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KNOWLEDGE ABOUT AI AND ONLINE PURCHASE INTENTION AMONG GEN Z: A MULTI-GROUP GENDER ANALYSIS

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ABSTRACT

Background: The rapid integration of artificial intelligence (AI) into e-commerce has transformed how consumers interact with online shopping platforms, particularly among Generation Z, who exhibit high digital literacy and strong acceptance of emerging technologies. Despite the growing adoption of AI-driven features, empirical findings regarding how AI knowledge influences purchase intention remain inconclusive, especially when perceptual factors and gender differences are considered.
Purpose: This study aims to examine the effect of knowledge about artificial intelligence on Generation Z's online purchase intention, with perceived usefulness and perceived ease of use of AI as mediating variables, and to investigate the moderating role of gender in these relationships.
Design/methodology/approach: A quantitative, cross-sectional research design was employed, employing purposive sampling. Data were collected from 200 Generation Z consumers in Indonesia through an online questionnaire. The measurement items were assessed using a five-point Likert scale. Data analysis was conducted using Partial Least Squares–Structural Equation Modeling (PLS-SEM), including mediation testing and multi-group analysis to evaluate gender moderation.
Findings/Results: The results indicate that knowledge of AI significantly influences perceived usefulness and perceived ease of use. Both perceived usefulness and perceived ease of use have positive and significant effects on purchase intention and function as mediators in the relationship between AI knowledge and purchase intention. However, the multi-group analysis reveals that gender differences were not significant in this study.
Conclusion: The findings suggest that AI knowledge influences purchase intention both directly and indirectly through perceived usefulness and perceived ease of use. Strengthening AI literacy and designing user-friendly, value-oriented AI features are therefore essential to enhance Generation Z's purchase intention in online shopping environments.
Originality/value (State of the art): This study extends the Technology Acceptance Model (TAM) by positioning AI knowledge as a cognitive antecedent of purchase intention through perceptual mediators, while simultaneously testing gender dynamics using multi-group analysis. The research provides novel insights into AI-driven consumer behavior among Generation Z in an emerging market context.

Keywords: artificial intelligence, knowledge about ai, perceived usefulness, perceived ease of use, purchase intention

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INTRODUCTION

Artificial intelligence (AI) is rapidly transforming online retail by enabling personalized recommendations and more efficient consumer interactions (Bunea et al. 2024). The integration of AI has significantly influenced consumer behavior, particularly among Generation Z, who show strong acceptance of AI-based applications in online shopping (Charles et al. 2025; Suresh et al. 2023). In Indonesia, a Katadata Insight Center survey (2024) reported that 65% of respondents had used AI technologies, primarily for information retrieval and online shopping, indicating widespread adoption. Gen Z perceives AI-driven functionalities not merely as convenient but as essential tools that shape purchasing decisions, particularly through personalized and relevant shopping experiences (Jize & Jamaludin, 2025; Bunea et al. 2024). This shift reflects a broader transformation in digital consumption patterns, where AI is increasingly embedded in everyday decision-making processes and customer journeys. Moreover, the growing reliance on AI-driven systems highlights the importance of understanding how consumers cognitively and perceptually evaluate these technologies in online shopping environments. As AI continues to evolve, its role in shaping user experience, engagement, and purchasing behavior becomes increasingly critical, particularly among digitally native consumers such as Generation Z.

The proactive role of AI in predicting consumer needs represents a fundamental shift from traditional retail toward adaptive and responsive e-commerce ecosystems (Ruiz-Viñals et al. 2024). This shift is particularly relevant for Generation Z, a digitally proficient cohort with extensive exposure to online shopping and AI technologies from an early age (Bunea et al. 2024; Guerra-Tamez et al. 2024). When Gen Z perceives AI as easy to use, beneficial, and understandable, positive emotional responses such as confidence, comfort, and security emerge, which in turn enhance purchase intention through AI-generated recommendations (Kasuma et al. 2024). As a generation that views technology as integral to problem-solving and capability enhancement, Gen Z's understanding of AI plays a critical role in shaping their acceptance of AI-based personalization in e-commerce, underscoring the importance of examining their distinct perspectives (Bunea et al. 2024; Lee et al. 2022; Routray & Khandelwal, 2024). It is important to understand how Gen Z uses and perceives AI technology, as it becomes essential in explaining their purchase behavior in modern e-commerce environments. The technology acceptance model (TAM) theory is very relevant to support the exploration regarding this.

The Technology Acceptance Model (TAM) emphasizes perceived usefulness and perceived ease of use as the primary determinants of technology adoption, a perspective that is highly relevant for Generation Z as a digital-native cohort that expects seamless and intuitive AI integration in online activities (Bunea et al. 2024). AI-driven personalization, such as tailored recommendations and customized shopping experiences, is particularly appealing to Gen Z, as they expect brands to recognize and respond to their individual preferences (Jize & Jamaludin, 2025). Compared with previous generations, Gen Z shows a stronger inclination to adopt advanced technologies that enhance efficiency and everyday convenience, thereby driving continuous innovation in AI-based e-commerce solutions (Routray & Khandelwal, 2024; Bunea et al. 2024). As Gen Z's purchasing power and market influence continue to grow, their perceptions of AI usability and ease of use play a critical role in shaping acceptance and sustained engagement with AI technologies. Accordingly, applying the TAM framework provides a critical insight into a deep understanding of how perceptual evaluations of AI influence Generation Z's behavioral intention in digital commerce environments.

This study positions Knowledge of Artificial Intelligence (KAAI) as a key antecedent shaping Gen Z consumers' perceptions of AI usefulness (PUAI) and ease of use (PEUAI), which, in turn, influence purchase intention in AI-enhanced e-commerce environments. KAAI reflects consumers' level of understanding of AI, ranging from basic awareness to deeper comprehension of AI concepts, functionalities, and applications in online retail (Bunea et al. 2024). Prior studies indicate that greater AI knowledge enhances consumers' recognition of the benefits and usability of AI systems, thereby strengthening their intention to purchase (Bunea et al. 2024; ElSayad & Mamdouh, 2024). Consistent with TAM, exposure to and understanding of AI improve perceptions of usefulness and ease of use, which act as key drivers of behavioral intention among Gen Z consumers (Alanzi et al. 2023). Moreover, higher AI literacy enables Gen Z to engage more actively with AI-powered services, advertisements, and recommendation systems, reinforcing positive

interaction experiences and purchase decisions (Liu et al. 2025; Tjahyana, 2024). These findings highlight the critical role of AI knowledge in shaping technology acceptance, thereby enabling marketers to leverage AI when targeting Gen Z consumers strategically (Cheung et al. 2020).

