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AI-DRIVEN PERSONALIZATION AND CONSUMER DECISION-MAKING: HOW PERCEIVED VALUE AND COGNITIVE BIAS SHAPE CONSUMER RESPONSES

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ABSTRACT

Objective: This study aims to analyze the influence of AI-driven personalization on Consumer Decision-Making through the mediating role of Perceived Value and to test the moderating role of Cognitive Bias in the relationships between AI-driven personalization and perceived value, as well as between Perceived Value and Consumer Decision-Making.

Research Design & Methods: This study used a quantitative approach by surveying consumers who have experience interacting with AI-based digital platforms. The study population included all consumers who had experience using AI-based digital platforms in the past six months. The sample size was 240 respondents. Data were collected through a structured questionnaire and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM).

Findings: The results of the study indicate that AI-Driven Personalization does not directly influence Consumer Decision-Making. However, AI-Driven Personalization has been shown to have a positive effect on Perceived Value, and Perceived Value has a positive effect on Consumer Decision-Making. In addition, Perceived Value has been shown to significantly mediate the relationship between AI-Driven Personalization and Consumer Decision-Making. The results of the moderation test indicate that Cognitive Bias does not moderate the relationship between AI-Driven Personalization and Perceived Value, but strengthens the relationship between Perceived Value and Consumer Decision-Making.

Contribution: This research provides a theoretical contribution by expanding the application of SOR Theory in the context of AI-based marketing by proving that the influence of AI-based personalization on consumer decisions occurs through the mechanism of forming perceived value. This research also enriches Behavioral Decision Theory by showing that psychological factors in the form of Cognitive Bias play a role in strengthening the transformation of value evaluations into actual consumer decisions.

Novelty: The novelty of this research lies in the integration of AI-Driven Personalization, Perceived Value, and Cognitive Bias in a single conceptual model that combines the perspectives of SOR Theory and Behavioral Decision Theory. This research shows that the influence of AI-Driven Personalization on Consumer Decision-Making does not occur directly, but rather through Perceived Value as a mediator, while Cognitive Bias acts as a moderator that strengthens the relationship between Perceived Value and Consumer Decision-Making.

Keywords: AI-Driven Personalization, Perceived Value, Consumer Decision-Making, Cognitive Bias, Artificial Intelligence Marketing.

JEL codes: M31, M37, D91, O33.

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INTRODUCTION

The development of Artificial Intelligence (AI) technology has changed digital marketing strategies from a mass marketing approach to hyper-personalization, which is able to adjust product recommendations, promotions and content based on consumer behavior and preferences. Today, big companies like Amazon, Netflix, TikTok, and Shopee are leveraging AI-driven personalization to improve customer experience and drive purchasing decisions. Arora et al. (2021) report shows that 71% of consumers expect companies to provide personalized experiences, and 76% feel frustrated when companies fail to do so. In addition, companies that succeed in implementing personalization effectively are able to increase revenue by 5–15% and generate 40% higher revenue than companies that are less than optimal in implementing personalization. This condition shows that AI-based personalization has become an important factor in building value and influencing consumer behavior in the digital era. However, some consumers consider personalization as an added value that makes the process of searching for information and making decisions easier, while others express doubts about the accuracy, transparency and objectivity of recommendations produced by algorithms (Kozyreva et al., 2021).

AI-driven personalization refers to the ability of artificial intelligence technology to analyze consumer data in real-time and produce recommendations, offers and experiences tailored to individual preferences (Islam et al., 2024). In contrast to conventional personalization, AI allows companies to understand consumer needs more accurately through the use of machine learning, predictive analytics and big data. The influence of AI-driven personalization on consumer decision-making does not occur directly, but rather through an evaluation process that forms perceived value (Yin & Qiu, 2021). When consumers receive recommendations that match their needs and preferences, they tend to experience greater benefits, time savings, and a more efficient shopping experience. These conditions will increase perceived value, which ultimately encourages the formation of more positive purchasing decisions. AI-driven personalization acts as an external stimulus that influences consumers' internal evaluation of the benefits they receive (Wang et al., 2025). When consumers receive relevant information, appropriate product recommendations, and a more efficient experience, they tend to experience benefits that outweigh the costs. Thus, AI-based personalization has the potential to increase perceived value because it can create a more comfortable, relevant and valuable experience for consumers.

Empirical findings show that AI-based personalization increases perceived value through increasing information relevance, convenience, and efficiency of consumer decision-making processes (Chew & Achananuparp, 2022). However, other research shows that too intensive personalization can actually give rise to perceptions of intrusiveness, concerns about privacy, and psychological discomfort, which ultimately reduces consumers' perceived value (Ding et al., 2025). AI's ability to present information that is more relevant, accurate and in line with individual needs will increase the perceived benefits that consumers receive during the interaction process with the company. The higher the level of personalization felt by consumers, the greater the value they perceive from the products, services and experiences offered (Yin & Qiu, 2021).

