

# Artificial intelligence in e-commerce: The moderating roles of consumer habits and security issues on purchase intention

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## ABSTRACT

**Objective:** This study aims to analyse the influence of artificial intelligence (AI) technology use on perceived ease of use, perceived usefulness, and purchase intentions in e-commerce, considering the moderating roles of consumer habits and security issues.

**Research Design & Methods:** We employed quantitative methods by collecting questionnaire data from 312 respondents who utilise AI technology in the e-commerce retail sector. We used the structural equation modelling (SEM) covariance-based approach to test the research model and hypotheses in two stages: the measurement model and the structural model.

**Findings:** The research results indicate that AI capabilities can impact the perceived ease of use and usefulness. Of these two variables, only perceived usefulness increased consumer purchase intention. Customer habits moderate by strengthening the influence of perceived usefulness on purchase intention, while security issues have no moderating effect.

**Implications & Recommendations:** The study's results indicate that customer habits can strengthen the relationship between perceived usefulness and purchase intention. Security issues do not significantly moderate the relationship between perceived ease of use and purchase intention. These results suggest that companies can build positive consumption habits through loyalty programs and personalised user experiences, thereby increasing perceived usefulness and encouraging continued purchase intentions. While security factors still need managing to maintain consumer trust.

**Contribution & Value Added:** This study complements existing research by explicitly addressing AI-shaping factors such as accuracy, insight, and interaction with consumer behaviour in e-commerce. Furthermore, it broadens our understanding of customer habits, which can strengthen AI's influence on purchase intentions. The study's originality lies in integrating technology and behaviour into a comprehensive model that explains AI's role in shaping consumer decision-making in e-commerce.

**Article type:** research article

**Keywords:** artificial intelligence; customer habits; e-commerce; security issues; technology acceptance model

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## INTRODUCTION

Rapid technological advances are transforming the business landscape, which can pose a threat or open up new opportunities. One of these changes is the shift in online shopping patterns brought about by artificial intelligence (AI) technology (Aiolfi, 2023). McKinsey (2022) reports that companies utilising AI have generated an additional 20% revenue. This increase results from AI's ability to interpret external data and use it as lessons to achieve specific goals and tasks through flexible adaptation

(Kaplan & Haenlein, 2019). Companies that utilise it properly will gain a competitive advantage (Wamba-Taguimdje *et al.*, 2020). Customers' ability to adopt technology also constitutes a concern for companies, as they must determine whether customers are comfortable using the technology, which impacts the selection of technology based on consumer preferences (Na *et al.*, 2023). This issue is particularly relevant in the use of AI to increase purchases in e-commerce (Febrian, 2025; Febrian *et al.*, 2025). We aimed to examine the effectiveness of AI utilisation in e-commerce.

Previous studies have confirmed that the use of technology in the form of AI can increase perceived usefulness (PU) and perceived ease of use (PEOU) (Kim & Park, 2024). This technology is an external factor that can either create positive or negative customer perceptions. Furthermore, AI can adjust to customer needs based on data recorded from previous consumer activities. Consumers will also feel helped because they do not need to do it manually, for example, when searching for product keywords on a website. Therefore, e-commerce utilises this convenience to deliver excellent customer service. The use of new technologies, such as AI, also runs the risk of being rejected by customers (Bawack *et al.*, 2022). One of the determining factors causing rejection is customer habits and security issues (Afroz Lari *et al.*, 2022).

However, previous studies have overlooked both these factors in examining the impact of AI use in e-commerce, focusing solely on the direct influence of its use without considering supporting factors that can either strengthen or weaken the relationship with consumer behaviour. Previous studies have also confirmed that customer habits act as a moderator by strengthening the relationship between customer experience and satisfaction with using technology and purchase intentions (Nazir *et al.*, 2023). However, no study has measured the impact of customer habits and security issues on the relationship between PEOU and PU in terms of purchase intentions (PI), which constitutes the novelty of our research. Therefore, we aimed to develop a conceptual model that explains how AI influences PEOU and PU, and how these two factors drive consumer PI. Furthermore, we evaluated the role of customer habits and security issues as moderating variables to improve the understanding of the relationship between technology acceptance and consumer behaviour in e-commerce. The remainder of this paper is structured as follows. First, we present the development of hypotheses using theory. The next step includes a presentation of the methods and data analysis, followed by a discussion of the theoretical and practical implications and the conclusion of the study

## LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

In e-commerce, AI refers to the use of tools, techniques, systems, or algorithms to support activities related to the purchase and sale of products or services over the internet (Bawack *et al.*, 2022). Artificial intelligence can predict individual behavior and preferences, as well as the performance of companies and organizations, based on collected data (Pallathadka *et al.*, 2023). The purpose of utilising AI in e-commerce is to enhance the customer experience, increase operational efficiency, and develop innovative methods to reach and serve customers while maintaining low costs (Pillarisetty & Mishra, 2022). We investigated the effect of AI by considering its impact on PEOU and PU. We utilised three dimensions to assess the effects of a practical online consumer experience: accuracy, insight, and interaction (Yin & Qiu, 2021). Notably, AI can help accurately identify the commodities customers seek, thereby providing a good experience for consumers. For example, when consumers enter keywords or product images into the search field, AI can identify and locate the products they are looking for, thereby maintaining the accuracy of product inventory (Ram Kishen *et al.*, 2021). This activity aims to facilitate more accurate and faster consumer decisions (Khrais, 2020). Moreover, AI also provides predictions based on user insights with personalised results. For example, companies develop systems that utilise past consumer data, such as search or purchase history, to gain essential insights into consumer behaviour (Bock *et al.*, 2020). To facilitate its services, AI can help serve consumers. Some of the features companies use to provide human-like services include replying to consumer messages by understanding the language used in the conversation, thereby offering fast and precise responses (Choudhury *et al.*, 2020). Previous research has shown that AI can impact PU and PEOU (Kim & Park, 2024; Wang *et al.*, 2023). Moreover, PU is related to how practical the technology is to interact with (Davis, 1989). Meanwhile, PEOU is defined as the user's ability to use new or new information technology without difficulty (Davis *et al.*,