Knowledge about AI (KAAI) significantly influences the perceived usefulness of AI (PUAI), indicating that consumers with higher AI understanding are more likely to recognize AI applications as beneficial in online shopping contexts (Bunea et al. 2024; Chen, 2022). A deeper understanding of AI enables consumers to understand better its functional advantages, such as improved convenience, efficiency, and personalized recommendations, thereby enhancing purchase intention. For Generation Z, AI knowledge strengthens trust and reliance on AI-driven tools, making them more receptive to shopping assistants and recommendation systems that improve decision-making and overall shopping experiences (Bunea et al. 2024; Suresh et al. 2023). Consistent with the Technology Acceptance Model (TAM), perceived usefulness emerges as a key determinant of technology adoption, particularly among digitally proficient Gen Z consumers who expect AI to optimize their online activities (Routray & Khandelwal, 2024). Prior studies further confirm that AI knowledge enhances the perceived value of AI-powered features, reinforcing their impact on purchase intention in e-commerce settings (Jize & Jamaludin, 2025; Ruiz-Viñals et al. 2024).

A study by Chen (2022) revealed that better KAAI improves consumers' PEUAI. Consumers are more likely to view AI tools as user-friendly, especially for online shopping, when they have a deeper understanding of artificial intelligence. Ruiz et al. (2024) indicate that a consumer's knowledge of AI (KAAI) significantly and positively influences their perceived ease of use when shopping online, particularly among Gen Z consumers. This suggests that as members of Generation Z become more familiar with the technology, their comfort and trust in using AI-driven online retail platforms increase. Furthermore, even without extensive direct experience, Gen Z shows a natural inclination toward AI advancements. Their expanding understanding enhances their understanding of the potential benefits and convenience of interacting with AI (Routray & Khandelwal, 2024). This improved understanding of AI positions it as an important mechanism for streamlining everyday activities, particularly in the fast-paced e-commerce sector (Routray & Khandelwal, 2024). Bunea et al. (2024) explored how Gen Z's comprehension of AI influences their perception of its usability in online retail settings, thereby helping to identify the elements driving the adoption of this technology. The findings showed a positive and significant association between knowledge about AI (KAAI) and the perceived ease of use of AI (PEUAI). The findings support those of Suresh et al. (2023), demonstrating that a deeper understanding of AI functions increases acceptance and use of AI in online retail among Gen Z consumers, thereby enhancing their overall shopping experience. Moreover, AI literacy has the potential to reduce technology-related stress among Generation Z, suggesting that a fundamental understanding of AI concepts can improve users' perceptions of its usefulness in digital environments (Routray & Khandelwal, 2024). A comprehensive understanding of AI mechanisms and applications can reduce perceived complexity, enhance intuitive navigation, and diminish resistance to new AI-driven shopping features (Routray & Khandelwal, 2024).

Prior studies consistently demonstrate that perceived usefulness of AI (PUAI) plays a crucial role in shaping consumers' purchase intention. Zhu et al. (2023) find that interactions with AI tools such as chatbots significantly enhance perceived usefulness, trust, and subsequent purchase intention. Similarly, Lê (2023) shows that the informational value and convenience provided by AI chatbots strengthen consumer engagement and purchasing behavior. Among Generation Z, perceived usefulness is particularly salient, as young consumers highly value the efficiency and reliability of AI-based platforms (ElSayad & Mamdouh, 2024). This is reinforced by Bunea et al. (2024), who confirm that PUAI has a positive and significant effect on purchase intention in online shopping contexts. Moreover, perceived usefulness influences consumers' attitudes toward AI-based recommendations, thereby increasing purchase intention (Tsaiyi et al. 2025). In contemporary digital marketing environments, AI-driven personalization, combined with influencer marketing, further strengthens Gen Z's perception of AI's usefulness, thereby amplifying its impact on purchasing decisions (Campbell et al. 2020). Collectively, these findings highlight that PUAI functions as a central evaluative mechanism through which AI technologies shape Gen Z consumers' online purchase behavior.

Bunea et al. (2024) and Fedorko et al. (2022) indicate that the perceived ease of use of AI (PEUAI) has a robust, positive, and meaningful influence on a consumer's purchase intention (PI). This is because user-friendly AI tools reduce cognitive effort and complexity in the online shopping process, especially for Gen Z, who are very familiar with technology. Simplified navigation, an intuitive interface, and easily accessible AI-powered functionality lower adoption barriers, making Gen Z consumers more comfortable and confident when interacting with AI systems. This collective ease of use enhances Gen Z consumers' satisfaction and trust, thereby increasing their purchase intention (Bunea et al. 2024). When consumers perceive mobile applications and social networking tools as easy to use and beneficial, this positive perception contributes to increased online sales. This happens because these positive views facilitate smoother and more satisfying user interactions. When users perceive these digital tools as intuitive and helpful, they experience less friction during the shopping process, which reduces cognitive effort and increases the likelihood of completing a purchase (Ferdoko, 2018). Another study focusing on AI knowledge emphasizes that this knowledge not only has a direct impact but also reinforces mediating factors such as perceived usefulness and perceived ease of use, which subsequently lead to greater purchase intention among Generation Z consumers (Bunea et al. 2024; Ruiz-Viñals et al. 2024).

