The Use of Artificial Intelligence on Indonesia Online Shopping Application in Relation to Customer Acceptance

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Abstract. The fast growth of digital technology has changed the way people shop online. Researchers and retailers need to know how people react to new technologies, especially artificial intelligence. The purpose of this study was to assess consumer perceptions of an AI device's utility, usability, and purchase intention. In this study, we suggest the TAM's expansion for use in the area of e-commerce. By adding a mediating component, trust, to the original variables of the technology acceptance model, the relationship between perceived usefulness, perceived ease of use, and customer purchasing intention will be adjusted. Using the technology acceptance model (TAM) as a theoretical foundation, this study examines customer trust and acceptability of Artificial Intelligence in online buying. The total number of respondents was 170, and SEM-AMOS was used to analyse the data, which comprised both the realibility test and structural equation modelling. The hypothesis was evaluated based on the results of second-order measurement model. The study's findings indicate perceived usefulness, perceived ease of use have a direct influence on customer buying intention. In addition, the research showed the mediation influence of trust between perceived usefulness and perceived ease of use among consumer online buying. The results of this study that valuable implications for web shop owners to increase customer acceptance.

Keywords: Perceived Usefulness · Perceived Ease of Use · Artificial Intelligence · Online Shopping · Buying Intention

1 Introduction

Digital technology has transformed online shopping with its rapid development (Daley, 2018). The use of artificial intelligence (AI) in online commerce has increased in recent years, as AI is an important tool for meeting rapidly changing customer expectations and improving sales efficiency (Szabolcs, 2020; Moriset Ahmad et al., 2018; Bacik, R et al., 2020; Zhiqi Zhu, 2021). The AI system is a combination of software programs and hardware that represents environmental factors and can be used to continuously evaluate and analyze data to determine choices and movements (European Commission, 2018). Previous research has focused specifically on the benefits of using AI in the

online environment and how consumers are accepting AI in online retail. Based on the utility theory, this new technology helps customers consider and select the most suitable products, reducing the cost and time spent searching (Pricewaterhouse, 2018; Bakos, 1977; Stigler, 1961). In addition, the development of technology, artificial intelligence, augmented reality, augmented fact, and digital fact will assist purchsers needs in a simple way (Enache, 2018). Due to the fact, they have got less time to save in a physical store, they will choose to buy merchandise available online.

According to Statistics Indonesia (2021), 32 million people in Indonesia are using e-commerce. The population has expanded by 88 percent since. 2020, when there were just 17 million people. The current Covid-19 problem, which forced us to perform many tasks at home starting in 2020 and accelerated the growth of e-commerce, is one of the factors contributing to the significant increase in the volume of online commerce. Online shopping is becoming more popular among consumers, who use it to make purchases, research products, or simply do some browsing.

Consequently, the interaction between marketers and consumers is more strongly influenced by online shopping environments. The Internet has transformed the transmission and processing of information.

Despite the fact that the interactive nature of the Internet has made it easier for shoppers to make well-informed product decisions, the assimilation of information in the online shopping environment is a personal education, experience, and and was difficult depending on the level of cognitive ability. Trust has always been an essential ingredient in marketing, especially e-commerce (Liao, 2010). Online shopping customers cannot evaluate the service environment or see or touch the products. Higher risk of purchasing products in online stores than a physical store (Chio, 2009).

The Theory of Reasoned Action and the Theory of Planned Behavioural form the base for the technology acceptance paradigm, which attempts to explain behavior intentions to use information systems. (Grandón, Nasco, & Mykytyn Jr, 2011). According to Lim and Tang (2012), for instance, there are a variety of predicted impacts across different studies involving various types of users and systems, and TAM connection findings do not hold true in all investigations. Some models, to better explain information system adoption, several models, including the UTAU model (Venkatesh, Morris, Davis, and David, 2003), have been modified or added to (Pavlou, 2003). In an effort to completely comprehend online customer attitudes and behaviors, researchers and market practitioners have, for decades, researched the aspects that influence online consumer attitudes and behaviors.

This research tries to fill this gap by giving information about how people decide to shop online and how those plans turn into actual ecommerce use. This study will also look at the effect of trust as a mediator, It may discourage individuals from using online shopping. By including a mediator variable, the primary variables of the technological acceptance model will be changed, trust, which is expected to strengthen or weaken the connection between perceived usefulness, perceived ease of use, and consumer buying intention.