1989). This means that when using a particular technology, users will be able to use it comfortably without having to make special efforts that complicate their use. The technology acceptance model (TAM) theory explains that these two factors can influence attitudes towards the use of technology and the intention to use it, ultimately leading to the choice of technology (Na *et al.*, 2023). Therefore, it is essential to comprehend how AI can enhance the value of these two factors. Thus, we hypostatise:

**H1:** AI has a significant effect on PU.

**H2:** AI has a significant effect on PEOU.

We may see consumer behaviour by how much internal and external factors influence PI (Ajzen & Fishbein, 1975). It is essential to understand this intention because there is a positive relationship between PI and actual purchase behaviour (Shaouf *et al.*, 2016). In online shopping, PU refers to the extent to which consumers are willing to buy a product through an online store (Pavlou, 2003). Regarding the factors that form this intention, several previous studies have explained that customer perceptions of using technology can increase PI. For example, PEOU and PU are dominant predictors of attitude formation and behavioural intentions in the early stages of using new technology (Li & Liu, 2014). Ultimately, customer considerations for using a particular technology can influence online purchasing decisions (Beyari & Garamoun, 2022). Thus, we hypostatise:

**H3:** PEOU has a significant effect on PI.

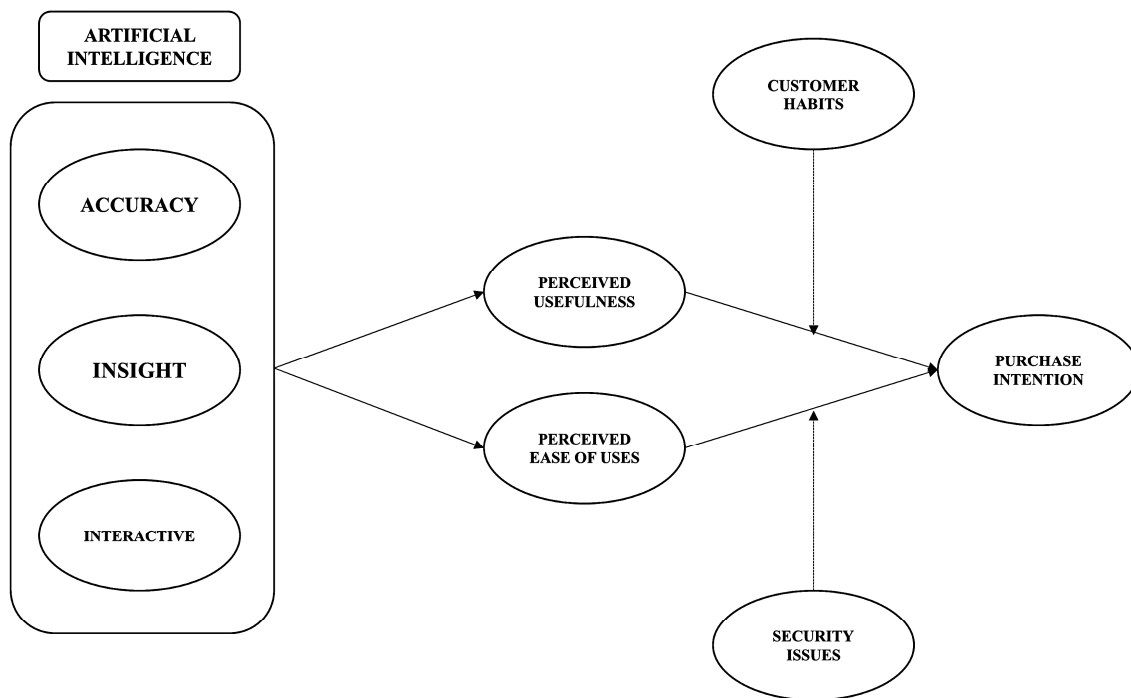
**H4:** PU has a significant effect on PI.

Each customer has their habitual behaviour. Habit is a tendency towards a repeatedly conducted action (Applebaum, 1951). In online shopping behaviour, these habits arise due to stimuli provided by the environment and satisfying experiences from certain products in the past (Hsu *et al.*, 2015). Moriuchi (2019) found that consumers who often use technology for product purchasing activities will find it easier to adopt technology on various platforms. It is also essential to understand the characteristics of consumers in terms of technology usage habits. Previous research shows that consumer experience satisfaction will have a more substantial influence on PI if it is formed from consumer habits (Nazir *et al.*, 2023). However, the moderating role of habits in the relationship between customer perceptions of technology use and purchase intentions has not been examined in the context of AI utilisation. This study introduces the moderating role of habits in increasing PI to address this gap. This is in line with Gefen (2003), who asserts that habitual behaviour not only influences the relationship between PU and PI but can also strengthen the relationship between PEOU and PU. Thus, this study deepens our understanding of the moderating role of customer habits in the adoption of AI technology in e-commerce, providing more comprehensive insights into the influence of habits on PI. Thus, we hypostatise:

**H5:** Customer habits moderate the relationship between PU and PI.

Furthermore, AI offers numerous benefits that can facilitate the online purchasing process for customers, but it also poses potential security risks related to cyber threats (Afroz Lari *et al.*, 2022). The ease of accessing e-commerce raises security issues that can hinder its development if not appropriately managed (Zhang *et al.*, 2012). These security issues are one of the primary challenges for companies in designing, implementing, and managing current information systems (Kalloniatis *et al.*, 2014). Companies can view this issue from the user's perspective (Chawla & Kumar, 2021). They want to make sure that the website or technology they use is safe to use (Tawalbeh *et al.*, 2020). Consumers will make purchasing decisions after considering various factors, including security, which is one of the most significant risks associated with online purchases (Kim, 2020). Companies must ensure that they maintain the security of personal information, security systems, and payment methods (Page & Lepkowska-White, 2002). As found by Mangin and Bourgault (2014), security issues can strengthen a person's desire to use technology. In this context, this study positions security issues as a moderator in strengthening the relationship between PEOU and PI. Mutahar *et al.* (2022) found that perceived risk and security issues significantly strengthen the influence of PEOU on user attitudes and behavioural intentions in online banking services. By integrating these perspectives, this study provides a more comprehensive understanding of the moderating effect of security issues on the adoption of AI technology in e-commerce. Thus, we hypostatise:

**H6:** Security issues moderate the relationship between PEOU and PI.



**Figure 1. Research model**

Source: own elaboration.