Perceived usefulness (PU) reflects users' evaluation of how AI enhances the shopping experience, such as through personalization and process efficiency. As a mediating variable, PU translates AI-related factors such as knowledge, exposure, and usage into purchase intention by shaping perceptions of AI's functional value. Consistent with the Technology Acceptance Model (TAM), prior studies confirm that PU plays a central role in technology adoption by linking external stimuli to behavioral intention (Bunea et al. 2024; Davis, 1989; ElSayad & Mamdouh, 2024). Empirical evidence further shows that AI applications perceived as useful foster trust and engagement, reduce resistance, and increase consumer acceptance, particularly in AI-driven shopping environments (Ruiz-Viñals et al. 2024).

Although e-commerce adoption has grown rapidly, empirical findings on the role of AI knowledge in shaping purchase intention remain inconclusive. While some studies suggest that higher AI knowledge enhances digital engagement and interaction (Bunea et al. 2024; Routray & Khandelwal, 2024), others indicate that AI knowledge alone does not directly influence purchase intention without perceptual mechanisms such as perceived usefulness, ease of use, and trust (Suryadi et al. 2025). Moreover, AI knowledge does not consistently strengthen perceived ease of use, as greater exposure to AI does not always translate into clearer usability expectations in specific shopping contexts (Duong et al. 2023; Ruiz et al. 2024).

In contrast, several studies report that the direct effect of perceived ease of use of AI on purchase intention is often insignificant (Lee et al. 2022; Liang et al. 2020; Nagy & Hajdú, 2021), suggesting that ease of use primarily functions as a prerequisite rather than a direct behavioral driver, and its impact is likely contingent on perceived usefulness and trust. Furthermore, most prior research has not explicitly focused on Generation Z, despite their distinct digital fluency and heightened technological expectations compared to older cohorts (Guerra-Tamez et al. 2024). Research examining gender differences in AI-driven e-commerce also remains limited, even though gender may influence technology evaluation and decision-making processes (Cheah et al. 2021; Hayes, 2018). Collectively, these gaps underscore the need for further investigation into how AI knowledge and perceptual factors interact to shape Gen Z's purchase intention in AI-supported online shopping environments.

To address the highlighted research gap, this study draws on the Technology Acceptance Model (TAM) as the most relevant theoretical foundation. TAM is particularly appropriate for this study because it focuses on the two main perceptual mechanisms that directly explain technology acceptance: perceived usefulness and perceived ease of use. These two conceptions are particularly pertinent in the context of AI-enabled e-commerce, given Generation Z's high expectations for efficiency, ease, and intuitive digital interactions. In contrast to broader models such as UTAUT or TPB, TAM provides a more concise and straightforward explanation of individuals' cognitive evaluations of technology, which is the primary focus of this study. Building on this approach, this study expands the Technology Acceptance Model (TAM) by integrating Knowledge about AI (KAAI) as an external cognitive antecedent. This expansion is important because previous research has been inconclusive concerning the impact of AI knowledge on purchase intention. This study provides a more theoretical explanation of how AI-related information is transformed into behavioural intention among Gen Z customers in online purchasing contexts by focusing on KAAI as a factor that impacts purchase

intention through perceived usefulness and perceived ease of use.

This study investigates the impact of knowledge of AI (KAAI) on Generation Z's online purchase intention, with perceived usefulness of AI (PUAI) and perceived ease of use of AI (PEUAI) serving as mediating variables. More particularly, the study aims to explain how consumers' cognitive and perceptual judgments of AI in online purchasing environments translate into buying intentions. The urgency of this study stems from the growing role of AI technology in shaping the purchasing intentions of Generation Z, a demographic group that is currently dominant in the digital marketplace, is highly familiar with technology, and has distinct preferences and expectations for AI-enabled shopping experiences with unique preferences and expectations, especially in a shopping environment that uses AI (Ameen, 2023). Accordingly, this study expects that increased understanding of AI will increase Generation Z's buy intention for AI-enabled online commerce, both directly and indirectly through perceived usefulness and simplicity of use of AI. Greater AI knowledge, in particular, is predicted to improve consumers' impressions of AI's utility and usability, increasing purchase intention. In addition, the study uses multi-group analysis to determine whether these structural linkages change by gender. By understanding this, businesses can tailor their technology offerings to better align with the expectations and comfort levels of this key demographic, ultimately influencing how customers perceive the usability and ease of AI in their shopping experience (Jenneboer & Herrando, 2022). A tailored approach is essential for fostering a positive user experience, leading to higher engagement and adoption rates (Bunea et al. 2024).

METHODS

The study targeted Generation Z respondents in Indonesia. Participants were selected through purposive sampling to ensure they met the research requirements, specifically Gen Z individuals who have made e-commerce purchases. This sampling approach was considered appropriate because it allowed the study to focus on respondents with relevant experience and characteristics aligned with the research objectives. Also, this approach strengthened the relevance of the data by focusing on individuals who were familiar with e-commerce purchasing activities.

Data were collected in October 2025 using an online questionnaire distributed via the Populix survey platform. The minimum sample size required is 138, as calculated using G*Power. Of the total questionnaires returned, up to 200 responses were deemed valid and can be processed further. The questionnaire items were adapted from prior studies, and the detailed operationalization of each construct, including indicators, measurement items, and sources, is presented in the operationalization, as shown in Table 1, Operationalization Variables. Items for Knowledge about AI (KAAI), Perceived Usefulness of AI (PUAI), Perceived Ease of Use of AI (PEUAI), and Purchase Intention (PI) were chosen from the appropriate literature and tailored to the context of AI-enabled online shopping among Generation Z customers in Indonesia. The adaptation mostly consisted of contextualizing phrasing to ensure that each item was relevant to the study situation while retaining the constructions' original meaning. Each item in the questionnaire was measured using a five-point Likert scale ranging from "strongly disagree" to "strongly agree". Before the data were analyzed, the returned questionnaires were screened to ensure completeness and suitability for further processing. Only valid responses were retained for analysis, resulting in a final sample of 200 respondents.