Based on the study background that has been explained, we formulate 6 research questions that will be answered in this research.

The research questions are:

1. Does perceived usefulness significantly influence trust on online shopping application?
2. Does perceived ease of use significantly influence trust on online shopping application?
3. Does perceived usefulness significantly influence consumer buying intention on online shopping application?
4. Does perceived ease of use significantly influence consumer buying intention on online shopping application?
5. Does perceived usefulness significantly influence consumer buying intention on online shopping application, and is the relationship mediated by trust?
6. Does perceived ease of use significantly influence consumer buying intention on online shopping application, and is the relationship mediated by trust?

In addition, the purpose of this study might be stated as to investigating the influence of perceived usefulness and perceived ease of use on customer buying intention on online shopping application. Moreover, the research also investigates the mediation effect of trust on the relationship between perceived usefulness and perceived ease of use toward consumer buying intention on online shopping application.

In this study, We focus mostly on artificial intelligence in relation to online commerce in Indonesia. Online shopping apps that delivers the product directly over the Internet and provide adequate information and a user-friendly interface to circumvent channel intermediaries (Wawan, 2013). Despite the proliferation of online shopping applications and other online shopping and ticketing sites, there are not many empirical studies examining the acceptance of online shopping applications. This study is to fill in the gaps to gain more insight into the adoption of artificial intelligence in online shopping applications, especially in online shopping.

2   Literature Review and Hypotheses Development

2.1   The Technology Acceptance Model

In the perspective of data system research, the Technology Acceptance Model (TAM) is a widely used modeling technique. Davis (1989) initially established the Technological Acceptance Model (TAM), which explains computer usage patterns to predict technology adoption. The TAM indicates that users' attitudes and adoption decisions are affected by their conceptions of a technology.

2.2   Perceived Usefulness

An individual's appraisal of the utility of a new information technology in a given situation is the perceived ease of use. Perceived usefulness shows task-related productivity, performance, and effectiveness according to the TAM model. Perceived ease of use refers to how simple the user believes the target system should be to use (Davis, 1989). The concepts of perceived usefulness and perceived ease of use are subjective individual assessments of the usefulness and simplicity of a certain system.

H1: Perceived usefulness has positive impact trust on online shopping application.

2.3 Perceived Ease of Use

The perceived ease of use of technologies and systems is an important factor in their acceptance (Davis, 1989, 1993; Davis, Bagozzi, & Warshaw, 1992; Mathieson, 1991). TAM has highlighted the issue of perceived usability due to the influence a poor user interface has on IT technology rejection. (Venkatesh & Davis, 1996). In TAM, perceived ease of use is the degree to which a person thinks it would be easy to use a certain system (Davis, 1989, p. 320). Prior research has demonstrated a correlation between perceived ease of use and consumer attitude towards technology. According to Brill (2018), consumer satisfaction will increase if digital. Therefore, if this product is simple to use and interact with, people will likely form a positive attitude.

H2: Perceived ease of use has positive impact trust on online shopping application.

2.4 Consumer Buying Intention

When customers use the Internet, they often form attitudes that influence their propensity to make online purchases. Therefore, internet usage and feelings about online buying are strong indicators of whether or not you intend to do so.

H3: Perceived usefulness has positive impact consumer buying intention on online shopping application.

H4: Perceived ease of use has positive impact consumer buying intention on online shopping application.

2.5 Trust

The impact of trust on the fulfillment of Internet purchasers may differ by individual. Castelfranchi and Tan (2002) suggested that online shoppers will not engage in a transaction until their level of perceived trust exceeds the minimum acceptable threshold. Customers are encouraged to do things online because trust makes them less worried about risks and weaknesses (Salo, 2007). Martinez-Lopez et al. (2005) stated that it is necessary for online businesses to establish trust and brand equity in order for consumers to build a purchasing intent on their websites.

H5: Perceived usefulness has positive impact consumer buying intention on online shopping application, mediated by trust.

H6: Perceived ease of use significantly influence consumer buying intention on online shopping application, mediated by trust.