## RESEARCH METHODOLOGY

### Questionnaire Development, Sampling Technique, and Data Collection

We conducted a literature review to explore the research problem, leading to the development of a theoretical model. In this study, we employed a quantitative method using the structural equation modelling (SEM) approach, specifically the AMOS 24 tool, to test the conceptual framework and proposed hypotheses. Notably, SEM was the right tool to use in this research model because it is a comprehensive statistical technique used to evaluate and validate complex conceptual models (Shahzad *et al.*, 2023). We collected survey data from 350 respondents who had experience using AI service features on e-commerce platforms. However, we used only 312 data points in the analysis due to considerations regarding data normality. We tested for normality by removing extreme values (outliers)  $\pm 3.0$ , based on the proposed criteria (Hair *et al.*, 2017; Hair *et al.*, 2017), using the SPSS Normality test. We selected respondents using a purposive sampling method, a sampling technique that selects participants based on specific criteria aligned with the research objectives. Inclusion criteria in this study included respondents being active users of e-commerce platforms and having interacted with or used AI-based features (such as automatic product recommendations, chatbots, or intelligent search systems). We focused on the context of the e-commerce market in Indonesia. We based object selection on the relevance of the phenomenon of increasing e-commerce use in Indonesia. To maintain data confidentiality, respondents provided voluntary consent to participate without collecting personal identities. We also analysed all data anonymously in accordance with ethical research principles.

### Measurement and Scaling Technique

We divided the questionnaire into four main parts. Firstly, we determined the respondents' demographic information and suitability in relation to the required criteria. Demographic information included gender, age, education level, and e-commerce brand. Secondly, we asked respondents to fill in several questions related to the use of AI, adopted from Yin and Qiu (2021), PU (Wang *et al.*, 2023),

PEOU (Wang *et al.*, 2023), security issues (Aytekin *et al.*, 2021), consumer habits (Nazir *et al.*, 2023), and PI (Yin & Qiu, 2021). We developed the questions using a 5-point Likert scale: strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1).

## RESULTS AND DISCUSSION

### Respondents' Demographic Profile

The demographic profile of respondents showed that women dominated the sample, with a total of 172. The number of men was 140. The age category was dominated by young respondents aged between 17 and 26, with 210 respondents; 27-42, with 83 respondents; and 43-58, with 19 respondents. The widely purchased types of products through e-commerce were fashion and electronic products. The most visited e-commerce brand was Shopee.

### Common Method Bias

Before testing the validity and reliability of all constructs, we checked whether the collected data were bias-free. We followed the recommendations of Kock *et al.* (2021) and Mahmud *et al.* (2017) by focusing on the measurement method using Herman's single-factor statistical approach. This is the most popular test to assess common method bias. We analysed all constructs using exploratory factor analysis (EFA). Notably, common method bias can be assumed if a single factor emerges from the unrotated factor solution. Moreover, AMOS assisted in data testing. In this study, the variance explained by a single factor using confirmatory factor analysis (CFA) was <50% according to the recommended criteria (Harman, 1976), indicating the absence of common method bias in the data set used.

### Confirmatory Factor Analysis

We conducted validity and reliability measurements by conducting confirmatory factor analysis (CFA) on all constructs. Notably, the AI construct used second-order CFA, and the other constructs used first-order CFA. (Chau, 1997; Hair Jr *et al.*, 2010) We assessed model fit using goodness of fit indices such as the CMIN/df ratio ( $\leq 3.0$ ), goodness of fit ( $\geq 0.9$ ), the root mean square error of approximation (RMSEA) ( $\leq 0.08$ ), the comparative fit index (CFI) ( $\geq 0.9$ ), Tucker-Lewis index (TLI) ( $\geq 0.9$ ), Normed Fit Index (NFI) ( $\geq 0.9$ ). A value of 0.80-0.90 is still acceptable in some circumstances (Bentler & Yuan, 1999; Byrne, 2001).

### Convergent and Discriminant Validity

Convergent validity is crucial for assessing the measurement model. We measured validity by examining the average variance extracted (AVE) value, which should be greater than 0.50. In exploratory research, a composite reliability value between 0.60 and 0.70 is acceptable, while in more advanced stages, the value should be higher than 0.70 (Sarstedt *et al.*, 2014). Nunnally and Bernstein (1978) also explain that CR 0.6 is still acceptable. In our study, all constructs had the required values shown in Table 1.

### Structural Model

We conducted SEM at the beginning of the study to evaluate the formulated hypothesis and test the goodness-of-fit. We modified the model to ensure the structural model fit index by justifying the error correlation in a factor that was still considered reasonable (Anderson & Gerbing, 1988). We tested the hypothesis after obtaining a measurement fit model with a standard goodness-of-fit index value. As shown in Table 2, the results of the structural model test confirmed that the implementation of AI technology had a significant effect on PU ( $\beta = 0.332$ ,  $p < 0.001$ ) and PEOU ( $\beta = 0.301$ ,  $p < 0.001$ ). This indicates that the higher the level of AI implementation in providing accurate recommendations and responsive interactions, the greater the user's perception of the ease and benefits of using digital platforms. In other words, AI plays a key role in strengthening consumers' positive perceptions of the efficiency and effectiveness of technology-based systems.