The data were analyzed using the PLS-SEM technique with SmartPLS 4.0. The assessment of the measurement model included tests of validity and reliability. Convergent validity was evaluated based on loading factors and the AVE values, whereas discriminant validity was verified through cross-loading analysis and the HTMT criterion. The reliability of the construct is ensured through Composite Reliability (CR). All indicators are declared to meet the criteria if the loading value ≥ 0.70, AVE ≥ 0.50, HTMT < 0.85, and CR ≥ 0.70. The structural model was then analyzed to see the strength of the relationship between constructs through the R-square value, effect size (f^2), and predictive relevance (Q^2). Hypothesis testing was performed through a bootstrapping procedure to generate t-statistics and p-values. The effects of mediation are analyzed through specific indirect effects and are classified as partial or full mediation based on the significance of the direct and indirect pathways. In addition, this study also tested the effect of gender moderation using Multi-Group Analysis (PLS-MGA) by comparing the path coefficients between groups. The difference between groups is stated to be significant if the p-value of the MGA result is below 0.05.

Table 1. Operational variables

Variable Name	Indicators	Statements	Source
KAAI (Knowledge about AI)	The level of ignorance of AI	"I consider myself very uninformed about what artificial intelligence (AI) means."	(Bunea et al. 2024; Malhotra & Ramalingam, 2025)
	Basic knowledge of AI	"I know some basic things about AI, but I still have a lot to learn."	
	Intermediate knowledge of AI (can explain basic concepts)	"I have a sufficient level of knowledge about AI."	
	Advanced understanding	"I can explain the basic concepts of AI."	
	Expertise in AI (expert level)	"I have an in-depth knowledge of AI."	
		"I have a comprehensive understanding of how AI works."	
		"I consider myself an expert in the field of AI."	
		"I can discuss advanced aspects and specific applications of AI."	
PUAI (Perceived Usefulness AI)	AI is considered innovative and beneficial	"I see the use of AI in marketing and sales activities as something innovative and beneficial."	(Bunea et al. 2024; Campbell et al. 2020; R. Chen et al. 2020; Lee et al. 2022; Liang et al. 2020)
	AI improves online shopping strategies	"I believe that AI can provide significant improvements to online shopping strategies."	
	AI personalizes customer experience	"I view AI as an effective tool for personalizing offers and customer experiences."	
	AI improves online shopping efficiency	"I believe that the use of AI can help increase efficiency in online shopping activities."	
	A general positive perception of AI in online shopping	"Overall, I have a positive perception of the use of AI in online shopping."	
PEUAI (Perceived Ease of Use about AI)	The AI-based shopping app is easy to use	"AI-powered shopping apps and online stores are easy to use."	(Bunea et al. 2024; Moriuchi, 2019)
	AI recommendations reduce mental effort	"When AI provides recommendations or alternatives, shopping requires less mental effort."	
	AI makes shopping easier with product recommendations	"AI simplifies the shopping process by suggesting suitable products for me."	
	Easily understand how AI-based applications work	"I find it easy to understand how to use AI-optimized shopping apps and online stores."	
	Easily develop the ability to use AI applications	"Developing skills in using AI-powered shopping apps and online stores is simple for me."	
PI (Purchase Intention)	Willingness to buy and recommend products that use AI	"I am willing to buy products or services that use AI in their sales processes in the near future."	(Bawack et al. 2022; Brill et al. 2019; Bunea et al. 2024; Nagy & Hajdú, 2021; Qin et al. 2022; Yen & Chiang, 2021)
	Consideration for buying products that use AI	"I consider recommending others to buy products or services that use AI in sales."	
	The tendency to visit AI-based online stores	"I would consider buying a product or service that benefits from AI technologies in the sales process."	
	More often end up buying from AI-based stores	"I tend to visit online shopping sites that use AI in their sales activities."	
	Willingness to pay more in AI-based stores	"I often end up purchasing products from online stores that use AI-based technologies."	
	Plan to increase the use of AI-based stores/apps	"I am willing to spend more when purchasing from online stores powered by AI technology."	
		"I plan to visit online stores and use shopping apps powered by AI more frequently."	

Knowledge about AI (KAAI) plays a crucial role in shaping Gen Z consumers' purchase intention (PI) in AI-powered e-commerce, as greater AI knowledge increases trust, reduces uncertainty, and enhances perceived value (Bunea et al. 2024). Accordingly, H1 posits that KAAI positively and significantly affects PI. In line with the Technology Acceptance Model (TAM), higher AI knowledge also strengthens perceptions of usefulness and ease of use by improving efficiency, personalization, and intuitive interaction (H2: KAAI → PUAI; H3: KAAI → PEUAI) (Bunea et al. 2024; Lopes et al. 2024). Furthermore, perceived usefulness and perceived ease of use directly enhance purchase intention by reducing adoption barriers and improving shopping effectiveness (H4: PUAI → PI; H5: PEUAI → PI) (Moriuchi, 2019). Finally, PUAI and PEUAI mediate the relationship between AI knowledge and purchase intention, indicating that AI knowledge influences purchasing behavior through evaluative and usability perceptions (H6: PUAI mediates KAAI–PI; H7: PEUAI mediates KAAI–PI) (Bawack et al. 2022). Research model in Figure 1.

RESULTS

The study reveals that, considering the total of 200 Generation Z respondents in Indonesia, most are women (71%), while men amount to 30% (Table 2).

Convergent Reliability and Validity

Across both gender groups, female and male respondents demonstrated Cronbach's Alpha values exceeding the 0.70 threshold, indicating a high level of internal consistency (Table 3). In the female group, the Alpha value ranged from 0.913 to 0.947, while in the male group, it was in the range of 0.848 to 0.916. The Composite Reliability (CR) values in both groups were also above the minimum value of 0.70, indicating that each construct had excellent composite reliability. Overall, in the total sample, the Alpha value ranged from 0.914 to 0.930, and the CR value was in the range of 0.936 to 0.945, which confirmed that the research instrument was stable. Thus, the research instrument is declared suitable for use in further analysis, such as testing relationships between variables and testing structural models.