3   Research Methods

This study used a quantitative survey design with closed-ended questions. This study's population consisted of Indonesian consumers who used artificial intelligence for online purchasing applications. We delivered 170 surveys via Google Form to consumers who used online shopping for this study. The sample sizes meet the statistical requirements. According Hair et al. (2019) that the sample size should be between 5 and 20 observations or items to get an alpha of 0.05 and a power of 0.8. In this study, the conceptual framework and hypotheseswere tested using a method called structural equation modeling (SEM). Since the study is about the mediation hypothesis, Hair et al. say that a SEM approach is the best way to test this relationship (2019).

4   Discussions and Results

Using SEM-AMOS, Based on the research by Hair et al., we run a bootstrapped structural model and a reflective measurement model (algorithm). This study model uses the two-step estimation as a variable higher order called "trust." The measurement model is initially examined for validity and dependability to ensure that it satisfies the standards for measuring quality.

Hair et al. (2019) suggested a measurement test and quality criteria. All invalid items were eliminated from the variables, and the data were reexamined to ensure the measurement model's validity. The results of the measurement evaluation are available in (Table 1).
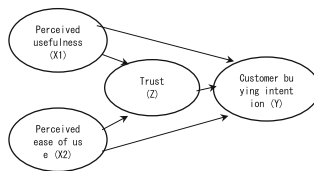
Goodness of Fit

The measurement of Goodness of Fit (GOF) research model is something relative, the use of several GOF Index allow researcher to get the proposed model. Using three to four fit models is adequate to show that this research model is acceptable, at least each one is fulfilled (Hair et al., 2011). Based on the analysis of the model test using SEM with the evaluation of the GOF criteria in the model test, it can be concluded that the proposed model is acceptable. These results can be seen in Table 2.

Path coefficient analysis in SEM is used to test the accepted if the significant level of the relationship between construct variable on the regression weight of the maximum likelihood estimation has p value <0.05 (Cooper & Schindler, 2011). In addition, hypothesis was carried out by looking at the critical ratio (CR) value, which was greater than 1.96 at a significant level of $p < 0.05$ and 2.58 at a significant level of $p < 0.01$. It can be seen from Table 3 that the standardized regression weight of the trust construct on perceived usefulness is 0.236, p value 0.001.

Table 1. Measurement Model Indicator

Construct/Items	LF	CA	CR	AVE
Perceived Usefulness		0,583	0,86	0,82
PU1 – Using shopping ads and online shops that use artificial intelligence helps me find the best deals.	0,701			
PU2 – The use of AI in retail stores makes it easier for me to buy things	0,691			
PU3 – I think it's helpful that AI is being used in retail.	0,706			
PU4 – Artificial intelligence helps me save time in stores where it is used.	0,599			
Perceived Ease of Use		0,733	0,86	0,74
PEoU1 - The shopping apps and websites driven by artificial intelligence are easy to use.	0,504			
PEoU2 - If I use Artificial Intelligence to help me shop, I don't have to think too much (alternatives are offered by Artificial Intelligence).	0,603			
PEoU3 - When AI recommends things to me, shopping is simplified.	0,681			
PEoU4 - I find it easy to find out how to use shopping apps and websites that are powered by AI.	0,662			
PEoU5 – It is easy to learn how to use shopping apps and web shops that are powered by artificial intelligence.	0,532			
Trust		0,779	0,84	0,64
TR1 - I am certain that that Artificial Intelligence is used in retail to make sure that customers get the best products.	0,538			
TR2 – I trust apps and websites that use AI.	0,732			
TR3- I trust that my personal information will be kept confidential when using Apps or web shops that use Artificial Intelligence	0,779			

Table 1. (*continued*)

Construct/Items	LF	CA	CR	AVE
Consumer Buying Intention		0,739	0,86	0,75
CBI1 - I intend to use Artificial Intelligence in retail (advertising and web shop)	0,529			
CBI2 - I intend to continue using Artificial Intelligence powered apps and web shop	0,668			
CBI3 - I believe the items in Artificial Intelligence in retail are suitable for me to buy	0,612			
CBI4 - I always talk about retail Artificial Intelligence with my friends	0,651			
CBI5 - I have an interest in using applications and websites that use Artificial Intelligence.	0,627			