**Table 1. Factor loading, validity, and reliability for the construct**

Constructs	Dimensions	Question items	Factor loading	AVE	CR
AI	Accuracy	When I shop online, AI technology helps me find the things I want accurately, based solely on the words I enter	0.749		0.60
		Only by entering my picture can I look for the desired item	0.685	0.50	
		Only with a helping voice can I look for the things I want	0.679		
	Insight (IS)	E-commerce websites can recommend the product that I want based on my habits. I am looking for a similar product.	0.58	0.50	0.60
		Attractive website appearance in accordance with the preference I	0.587		
	Interactivity (IT)	The website offers several possible items I like	0.694	0.50	0.67
		Questions I can answer with the help of AI virtual services	0.752		
AI services can answer questions for me in a way appropriate to the time		0.775			
		The answer from AI is closely related to the question that I have submitted	0.585		
PEOU		AI-powered websites are easy to use	0.79	0.66	0.74
		I do not need to emit Lots of power to understand AI	0.686		
		Shopping becomes easy with the help of products offered by AI	0.786		
		I am easy to use a website that utilises technology	0.664		
		Become skilled in using application shopping or an AI-powered e-commerce website, which is easy for me	0.7		
PU		I found the best offers through AI technology on e-commerce websites	0.691	0.58	0.63
		The use of AI in online shopping is increasing the accuracy of purchases	0.764		
		The use of AI for online shopping is beneficial for me	0.745		
		The use of AI for online shopping saves time	0.832		
PI		I am willing to browse products recommended by "e-commerce brands" powered by AI when shopping	0.722	0.66	0.63
		I am willing to buy products recommended by "e-commerce brands"	0.795		
		I tend to buy products recommended by "e-commerce brands."	0.904		
		I tend to buy products that are not planned when shopping at "e-commerce brands."	0.814		
Security issue		I am worried that the use of AI can endanger the user	0.804	0.66	0.62
		I am worried that the use of AI can harm customers.	0.799		
		I am worried that the products recommended by AI are not appropriate for use	0.715		
		According to me, the products offered by AI will lead to something that consumers do not desire	0.552		
Customer habits		I often use e-commerce websites to order products	0.757	0.60	0.65
		Booking products online has already become a usual activity for me	0.936		
		Every time I think about booking a product online, e-commerce brand sites come to mind	0.947		
$\chi^2$ /CMIN df = 1.341, Chi-Square = 434.569, GFI= 0.90, RMSEA= 0.36, TLI= 0.96, NFI= 0.90					

Source: own study.

Furthermore, PU had a positive and significant effect on PI ( $\beta = 0.412$ ,  $p < 0.001$ ). These findings confirm that consumers tend to have higher PI when they perceive tangible benefits from using AI

technology. Conversely, PEOU had a negative and statistically insignificant effect on PI ( $\beta = -0.177, p > 0.001$ ). This means that even though the system is considered easy to use, this ease of use is not strong enough to drive purchasing decisions, and consumers are more likely to consider the benefits or added value offered by AI technology. The model testing has met the goodness-of-fit indicators, including CMIN  $df = 2.093$ , Chi-Square = 194.632, GFI = 0.931, RMSEA = 0.059, TLI = 0.949, and NFI = 0.928, which indicate values within the fit criteria limits and demonstrate that the model fits the observed data.

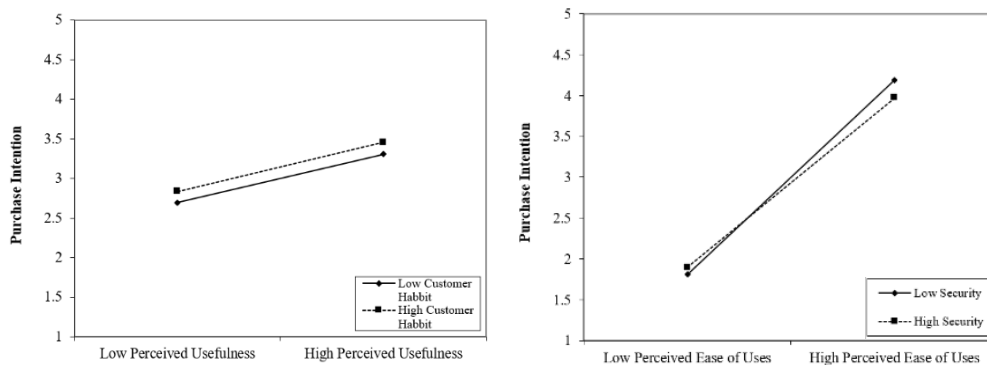
**Table 2. Structural model**

Hypotesis	Path	Estimate	S.E	C.R	P	Result
H1	AI to PU	0.332	0.033	10.008	0.000	Supported
H2	AI to PEOU	0.301	0.027	10.976	0.000	Supported
H3	PU to INTEN	0.412	0.123	3.341	0.000	Supported
H4	PEOU to INTEN	-0.177	0.09	-1.978	0.048	Not Supported

Source: own study.

### Moderation Effect

We conducted moderation testing on the security issue and customer habit variables to see their effect on the relationship between other variables in the model. The results showed that customer habits successfully moderated and strengthened the relationship between PU and PI, indicating that customer habits play an essential role in driving PI. Conversely, security issues did not significantly moderate the relationship between PEOU and PI, indicating that they did not have a strong enough moderating effect on the relationship. Figure 2 shows a diagram of the moderation relationship based on a table from Jeremy Dawson (Dawson, 2023), which clarifies the interaction between the moderating variables in this study. We examined the path coefficient value of the interaction variable in relation to the dependent variable. The customer habit interaction value was significant ( $p < 0.05, 0.004$ ). These results suggest a moderating effect, strengthening the relationship between the independent and dependent variables. Meanwhile, testing the moderating role of security issues yielded an insignificant value ( $p > 0.05, -0.068$ ). These results indicated no moderation effect on the relationship.



**Figure 2. Diagram moderation effect**

Source: own elaboration.

### Discussion

The findings of this study contribute generally to the proposed theoretical model in the field of digital marketing and the application of AI technology in the retail business sector, particularly in the e-commerce industry. These findings provide a deeper understanding of the factors underlying the concept of AI formed by accuracy, insight, and interaction. They can improve consumer perceptions, specifically PEOU and PU. These findings are consistent with previous studies in the literature related to the role that AI can have in building customer perceptions of the benefits of this technology in the decision-making process (Jain *et al.*, 2023). This study complements our understanding of AI's ability to analyse

when consumers are engaging in activities on the website, enabling AI devices to provide suggestions and solutions tailored to customer needs and preferences.

We also found that PU significantly affected PI. These results support previous studies (Nguyen *et al.*, 2023). This suggests that consumers are more motivated to buy when they perceive the real benefits of the technology, such as personalised product recommendations or increased efficiency in product searches. Notably, PU helps consumers feel that using AI technology supports their needs and desires in the shopping experience, thereby strengthening their intention to make a purchase. Another finding is that PEOU had no significant effect on PI. These results differ from previous studies, which consistently reported a considerable impact, particularly in the application of the technology acceptance model (Islam *et al.*, 2023). Consumers already consider ease of use as a basic standard in using e-commerce platforms, so it is no longer a strong differentiating factor. Consumers tend to focus more on direct benefits or PU, such as personalised recommendations and time efficiency, which directly impact purchasing decisions. Moreover, consumers are increasingly skilled at using technology, so they prioritise features that can improve the shopping experience and results rather than just easy navigation. In other words, PU offers more direct and tangible value in the shopping experience, making ease of use a secondary factor in influencing PI.