Hypotheses Testing

The direct relationship (Table 4) analysis indicates that Knowledge about AI (KAAI) significantly influences Purchase Intention (PI) across all respondent groups, including female, male, and the total sample, with consistently significant β values (female = 0.279; male = 0.369; complete = 0.297). This confirms that higher AI knowledge increases consumers' intention to purchase on AI-enabled platforms. In addition, KAAI shows a strong and stable effect on Perceived Usefulness of AI (PUAI) in all groups (female = 0.745; male = 0.630; complete = 0.689), highlighting AI literacy as a key predictor of usefulness perception. KAAI also significantly affects Perceived Ease of Use of AI (PEUAI) (female = 0.714; male = 0.689; complete = 0.714), supporting the Technology Acceptance Model (TAM) assumption that knowledge enhances ease-of-use perception. Regarding the relationship between PUAI and PI, the effect varies by gender: PUAI does not significantly influence purchase intention among male respondents ($\beta = 0.020$, $p > 0.05$) but is significant among female respondents ($\beta = 0.282$, $p = 0.005$), while remaining significant in the total sample ($\beta = 0.211$, $p = 0.009$). Finally, PEUAI demonstrates a strong and significant influence on purchase intention across all groups (female = 0.383; female = 0.545; complete = 0.428), with a stronger effect observed among female consumers, indicating that ease of use is a dominant factor in driving purchase decisions, particularly for women.

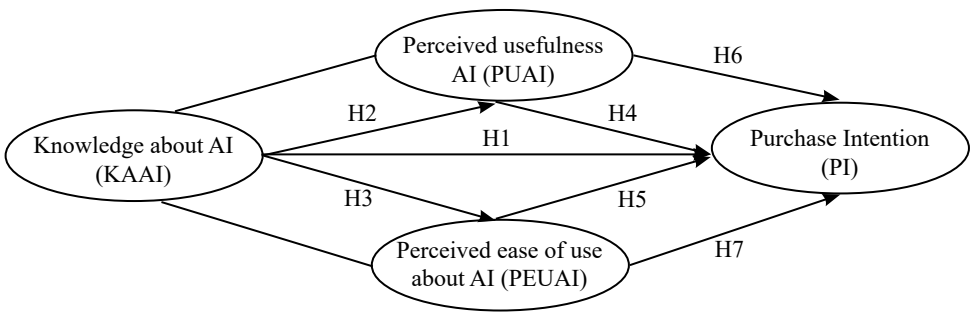

Figure 1. Research model

Table 1. Participant demographics

Respondent Characteristics		%	Frequency
Gender	Man	30%	59
	Woman	71%	141
Age	18-24	42%	84
	25-30	58%	116
Online Shopping Frequency in the Last 3 Months	1 time in the last 3 months	8%	16
	2–3 time in the last 3 months	40%	80
	4–10 time in the last 3 months	36%	72
	>10 time in the last 3 months	16%	32

Table 2. Reliability and convergent validity

Items	Female			Male			Complete		
	Alpha	CR	AVE	Alpha	CR	AVE	Alpha	CR	AVE
KAAI	0.947	0.958	0.792	0.848	0.885	0.573	0.930	0.945	0.742
PEUAI	0.927	0.945	0.774	0.888	0.917	0.690	0.917	0.938	0.750
PI	0.939	0.950	0.733	0.908	0.927	0.646	0.930	0.944	0.705
PUAI	0.913	0.935	0.742	0.916	0.937	0.749	0.914	0.936	0.744

Note. KAAI: Knowledge about AI, PUAI: Perceived Usefulness AI, PEUAI: Perceived ease of use about AI, PI: Purchase intention, AVE: Average Variance Extracted, CR: Composite Reliability

Table 3. Direct Relationship

Hypotheses	Female				Male				Complete			
	B	T	P	Result	B	T	P	Result	B	T	P	Result
H1: KAAI → PI	0.279	3.669	0.000	Supported*	0.369	4.181	0.000	Supported*	0.297	5.058	0.000	Supported*
H2: KAAI → PUAI	0.745	17.820	0.000	Supported*	0.609	7.045	0.000	Supported*	0.708	18.385	0.000	Supported*
H3: KAAI → PEUAI	0.714	17.129	0.000	Supported*	0.630	7.834	0.000	Supported*	0.689	18.001	0.000	Supported*
H4: PUAI → PI	0.282	2.577	0.005	Supported*	0.020	0.142	0.443	Not Supported	0.211	2.355	0.009	Supported*
H5: PEUAI → PI	0.383	3.788	0.000	Supported*	0.545	3.543	0.000	Supported*	0.428	5.059	0.000	Supported*
	R-Sq	Q-Sq			R-Sq	Q-Sq			R-Sq	Q-Sq		
KAAI		0.000				0.000				0.000		
PEUAI	0.510	0.386			0.398	0.264			0.474	0.352		
PI	0.752	0.536			0.714	0.437			0.729	0.503		
PUAI	0.555	0.405			0.371	0.264			0.501	0.370		
	f-square				f-square				f-square			
KAAI → PEUAI	1.039				0.660				0.902			
KAAI → PI	0.130				0.275				0.151			
KAAI → PUAI	1.246				0.590				1.005			
PEUAI → PI	0.176				0.307				0.202			
PUAI → PI	0.087				0.000				0.047			

Note. KAAI: Knowledge about AI, PUAI: Perceived Usefulness AI, PEUAI: Perceived ease of use about AI, PI: Purchase intention, Relationships are significant at $p < 0.05$, B = Beta Coefficient, T = t-statistic, and P = Probability (P) value.

Table 4. Path coefficient

	Female			Male			Complete		
	B	t	p	B	t	p	B	t	p
KAAI → PEUAI	0.714	17.129	0.000	0.630	7.834	0.000	0.689	18.001	0.000
KAAI → PI	0.279	3.669	0.000	0.369	4.181	0.000	0.297	5.058	0.000
KAAI → PUAI	0.745	17.820	0.000	0.609	7.045	0.000	0.708	18.385	0.000
PEUAI → PI	0.383	3.788	0.000	0.545	3.543	0.000	0.428	5.059	0.000
PUAI → PI	0.282	2.577	0.005	0.020	0.142	0.443	0.211	2.355	0.009

Note. KAAI: Knowledge about AI, PUAI: Perceived Usefulness AI, PEUAI: Perceived ease of use about AI, PI: Purchase intention, Relationships are significant at $p < 0.05$, B = Beta Coefficient, T = t-statistic, and P = Probability (P) value.