Notes: LF = loadings factor; CA = Cronbach's Alpha, CR = Composite Reliability and, AVE = Average Variance extracted
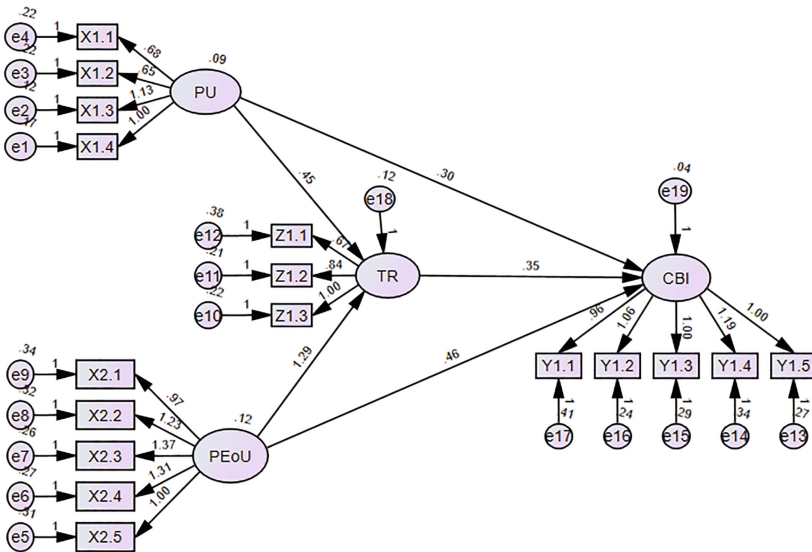

Fig. 1. Nested model (Structure Equation Modelling)

Table 2. Goodness of Fit (GOF)

Criteria	Reference Value	Result	Description
Chi-square	Small	206,893	
RMSEA	<0.08	0,068	Good
CFI	>0.95	0,893	Good
TLI	>0.95	0,872	Good
CMIN/ df	<5.00	1,815	Good

Table 3. Loading Value and The Significance of The Structural Relationship Between Construct

Effect	Estimate	Critical Ratio	Standardized Regression Weight	P value	Description
Trust ← Perceived usefulness	0,453	2,549	0,236	0,011	Significant
Trust ← Perceived ease of use	1,289	5,645	0,771	0,000	Significant
Customer buying intention ← Perceived usefulness	0,303	2,254	0,221	0,024	Significant
Customer buying intention ← Perceived ease of use	0,457	2,127	0,383	0,033	Significant

The value of trust in perceived ease of use is 0.771, p value 0.000, the value of customer buying intention on perceived usefulness is 0.221, p value is 0.024, the value of customer buying intentions towards perceived ease of use is 0.383, p value is 0.033.

5 Conclusions

This study expands our understanding of customer acceptance of artificial intelligence in online buying in. It was demonstrated that the commonly utilized technology accepatance model is suitable for assessing customer acceptability of artificial intelligence in online shopping.

Based on the results of the hypothesis test, perceived usefulness and perceived ease of use have a significant positive impact on customer buying intention on Indonesia's online shopping applications. Therefore use artificial intelligence on online shopping application in Indonesia recommended to the people that want to buy product on online shopping application. Improving perceived usefulness and perceived ease of use by trust on online shopping application will increase consumer trust to use artificial intelligence on online application. Before people will use artificial intelligence to make online purchases, they need to trust it. If people don't trust an AI-powered web store or app, they're

likely to think it's not worth as much and have a bad attitude about it. This could cause a drop in web traffic. Also, AI must provide customized deals for online shopping, i.e., products with the best value. It is expected to cut down on the time it takes to find products, which will make shopping more efficient.

6   Implications

It is currently more important than ever to adapt to customer preferences, customize the customer experience, and enhance online buying. The findings of this investigation indicate that artificial intelligence can be a highly beneficial tool for such attempts. This study has practical applications. Web store owners and those in charge of online marketing can benefit from understanding how customers adapt to new technologies, such as when they utilize artificial intelligence to shop online. It is also useful for scholars and researchers who wish to examine the used Technology Acceptance Model to examine online shopping.

This study will also be of interest to them who are interested in how trust influences online decision-making. Regarding future research directions, it would be beneficial to repeat this study in a multicultural setting. Additionally, it would be useful to evaluate the model of the Technology Readiness Index established by Parasuraman (2000) and compare the results reported here to the new findings.

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