We also examined the direct and positive impact of AI on PEOU and PU, which in turn affects PI. However, we also investigated the moderating role of security issues and customer habits. We found that customer habits can be moderated by strengthening the relationship between PU and PI. Consumer habits formed from external factors will create new purchasing behaviours that last a long time and influence purchasing decisions (Sheth, 2020). In the context of social commerce, repeated interactions lead to increased familiarity between users. This familiarity will serve to obtain information on the experiences of other users and will become a consideration when making a purchase (Wang *et al.*, 2021).

Previous studies indicate that security concerns do not play a moderating role in the relationship between perceived ease of use (PEOU) and purchase intention (PI). The lack of a moderating effect of security-related issues is supported by research on consumers' perceptions of risk in technology use. Specifically, privacy-related risks may vary depending on users' need for human interaction when engaging with technology (Song *et al.*, 2022). Security issues in AI-based service applications were also found to negatively impact attitudes (Pan *et al.*, 2019). This teaches us that consumers often overlook security issues when shopping on e-commerce sites. The research results also confirmed that perceived ease of use (PEOU) and perceived usefulness (PU) positively influence consumer acceptance of AI. However, the absence of a moderation effect of security issues suggests that security issues can be a strength, as individuals become increasingly concerned about data threats associated with AI technology. Coupled with the absence of a direct effect of security issues, this suggests that in the context of AI utilisation in e-commerce, cognitive function before accepting or rejecting AI is closely related to perceived utility value, namely, how useful or easy it is to use AI. One will not know the level of concern others have about accepting or rejecting personal data used in AI-based applications or platforms (Park & Jones-Jang, 2023). However, the positive assessment impact of PEOU and PU can be reversed into a strength because individuals are less concerned about data threats associated with AI technology. Consumers' lack of security concern is also due to their understanding that companies can use customer data to provide a better experience and assist in decision-making (Rohden & Zeferino, 2023).

Ultimately, the findings of this study support the technology acceptance model (TAM) (Mogaji *et al.*, 2024), which shows that technology will be readily accepted and used if it has benefits (PU) and is easy to use (PEOU). However, it is necessary to evaluate the application of this theory, which posits that not all technologies employed in business processes can enhance consumer purchasing intentions. It is essential to consider other factors that can impact the effectiveness of this technology in promoting positive consumer behaviour. Notably, AI enables automation and personalisation, thereby increasing operational efficiency and a more relevant user experience, ultimately increasing purchasing interest. The application of AI in e-commerce enhances operational efficiency and provides a more appropriate and engaging experience for users, ultimately driving purchasing interest and decisions. As measured by the theory of planned behaviour (TPB), purchase intention supports the use of AI in e-

commerce by explaining how psychological factors influence consumer intentions regarding technology. In TPB, attitudes, subjective norms, and perceived behavioural control influence consumer behaviour. Consumers who experience the convenience, efficiency, and benefits of personalisation by AI, such as automatic product recommendations, tend to have a positive attitude toward its use. Social norms, such as favourable reviews or trends that highlight AI as a helpful feature, also contribute to increased consumer acceptance. In addition, when consumers feel they have sufficient control (*e.g.*, ease of navigation and a good user experience), they are more motivated to shop on AI-powered e-commerce platforms, thereby increasing their interest and loyalty.

### Practical Implications

Companies widely use AI-based technology in today's industry to gain efficiency and effectiveness in providing consumer services. Therefore, it is essential to examine the impact of AI on increasing PI in e-commerce studies. The results of this study explain several vital implications for e-commerce industry marketing managers. Firstly, AI can provide high-accuracy insights and interactivity in creating consumer PEOU and PU. The e-commerce industry can integrate AI to learn user patterns and preferences, enabling it to provide more relevant product recommendations. This technology enables consumers to search for and select products that meet their needs, thereby increasing their PI. E-commerce can also utilise AI to improve the interactions quality through chatbot features or personalised recommendations, thereby strengthening customer loyalty. The use of AI in e-commerce also requires consideration of ethical issues, particularly regarding consumer data privacy and security. Data collection and analysis must be conducted transparently and responsibly to maintain user trust in digital platforms.

Secondly, customer habits have been shown to strengthen the relationship between PU and PI, so e-commerce businesses need to consider how to build and maintain positive consumption habits. For example, business actors can encourage habits through loyalty programs, recommendation notifications, or incentives that make consumers more accustomed to using their platforms. Companies can create user communities, such as in social commerce, that foster familiarity among users, encouraging trust and a tendency to make decisions based on the experiences of other consumers. The ability to combine e-commerce and social commerce has the potential to drive further consumption growth that benefits goods providers (Febrian, 2023).

Third, the absence of a moderating role from the security issue factor suggests that, in the context of e-commerce, some consumers prioritise the benefits of AI over privacy risks. However, it is still essential for companies to maintain data transparency to minimise potential concerns. E-commerce businesses can strengthen consumer trust by implementing responsible data management and maintaining transparent communication about the security measures they have in place. Maintaining long-term loyalty is crucial, particularly as consumer awareness of data security continues to increase. Fourth, when AI technology can increase PEOU and PU, companies can use an approach that emphasises the benefits of technology over privacy risks to attract customers. However, this strategy needs to be balanced with an understanding of data protection and the benefits of AI for customers. Marketing that highlights the practical benefits of AI, such as increased efficiency and enhanced user experience, can alleviate concerns that some customers may have and increase acceptance of AI in e-commerce. Therefore, the e-commerce industry can optimise the use of AI technology to enhance positive consumer perceptions and drive PI, while striking a balance between security and habits that may influence consumer behaviour in the long term.