R Square

The R-square (R^2) results indicate that the proposed model demonstrates good predictive ability across all respondent groups. In the female group, the model explains 51% of the variance in perceived usefulness of AI (PUAI), 75.2% of perceived ease of use of AI (PEUAI), and 55.5% of purchase intention (PI), reflecting strong explanatory power. In the male group, the explanatory power is slightly lower, with the model accounting for 39.8% of PUAI variance, 71.4% of PEUAI variance, and 37.1% of PI variance, which fall within the moderate to high range. For the complete sample, the R^2 values indicate moderate predictive ability for PUAI 47.4%, PI 50.1%, and high predictive ability for PEUAI 72.9%. Overall, these findings confirm the robustness and fitness of the research framework, particularly for the PEUAI construct, which consistently achieves high predictive power across all groups, underscoring its central role in AI adoption behavior.

F Square

The f^2 results show that knowledge about AI (KAAI) is the strongest determinant across all groups, exerting a large effect on perceived usefulness (PUAI) and perceived ease of use (PEUAI). In contrast, the effects of PUAI and PEUAI on purchase intention are relatively weaker, ranging from small to moderate.

Mediation Analysis

Results from the mediation test indicated that PUAI partially mediated the influence of KAAI on PI, with significant effects observed solely in the female respondents and the combined sample. In female respondents, the indirect effect through PUAI was significant ($\beta = 0.210$, $p = 0.005$), while the direct effect of KAAI → PI was also significant, resulting in partial mediation. In the male group, mediation via PUAI was not significant ($\beta = 0.012$, $p = 0.445$), indicating no mediating effect. Overall, for the total sample, mediation via PUAI was significant ($\beta = 0.150$, $p = 0.009$), indicating that the effect of KAAI on purchase intent was partially mediated by perceived AI usability.

Meanwhile, mediation through PEUAI showed consistently strong results in all groups of females, male, and total samples. Indirect effects through PEOUAI were significant in females ($\beta = 0.273$, $p < 0.001$), males ($\beta = 0.343$, $p = 0.001$), and total samples ($\beta = 0.295$, $p < 0.001$). Because the direct effects of KAAI → PI remain significant in all groups, this relationship is categorized as partial mediation on the whole sample. These outcomes highlight that perceptions of AI usability serve as a powerful and stable mediating mechanism, effectively bridging the relationship between AI knowledge and purchase intention.

Multi-group Analysis

The MGA results show no significant differences in the structural relationships across gender ($p < 0.05$). Although some paths exhibit marginal differences ($p < 0.10$), they do not reach statistical significance, confirming that gender does not moderate the relationships among the constructs.

Knowledge about AI (KAAI) and Purchase Intention (PI) H1

The findings support H1, demonstrating that Knowledge of AI (KAAI) has a positive and significant impact on Generation Z's Purchase Intention (PI). This finding implies that customers' comprehension of how AI works and the benefits it provides influences their intention to buy in AI-enabled online shopping environments. Greater AI knowledge boosts users' trust

in judging the accuracy, relevance, and personalization produced by AI systems on e-commerce platforms, improving their desire to make purchases. In the context of Gen Z, who are quite familiar with digital surroundings, such information promotes the belief that AI may give efficiency, ease, and decision support during the purchasing experience. These findings are consistent with prior research demonstrating that a thorough understanding of AI capabilities increases trust and positive evaluations of AI-based retail systems, which contributes to higher buy intentions (ElSayad & Mamdouh, 2024; Bunea et al. 2024). This finding further suggests that AI knowledge serves not only as background awareness but also as a cognitive element that directly influences behavioural intention. Knowledge of AI may minimize uncertainty and enhance confidence when engaging with AI-powered features such as chatbots, recommendation engines, and automated shopping assistants. Previous research indicates that using AI-driven features improves user engagement and reduces ambiguity in decision-making (Lan et al. 2025; Ruiz-Viñals et al. 2024). As a result, the current study demonstrates that KAAI is a major predictor of purchase intention, while also supporting the larger TAM-based notion that cognitive preparedness for technology might directly contribute to technology-related behavioural intention.

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Knowledge about AI (KAAI) and Perceived Usefulness of AI (PUAI) H2

The findings support H2, demonstrating that Knowledge about AI (KAAI) has a positive and significant effect on Perceived Usefulness of AI (PUAI). This finding shows that when consumers possess a deeper understanding of AI mechanisms and practical benefits, they are better able to evaluate how the technology improves shopping efficiency, effectiveness, and decision quality in e-commerce settings. In other words, greater AI knowledge strengthens consumers' ability to recognize the functional value of AI-enabled features, such as recommendation systems, automated interactions, and personalized assistance. Prior research has also shown that consumers who understand AI capabilities tend to perceive these technologies as accurate, beneficial, and value-adding tools in digital shopping environments (Ai-zhong & Zhang, 2022; Bunea et al. 2024; ElSayad et al. 2024). This finding is also consistent with previous research showing that AI knowledge reduces uncertainty, lowers cognitive effort, and strengthens confidence in technology usage, thereby increasing the perception that AI is useful in improving shopping quality and performance (Chen et al. 2022; Moriuchi, 2019; Nagy & Hajdú, 2021; Yen & Chiang, 2021). Within the Technology Acceptance Model (TAM), this result suggests that AI literacy functions as an important evaluative trigger through which consumers assess the practical value offered by AI-driven e-commerce systems. Thus, KAAI does not merely reflect technological familiarity but also serves as a cognitive foundation that enhances consumers' judgments of usefulness. Moreover, AI applications that provide accurate recommendations and responsive interactions further reinforce the perception that the technology delivers meaningful value by aligning its outputs with consumers' preferences and expectations (Lopes et al. 2024; Ruiz-Viñals et al. 2024). From a theoretical standpoint, this finding supports the extended TAM argument in this study by establishing that cognitive preparation in the form of AI knowledge is a key predictor of perceived utility in AI-enabled online buying.

