Trends*. Applied Computational Science Anywhere, pp. 205–214.
- Neuman, W. L. and Robson, K. 2014. *Basics of Social Research*. Toronto: Pearson Canada.
- Oroh, C. R. 2015. *The Influence of Perceived Ease of Use, Perceived Usefulness, and Trust on Repurchase Intention of Lion Air E-Ticket*. Jurnal Berkala Ilmiah Efisiensi, 15(5).
- Purnami, N. M and Nurcaya, I. N. 2015. *Pengaruh E-Trust, Perceived Usefulness, and E-Satisfaction terhadap Online Repurchase Intention*. Seminar Nasional Sains and Teknologi (Senastek), Denpasar, Bali.
- Rafique, H., Almagrabi, A. O., Shamim, A., Anwar, F., and Bashir, A. K. 2020. *Investigating the Acceptance of Mobile Library Applications with an Extended Technology Acceptance Model (TAM)*. Computers and Education, pp. 145. DOI: <https://doi.org/10.1016/j.compedu.2019.103732>.
- Safitri, T. A. 2020. *The Development of Fintech in Indonesia*. 436, pp. 666–670. DOI: <https://doi.org/10.2991/assehr.k.200529.139>.
- Setyorini, R. and Nugraha, R. P. 2016. *The Effect of Trust towards Online Repurchase Intention with Perceived Usefulness as an Intervening Variable: A*

- Study on KASKUS Marketplace Customers*. Asian Journal of Technology Management, 9(1), pp. 1-7.
- Su, Z., Liu, L., Li, M., Fan, X., and Zhou, Y. 2013. *Service Trust: Trust Management in Service Provision Networks*. In 2013 IEEE International Conference on Services Computing (pp. 272-279). IEEE.
- Subramanian, G. H. 1994. *A Replication of Perceived Usefulness and Perceived Ease of Use Measurement*. Decision Sciences, Volume 25, Issue 56, pp. 863-874.
- Suki, N. M. and Suki, N. M. 2011. *Exploring the Relationship between Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, Attitude and Subscribers' Intention towards using 3G Mobile Services*. Journal of Information Technology Management, XXII(1), pp. 1-7. <http://jitm.ubalt.edu/XXII-1/article1.pdf>.
- Tahar, A., Riyadh, H. A., Sofyani, H., and Purnomo, W. E. 2020. *Perceived Ease of Use, Perceived Usefulness, Perceived Security and Intention to Use E-Filing: The Role of Technology Readiness*. Journal of Asian Finance, Economics, and Business, 7(9), pp. 537-547. DOI: <https://doi.org/10.13106/JAFEB.2020.VOL7.NO9.537>.
- Teo, T. 2011. *Technology Acceptance Research in Education*. Technology Acceptance in Education, pp. 1-5. DOI: [https://doi.org/10.1007/978-94-6091-487-4\\_1](https://doi.org/10.1007/978-94-6091-487-4_1).
- Van Krevelen, D. W. F. and Poelman, R. 2010. *A Survey of Augmented Reality Technologies, Applications and Limitations*. International Journal of Virtual Reality, 9(2), pp. 1-20. DOI: <https://doi.org/10.20870/ijvr.2010.9.2.2767>.
- Venkatesh, V. and Davis, F. D. 2000. *Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies*. Management Science, 46(2), pp. 186-204. DOI: <https://doi.org/10.1287/mnsc.46.2.186.11926>.
- Wahyudi, Untung and Pawestri, Hartini P. 2006. *Implikasi Struktur Kepemilikan terhadap Nilai Perusahaan: Dengan Keputusan Keuangan sebagai Variabel Intervening*. Simposium Nasional Akuntansi, pp. 23-26.
- Wilson, N. and Keni, K. 2018. *Pengaruh Website Design Quality dan Kualitas Jasa terhadap Repurchase Intention: Variabel Trust sebagai Variabel Mediasi*. Jurnal Manajemen dan Pemasaran Jasa, 11(2), pp. 291-310.