### CONCLUSIONS

Artificial intelligence technology significantly increases PEOU and PU in e-commerce consumers. However, PEOU alone cannot increase consumer PI. This finding also highlights that customer habits can strengthen the relationship between PU and PI. However, security issues negatively affect the relationship between PEOU and PI. This suggests that, in the context of e-commerce, consumer concerns regarding security may be less significant than the perceived benefits offered by AI. From an academic perspective, this article represents a significant empirical step in enriching the digital mar-

keting model, particularly in e-commerce, by deepening the understanding of key factors in the concept of AI, namely accuracy, insight, and interactivity. This finding aligns with previous literature, which shows that AI has a positive impact on fostering positive perceptions of technology. Moreover, this study offers insight into how AI analyses consumer activity on websites to provide personalised suggestions tailored to individual needs and preferences. From a practitioner's perspective, our study provides several recommendations to the e-commerce industry for maximising the use of AI in enhancing user experience through features such as personalised product recommendations and responsive interactions. Businesses can consider consumer habit factors in their marketing strategies by encouraging continued use of the platform and building a user community to increase trust. Meanwhile, although security issues do not have a strong moderating role, companies are still advised to manage data transparency to maintain long-term customer loyalty.

### Research Limitations

Although this study provides insight into the influence of AI use on increasing PI, scholars may use its several limitations as directions for further research. Firstly, the data collected was limited to Indonesia, which restricts the applicability of the research model to other cultures. Additional research can consider other countries or compare them. Secondly, although this study identified factors that shape PI by looking at internal perceptions from customers (PEOU and PU), there may still be other internal factors that this study did not explore, as explained by many previous studies on the variable perceived enjoyment, which can also increase purchase intentions. These results suggest that other consumer perception factors may still offer valuable insights into the influence of AI technology, provided that the moderating roles of security issues and customer habits are considered. Finally, this study employed a quantitative approach, which may have limitations in exploring and understanding respondents' subjective perspectives or experiences in depth.

### REFERENCES

- Afroz Lari, H., Vaishnava, K., & Manu, K.S. (2022). Artificial Intelligence in E-commerce: Applications, Implications and Challenges. *Asian Journal of Management*, July, 235-244. <https://doi.org/10.52711/2321-5763.2022.00041>
- Aiolfi, S. (2023). How shopping habits change with artificial intelligence: smart speakers' usage intention. *International Journal of Retail and Distribution Management*, 51(9-10), 1288-1312. <https://doi.org/10.1108/IJRDM-11-2022-0441>
- Addison-Wesley, I., & Fishbein, M. (1975). Theories of attitudes. In *Psychology of Attitudes* (p. chapter 2).
- Anderson, J.C., & Gerbing, D.W. (1988). Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach. *Psychological Bulletin*, 103(3), 411-423. <https://doi.org/10.1037/0033-2909.103.3.411>
- Applebaum, W. (1951). Studying Customer Behavior in Retail Stores. *Journal of Marketing*, 16(2), 172. <https://doi.org/10.2307/1247625>
- Aytekin, P., Virlanuta, F.O., Guven, H., Stanciu, S., & Bolakca, I. (2021). Consumers' Perception of Risk Towards Artificial Intelligence Technologies Used in Trade: A Scale Development Study. *Amfiteatru Economic*, 23(56), 66-66. <https://doi.org/10.24818/EA/2021/56/65>
- Bawack, R.E., Wamba, S.F., Carillo, K.D.A., & Akter, S. (2022). Artificial intelligence in E-Commerce: a bibliometric study and literature review. In *Electronic Markets* (Vol. 32, Issue 1). Springer Berlin Heidelberg. <https://doi.org/10.1007/s12525-022-00537-z>
- Bentler, P.M., & Yuan, K.-H. (1999). MULTIVARIATE BEHAVIORAL RESEARCH Structural Equation Modeling with Small Samples: Test Statistics. *Multivariate Behavioral Research*, 34(2), 181-197. <https://doi.org/10.1207/S15327906Mb340203>
- Beyari, H., & Garamoun, H. (2022). The Effect of Artificial Intelligence on End-User Online Purchasing Decisions: Toward an Integrated Conceptual Framework. *Sustainability (Switzerland)*, 14(15). <https://doi.org/10.3390/su14159637>
- Bock, D.E., Wolter, J.S., & Ferrell, O.C. (2020). Artificial intelligence: disrupting what we know about services. *Journal of Services Marketing*, 34(3), 317-334. <https://doi.org/10.1108/JSM-01-2019-0047>