Knowledge about AI (KAAI) and Perceived Ease of Use of AI (PEUAI) H3

The findings support H3, suggesting that knowledge about AI (KAAI) has a positive and significant impact on perceived ease of use of AI (PEUAI). This research implies that a better grasp of artificial intelligence allows Generation Z consumers to perceive AI-enabled purchasing features as simpler, more intuitive, and less complex. Technological literacy allows users to interact with AI-supported features more easily by reducing cognitive ambiguity, mental effort, and self-efficacy (Bunea et al. 2024; Mondal & Hasan, 2023; Shafiq et al. 2025). When users understand how AI systems work, features like chatbots, recommendation engines, and virtual assistants appear more intuitive and simpler to use. This finding is similar to previous research, which found that more knowledge of AI increases consumers' comfort and trust in utilizing AI-powered online retail platforms (Chen, 2022; Ruiz et al. 2024; Routray & Khandelwal, 2024). Similarly, Bunea et al. (2024) discovered that Gen Z's grasp of AI has a substantial impact on their impression of its usability in online retail situations, whereas Suresh et al. (2023) demonstrated that a better understanding of AI functions boosts adoption and use of AI in online purchasing. Furthermore, perceived ease of use is reinforced by prior digital experience, technological expectations, and psychosocial factors, since AI systems that provide

quick replies and easy navigation correspond well with Gen Z's digital expectations (Lopes et al. 2024; Ruobing & Chen, 2023). According to Nagy and Hajdú (2021) and Jize and Jamaludin (2025), AI knowledge improves user comfort and confidence when interacting with AI-powered platforms. It also reduces perceived complexity and fosters a more convenient user experience, leading to increased technology acceptance. From a theoretical standpoint, this research confirms the Technology Acceptance Model (TAM) by demonstrating that cognitive preparation in the form of AI expertise is an essential predictor of perceived ease of use in AI-enabled online shopping scenarios. In other words, KAAI serves as an important precursor of PEUAI in AI-enabled online retail environments. The finding further supports the study's extended TAM by demonstrating that consumers' comprehension of AI is not only important for determining whether the technology is valuable, but also for shaping whether it is regarded as simple and straightforward to use. Thus, the influence of KAAI on PEUAI originates from a combination of technology-related information, experiential interactions, and social-psychological expectations, all of which contribute to the notion that AI systems are simple to understand and operate in e-commerce settings.

Perceived Usefulness of AI (PUAI) and Purchase Intention (PI)

The results provide partial support for H4, indicating that Perceived Usefulness of AI (PUAI) positively and significantly influences Purchase Intention (PI) in the female group and in the complete sample, but not in the male group. This finding is generally consistent with prior studies showing that AI-driven features such as personalized recommendations and adaptive interactions enhance purchase intention by improving product search, evaluation, and decision-making efficiency (Bunea et al. 2024; ElSayad et al. 2024; Lee et al. 2022). When AI assists Gen Z consumers in making more efficient and productive shopping selections, they view it as valuable. As a result, perceived AI usefulness serves as an evaluation mechanism that reduces cognitive effort while improving trust and convenience (Mondal & Hasan, 2023; Ruobing & Chen, 2023). Social validation within digital communities may further reinforce this perception, as shared positive experiences shape collective expectations (Achim et al. 2024; Kavitha & Joshith, 2024). At the same time, the non-significant effect in the male group indicates that the influence of PUAI on purchase intention is not uniform across all respondents. This finding suggests that usefulness alone may be insufficient to drive purchase intention among male respondents, and that other factors, particularly convenience, simplicity, or ease of interaction, may play a more central role in shaping their behavioural intention. This interpretation is consistent with the broader pattern of the results, which shows that PEUAI has a stronger and more stable effect across groups. From a theoretical perspective, this finding suggests that perceived usefulness remains an important predictor of purchase intention within the extended TAM framework, but its role may vary across subgroups. Thus, while the overall result supports the TAM assumption that usefulness contributes to behavioural intention, the male-group result refines this relationship by showing that usefulness-based evaluations do not operate uniformly across all Gen Z consumers.

Perceived Ease of Use of AI (PEUAI) and Purchase Intention (PI)

The results support H5 across the female, male, and complete samples, indicating that Perceived Ease of Use of AI (PEUAI) has a positive and significant effect on Purchase Intention (PI). This finding indicates that when Gen Z consumers perceive AI-enabled shopping features as easy to use, intuitive, and effortless, they are more likely to develop stronger purchase intention. This aligns with the TAM framework, which highlights ease of use as an important determinant of behavioural intention. These findings correspond with prior studies showing that AI systems that are easy to navigate, responsive, and intuitive reduce cognitive load, improve interaction comfort, and increase user confidence, leading to smoother and more satisfying shopping experiences (Bhagat et al. 2024; Bunea et al. 2024; Lopes et al. 2024). When AI is perceived as effortless to use, consumers experience lower frustration and higher satisfaction, which strengthens their evaluation of AI's functional value in e-commerce settings (Lee et al. 2022). Moreover, perceived ease of use reinforces trust and reduces perceived risk, as intuitive interactions signal technological reliability and encourage positive social reinforcement (Ngo et al. 2023; Ruobing & Chen, 2023). Perceived ease of use minimizes the effort and complexity of interacting with AI recommendation systems, increasing Gen Z's perception of usability, trust, convenience, and satisfaction (Jize & Jamaludin, 2025). From a theoretical perspective, this finding

reinforces the Technology Acceptance Model (TAM) by confirming that ease of use remains a strong predictor of purchase intention in AI-enabled online shopping, and in this study, it appears to be a more stable driver of behavioural intention across groups.