- Byrne, B.M. (2001). Structural Equation Modeling With AMOS, EQS, and LISREL: Comparative Approaches to Testing for the Factorial Validity of a Measuring Instrument. *International Journal of Testing*, 1(1), 55-86. [https://doi.org/10.1207/s15327574ijt0101\\_4](https://doi.org/10.1207/s15327574ijt0101_4)
- Chau, P.Y.K. (1997). Reexamining a model for evaluating information center success using a structural equation modeling approach. *Decision Sciences*, 28(2), 309-334. <https://doi.org/10.1111/j.1540-5915.1997.tb01313.x>
- Chawla, N., & Kumar, B. (2021). E-Commerce and Consumer Protection in India: The Emerging Trend. *Journal of Business Ethics*, 180(2), 581-604. <https://doi.org/10.1007/s10551-021-04884-3>
- Choudhury, M. De, Lee, M.K., Zhu, H., & Shamma, D.A. (2020). Introduction to this special issue on unifying human computer interaction and artificial intelligence. *Human-Computer Interaction*, 35(5-6), 355-361. <https://doi.org/10.1080/07370024.2020.1744146>
- Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 319-340. <https://doi.org/10.2307/249008>
- Davis, F.D., Bagozzi, R.P., & Warshaw, P.R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982-1003. <https://doi.org/10.1287/mnsc.35.8.982>
- Dawson, J.F. (2023). *Interpreting interaction effects*. Retrieved from <http://www.jeremydawson.co.uk/slopes.html> on March 1, 2025.
- Febrian, A. (2023). Increasing customer equity through social media content and engagement. *Entrepreneurial Business and Economics Review*, 11(3), 39-56. <https://doi.org/10.15678/EBER.2023.110303>
- Febrian, A. (2025). The Role of Artificial Intelligence in Increasing E-Commerce Brand Equity. *Journal of Technology Management & Innovation*, 20(1), 61-73. <https://doi.org/10.4067/S0718-27242025000100061>
- Febrian, A., Purnomowati, I., Mahardiyanto, A., Lina, L.F., & Novita, D. (2025). The Role of Artificial Intelligence in Forming Favorable Customer Attitudes on E-Commerce Websites. *Journal of Artificial Intelligence and Technology*, 159-167. <https://doi.org/10.37965/jait.2025.0696>
- Gefen, D. (2003). TAM or Just Plain Habit: A Look at Experienced Online Shoppers. *Journal of End User Computing*, 15(3), 1-13. <https://doi.org/10.4018/joeuc.2003070101>
- Hair, J.F., Babin, B.J., & Grey, N. (2017). Covariance-Based Structural Equation Modeling in the Journal of Advertising: Review and Recommendations. *Journal of Advertising*, 46(1), 163-177. <https://doi.org/10.1080/00913367.2017.1281777>
- Hair, J.F., Matthews, L.M., Matthews, R.L., & Sarstedt, M. (2017). Updated guidelines on which method to use. *International Journal of Multivariate Data Analysis*, 1(2), 107.
- Hair Jr, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2010). Multivariate data analysis. In *Multivariate data analysis* (p. 785). Pearson Prentice Hall.
- Harman, H.H. (1976). *Modern factor analysis*. University of Chicago press.
- Hsu, M.H., Chang, C.M., & Chuang, L.W. (2015). Understanding the determinants of online repeat purchase intention and moderating role of habit: The case of online group-buying in Taiwan. *International Journal of Information Management*, 35(1), 45-56. <https://doi.org/10.1016/j.ijinfomgt.2014.09.002>
- Islam, S., Islam, M.F., & Zannat, N.-E.-. (2023). Behavioral Intention to Use Online for Shopping in Bangladesh: A Technology Acceptance Model Analysis. *SAGE Open*, 13(3), 1-19. <https://doi.org/10.1177/21582440231197>
- Jain, V., Wadhvani, K., & Eastman, J.K. (2023). Artificial intelligence consumer behavior: A hybrid review and research agenda. *Journal of Consumer Behaviour*, 23(2), 676-697. <https://doi.org/10.1002/cb.2233>
- Kalloniatis, C., Mouratidis, H., Vassilis, M., Islam, S., Gritzalis, S., & Kavakli, E. (2014). Towards the design of secure and privacy-oriented information systems in the cloud: Identifying the major concepts. *Computer Standards and Interfaces*, 36(4), 759-775. <https://doi.org/10.1016/j.csi.2013.12.010>
- Kaplan, A., & Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, 62(1), 15-25. <https://doi.org/10.1016/j.bushor.2018.08.004>
- Khrais, L.T. (2020). Role of artificial intelligence in shaping consumer demand in e-commerce. *Future Internet*, 12(12), 1-14. <https://doi.org/10.3390/fi12120226>
- Kim, H., & Park, M. (2024). When digital celebrity talks to you: how human-like virtual influencers satisfy consumer's experience through social presence on social media endorsements. *Journal of Retailing and Consumer Services*, 76, 103581. <https://doi.org/10.1016/j.jretconser.2023.103581>

- Kim, S.S. (2020). Purchase intention in the online open market: Do concerns for E-commerce really matter?. *Sustainability (Switzerland)*, 12(3). <https://doi.org/10.3390/su12030773>
- Kock, F., Berbekova, A., & Assaf, A.G. (2021). Understanding and managing the threat of common method bias: Detection, prevention and control. *Tourism Management*, 86, 104330. <https://doi.org/10.1016/j.tourman.2021.104330>
- Li, H., & Liu, Y. (2014). Understanding post-adoption behaviors of e-service users in the context of online travel services. *Information and Management*, 51(8), 1043-1052. <https://doi.org/10.1016/j.im.2014.07.004>
- Mahmud, I., Ramayah, T., & Kurnia, S. (2017). To use or not to use: Modelling end user grumbling as user resistance in pre-implementation stage of enterprise resource planning system. *Information Systems*, 69, 164-179. <https://doi.org/10.1016/j.is.2017.05.005>
- Mangin, J., & Bourgault, N. (2014). The Moderating Role of Risk, Security and Trust Applied to the TAM Model in The Offer of Banking Financial Services in Canada. *Journal of Internet Banking and Commerce*, 19(2), 1-21.
- Mckinsey. (2022). *The state of AI in 2020*. Retrieved from <https://www.mckinsey.com/capabilities/quantumblack/our-insights/global-survey-the-state-of-ai-in-2020> on March 5, 2025.
- Mogaji, E., Viglia, G., Srivastava, P., & Dwivedi, Y.K. (2024). Is it the end of the technology acceptance model in the era of generative artificial intelligence?. *International Journal of Contemporary Hospitality Management*, 3324-3339. <https://doi.org/10.1108/IJCHM-08-2023-1271>
- Moriuchi, E. (2019). Okay, Google!: An empirical study on voice assistants on consumer engagement and loyalty. *Psychology and Marketing*, 36(5), 489-501. <https://doi.org/10.1002/mar.21192>
- Mutahar, A.M., Aldholay, A., Isaac, O., Jalal, A.N., & Kamaruddin, F.E.B. (2022). The Moderating Role of Perceived Risk in the Technology Acceptance Model (TAM): The Context of Mobile Banking in Developing Countries. *Lecture Notes in Networks and Systems*, 299, 389-403. [https://doi.org/10.1007/978-3-030-82616-1\\_34](https://doi.org/10.1007/978-3-030-82616-1_34)
- Na, S., Heo, S., Choi, W., Kim, C., & Whang, S.W. (2023). Artificial Intelligence (AI)-Based Technology Adoption in the Construction Industry: A Cross National Perspective Using the Technology Acceptance Model. *Buildings*, 13(10). <https://doi.org/10.3390/buildings13102518>
- Nazir, S., Khadim, S., Ali Asadullah, M., & Syed, N. (2023). Exploring the influence of artificial intelligence technology on consumer repurchase intention: The mediation and moderation approach. *Technology in Society*, 72(December), 102190. <https://doi.org/10.1016/j.techsoc.2022.102190>
- Nguyen, T.T., Thi Thu Truong, H., & Le-Anh, T. (2023). Online Purchase Intention Under the Integration of Theory of Planned Behavior and Technology Acceptance Model. *SAGE Open*, 13(4), 1-16. <https://doi.org/10.1177/21582440231218814>
- Nunnally, J.C., & Bernstein, I. (1978). *Psychometric Theory*, New York, NY: McGraw-Hills. Inc.
- Page, C., & Lepkowska-White, E. (2002). Web equity: A framework for building consumer value in online companies. *Journal of Consumer Marketing*, 19(3), 231-248. <https://doi.org/10.1108/07363760210426058>
- Pallathadka, H., Ramirez-Asis, E.H., Loli-Poma, T.P., Kaliyaperumal, K., Ventayen, R.J.M., & Naved, M. (2023). Applications of artificial intelligence in business management, e-commerce and finance. *Materials Today: Proceedings*, 80, 2610-2613. <https://doi.org/10.1016/j.matpr.2021.06.419>
- Pan, J., Ding, S., Wu, D., Yang, S., & Yang, J. (2019). Exploring behavioural intentions toward smart healthcare services among medical practitioners: a technology transfer perspective. *International Journal of Production Research*, 57(18), 5801-5820. <https://doi.org/10.1080/00207543.2018.1550272>
- Park, Y.J., & Jones-Jang, S.M. (2023). Surveillance, security, and AI as technological acceptance. *AI & Society*, 38(6), 2667-2678. <https://doi.org/10.1007/s00146-021-01331-9>
- Pavlou, P.A. (2003). Consumer Acceptance of Electronic Commerce : Integrating Trust and Risk with the Technology Acceptance Model. *International Journal of Electronic Commerce*, 7(3), 69-103. <https://doi.org/10.1080/10864415.2003.11044275>
- Pillarisetty, R., & Mishra, P. (2022). A Review of AI (Artificial Intelligence) Tools and Customer Experience in Online Fashion Retail. *International Journal of E-Business Research*, 18(2), 1-12. <https://doi.org/10.4018/ijebr.294111>
- Ram, K., Satyendra, U., Feba, J., Sawmini, S., Nelli, K., Svetlana, B., Mottaeva, A., Barykin, S.Y., & Vitaly, A.M. (2021). Prospects for Artificial Intelligence Implementation To Design Personalized Customer Engagement Strategies. *Journal of Legal, Ethical and Regulatory Issues*, 24(6), 1-18.


- Rohden, S.F., & Zeferino, D.G. (2023). Recommendation agents: an analysis of consumers' risk perceptions toward artificial intelligence. *Electronic Commerce Research*, 23(4), 2035-2050. <https://doi.org/10.1007/s10660-022-09626-9>
- Sarstedt, M., Ringle, C.M., Smith, D., Reams, R., & Hair, J.F. (2014). Partial least squares structural equation modeling (PLS-SEM): A useful tool for family business researchers. *Journal of Family Business Strategy*, 5(1), 105-115. <https://doi.org/10.1016/j.jfbs.2014.01.002>
- Shahzad, M.F., Xu, S., Naveed, W., Nusrat, S., & Zahid, I. (2023). Investigating the impact of artificial intelligence on human resource functions in the health sector of China: A mediated moderation model. *Heliyon*, 9(11), e21818. <https://doi.org/10.1016/j.heliyon.2023.e21818>
- Shaouf, A., Lü, K., & Li, X. (2016). The effect of web advertising visual design on online purchase intention: An examination across gender. *Computers in Human Behavior*, 60, 622-634. <https://doi.org/10.1016/j.chb.2016.02.090>
- Sheth, J. (2020). Impact of Covid-19 on consumer behavior: Will the old habits return or die?. *Journal of Business Research*, 117, 280-283. <https://doi.org/10.1016/j.jbusres.2020.05.059>
- Song, M., Xing, X., Duan, Y., Cohen, J., & Mou, J. (2022). Will artificial intelligence replace human customer service? The impact of communication quality and privacy risks on adoption intention. *Journal of Retailing and Consumer Services*, 66, 102900. <https://doi.org/10.1016/j.jretconser.2021.102900>
- Tawalbeh, L., Muheidat, F., Tawalbeh, M., & Quwaider, M. (2020). Applied sciences IoT Privacy and Security: Challenges and Solutions. *Mdpi*, 1-17. <https://doi.org/10.3390/app10124102>
- Wamba-Taguimdje, S.-L., Fosso Wamba, S., Kala Kamdjoug, J.R., & Tchatchouang Wanko, C.E. (2020). Influence of artificial intelligence (AI) on firm performance: the business value of AI-based transformation projects. *Business Process Management Journal*, 26(7), 1893-1924. <https://doi.org/10.1108/BPMJ-10-2019-0411>
- Wang, C., Ahmad, S.F., Ayassrah, A.Y.A.B.A., Awwad, E.M., Irshad, M., Ali, Y.A., Al-Razgan, M., Khan, Y., & Han, H. (2023). An empirical evaluation of technology acceptance model for Artificial Intelligence in E-commerce. *Heliyon*, 9(8). <https://doi.org/10.1016/j.heliyon.2023.e18349>
- Wang, M., Sun, L.L., & Hou, J.D. (2021). How emotional interaction affects purchase intention in social commerce: the role of perceived usefulness and product type. *Psychology Research and Behavior Management*, 14, 467-481. <https://doi.org/10.2147/PRBM.S301286>
- Yin, J., & Qiu, X. (2021). AI technology and online purchase intention: Structural equation model based on perceived value. *Sustainability*, 13(10), 5671. <https://doi.org/10.3390/su13105671>
- Zhang, Y., Deng, X., Wei, D., & Deng, Y. (2012). Assessment of E-Commerce security using AHP and evidential reasoning. *Expert Systems with Applications*, 39(3), 3611-3623. <https://doi.org/10.1016/j.eswa.2011.09.051>

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This research is a collaboration between Angga Febrian and Joel Mero. Angga Febrian contributed 95% of the research, including the formulation of the research idea, data collection, and analysis of the results. Joel Mero contributed 5% participated in the development of the theoretical framework.


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### Use of Artificial Intelligence

The manuscript is free of AI/GAI usage.

### Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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