Mediation Effect of Perceived Usefulness of AI (PUAI)

The results provide partial support for H6, indicating that Perceived Usefulness of AI (PUAI) mediates the effect of Knowledge about AI (KAAI) on Purchase Intention (PI) in the female sample, but not in the male or complete samples. This research implies that knowledge about AI produces behavioral consequences when consumers first perceive that the technology is genuinely useful. These findings are consistent with Bunea et al. (2024), Chen et al. (2022), and Liang et al. (2020), which affirm that AI knowledge improves consumers' ability to understand the functions, advantages, and practical value of AI, including personalized recommendations, more efficient navigation, and more accurate decision-making. This greater awareness improves the sense of benefits, lowering technological uncertainty and enabling consumers to see AI as a tool that contributes meaningfully to the purchasing experience. In this regard, PUAI acts as an evaluative bridge, converting AI literacy into purchase intention in accordance with the Technology Acceptance Model (TAM). At the same time, the non-significant result in the male and complete group indicates that the mediating role of PUAI is not equally stable across all groups. This means that, while perceived usefulness may translate AI knowledge into purchase intention, the impact may differ depending on how different respondents rate usefulness. The findings of this study are also strengthened by Lee et al. (2022), Lopes et al. (2024), and Nagy & Hajdú (2021), which show that benefit perception integrates cognitive (knowledge), emotional (trust), and operational (decision effectiveness) aspects in shaping behavioral intention. Thus, from a theoretical perspective, this finding supports the extended TAM by showing that PUAI functions as a mediating mechanism between AI knowledge and purchase intention, although its mediating role appears more limited and less consistent than PEUAI across groups.

Mediation Effect of Perceived Ease of Use (PEUAI)

The finding confirms H7, which states that Perceived Ease of Use of AI (PEUAI) significantly mediates the effect of Knowledge about AI (KAAI) on Purchase Intention (PI) across the female, male, and complete samples. This finding suggests that AI knowledge becomes more behaviorally meaningful when consumers first perceive AI-enabled shopping features as easy to use, intuitive, and effortless. Perceived ease of use about AI (PEUAI) significantly mediates the influence of knowledge about AI (KAAI) on purchase intention (PI) (Bawack et al. 2022; Lan et al. 2025; Lee et al. 2022; Wang et al. 2025). Moriuchi (2019) shows that PEUAI partially mediates the positive effects of KAAI on PI. This means that consumers' knowledge of AI increases their perception that using AI-based technologies is easy, which in turn increases their intention to purchase through these technologies. Consumers who are more familiar with AI technology find it easier to use, reducing complexity or perceived effort, which is consistent with the TAM thesis that ease of use improves behavioural intent (Moriuchi, 2019). This finding is also consistent with prior studies showing that AI knowledge increases familiarity, reduces cognitive uncertainty, and strengthens users' confidence and perceived control, which leads AI systems to be perceived as more intuitive and less complex (Bunea et al. 2024; Lee et al. 2022; Lopes et al. 2024; Nagy & Hajdú, 2021; Yen & Chiang, 2021). Ease of navigation and intuitive system design further accelerate users' ability to recognize the benefits of AI, strengthen perceived usefulness, and facilitate decision-making (Lopes et al. 2024; Bunea et al. 2024). Within the context of high digital literacy and frequent AI exposure among Gen Z consumers, PEUAI plays a critical mediating role by bridging technological understanding and behavioral intention. From a theoretical perspective, this finding supports the Technology Acceptance Model (TAM) and strengthens the extended TAM argument in this study by confirming that AI knowledge must be translated into perceived ease of use to more effectively drive purchase intention.

Multi-group Analysis

The Multi-Group Analysis results indicate that gender does not moderate any relationships in the structural model, suggesting that the mechanisms linking AI knowledge, perceived usefulness, perceived ease of use, and purchase intention operate uniformly across male and female Gen Z consumers. This absence of moderation supports a structural-invariant model of AI acceptance, where technology adoption is driven primarily by cognitive, evaluative, and operational

perceptions rather than demographic characteristics. The findings imply that the utilitarian benefits of AI in e-commerce, such as efficiency, personalization, and decision facilitation, are perceived similarly by both genders. Consequently, gender does not function as a boundary condition in AI acceptance among Gen Z, reinforcing the robustness of the model and indicating that AI-based e-commerce strategies can be developed without gender-based segmentation.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

According to the study's findings, Generation Z's intention to make an online purchase is positively impacted by Knowledge about AI (KAAI), both directly and indirectly through Perceived Usefulness of AI (PUAI) and Perceived Ease of Use of AI (PEUAI). Consistent with the prior studies (Bunea et al. 2024; Ruiz-Viñals et al. 2024), have found that AI-related information and perceptual evaluations have a significant influence on determining customer intention in digital buying environments. However, in contrast to previous studies, which suggest that AI knowledge does not directly influence purchase intention without perceptual mechanisms (Suryadi et al. 2025), the present study shows that AI knowledge affects purchase intention both directly and indirectly, indicating partial mediation. In particular, PEUAI emerged as the more stable mediating pathway across groups, while PUAI showed a more limited mediating role. The findings therefore reinforce and extend the Technology Acceptance Model (TAM) by positioning KAAI as a cognitive antecedent of behavioural intention that operates both directly and through perceived usefulness and perceived ease of use. Additionally, the lack of substantial gender differences in structural correlations suggests that cognitive and perceptual characteristics exert a greater influence on Gen Z customers' intentions to make AI-enabled purchases than gender does. Our results suggest that to more effectively improve purchase intention, e-commerce platforms should prioritize intuitive, user-friendly, and value-oriented AI features, in addition to enhancing consumers' AI literacy.

Recommendations

This study provides both theoretical and practical implications for AI-driven e-commerce. From a theoretical point of view, the findings extend the Technology Acceptance Model (TAM) by incorporating Knowledge about Artificial Intelligence (KAAI) as a cognitive antecedent that influences purchase intention both directly and indirectly through perceived usefulness and perceived ease of use, with the latter emerging as a more stable predictor. From a practical point of view, e-commerce platforms should prioritize the simplification of user interaction (UI)/ user experience (UX) and ensure that AI features are intuitive, easy to use, and enhance purchase intention among Generation Z. Furthermore, the lack of gender disparities implies that segmentation strategies should shift from demographic-based approaches toward behavioral and digital literacy-based segmentation, focusing on how different segments perceived AI's usefulness and ease of use in online shopping. Finally, marketing communications should promote convenience, simplicity, and user-friendliness, emphasizing the importance of shifting from a technology-centric to an experience-centric strategy in AI-enabled online buying.

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