Perceived value can be one of the determinants that influences consumer behavior and decisions because it reflects the extent to which consumers assess that a product is able to meet their needs and expectations (Xu et al., 2022). Consumers tend to choose alternatives that provide the greatest benefits with the lowest sacrifices. When consumers perceive high value from a product, whether in the form of functional, emotional, social, or economic benefits, they will have a stronger tendency to make a purchase, use the product, or maintain a relationship with the brand. Thus, perceived value acts as an evaluator that bridges the information processing process towards forming consumer decisions. Previous research has found that perceived value has a significant positive influence on purchasing decisions because consumers tend to choose products that offer higher benefits compared to other alternatives (Shi et al., 2025). However, other research has shown that high perceived value does not always result in positive purchasing decisions (Luo et al., 2022). In an increasingly complex digital environment, consumers often face an abundance of information, uncertainty about product quality, and the influence of psychological factors that cause them not to always act rationally. Furthermore, most previous research has primarily examined perceived value in the context of traditional marketing or e-commerce in general, while research linking perceived value to consumer decision-making processes in AI-based marketing environments is still relatively limited.

Cognitive bias is an individual's tendency to process and interpret information subjectively, resulting in decisions that are not always based on entirely rational considerations. Individuals often use heuristics or cognitive shortcuts when faced with complex information (Korteling et al., 2023). Consumers' responses to AI-driven personalization are determined not only by the quality of the personalization provided, but also by their psychological tendencies in processing that information. Therefore, cognitive bias has the potential to influence the extent to which AI-based personalization is able to create perceived value in the minds of consumers (Zhang & Gosline, 2023). Consumers with high levels of cognitive bias tend to be more receptive to information deemed relevant to their needs, preferences, or beliefs. When an AI system presents recommendations that align with these preferences, consumers are more likely to perceive the information provided as useful, accurate, and valuable (Zhou & Shen, 2022). The effect of AI-driven personalization on perceived value is strengthened because consumers tend to confirm their pre-existing beliefs (confirmation tendency) and give more positive assessments of the recommendations received (Selten et al., 2023). Conversely, consumers with low levels of cognitive bias tend to conduct a more critical evaluation of AI recommendations, including considering alternatives and questioning the system's accuracy (Tun et al., 2025). As a result, the influence of personalization on the formation of perceived value is relatively weaker compared to consumers with high levels of cognitive bias. Furthermore, consumers are often faced with various recommendations, information, and offers generated by algorithms. Although perceived value reflects consumers' evaluation of the benefits received, the process of translating this value into actual decisions can be influenced by how consumers process the available information. Individuals do not always act as rational decision-makers because their judgments are often influenced by cognitive biases that shape their perceptions, preferences, and interpretations of information. Therefore, the influence of perceived value on consumer decision-making can potentially vary among individuals depending on the level of cognitive bias they possess.

Consumers with high levels of cognitive bias tend to use heuristics—or cognitive shortcuts—when evaluating information, making them more easily influenced by pre-existing perceptions of value (Nandi & Subrahmanyam, 2026). When they perceive high value in a company's recommendations or experiences, they tend to convert that perception into a purchase decision more quickly without conducting an in-depth evaluation of other alternatives. Consumers with low levels of cognitive bias tend to engage in a more critical and comprehensive

evaluation process before making a decision (Frederiks et al., 2015). When they perceive high value in a company's recommendations or experiences, they tend to convert that perception into a purchase decision more quickly without conducting an in-depth evaluation of other alternatives. Consumers with low levels of cognitive bias tend to engage in a more critical and comprehensive evaluation process before making a decision (Ali, 2025).

This study offers a novel approach by integrating perspectives from artificial intelligence-driven marketing (AI-driven personalization) and behavioral economics through an examination of the role of cognitive bias as a moderating variable in the relationship among AI-driven personalization, perceived value, and consumer decision-making. Unlike previous studies, which generally focused on the direct effects of digital personalization on consumer behavior or treated consumers as rational decision-makers, this study acknowledges that the effectiveness of AI-based personalization is significantly influenced by individuals' psychological tendencies in processing information. The objectives of this study are to analyze the effect of AI-driven personalization on perceived value, to test the effect of perceived value on consumer decision-making, and to evaluate the role of cognitive bias in strengthening both of these relationships. This study contributes to expanding the Stimulus-Organism-Response (SOR) Theory by positioning AI-driven personalization as an external stimulus that influences consumers' internal evaluation processes (perceived value) before generating a response in the form of consumer decision-making. This study enriches Behavioral Decision Theory by demonstrating that the processes of value formation and consumer decision-making in an AI-based marketing environment are not entirely rational but are influenced by cognitive biases that can enhance the effectiveness of AI personalization in shaping perceived value and driving consumer decisions. This study provides insights for companies in designing more effective personalization strategies by taking consumer psychological characteristics into account, thereby enhancing perceived value and encouraging more positive decision-making.

LITERATURE REVIEW

This study is based on the Stimulus-Organism-Response (SOR) Theory to explain how external stimuli influence an individual's internal state, which in turn produces specific behavioral responses. The SOR Theory has been widely used to explain how characteristics of the online environment, system quality, and digital technology influence consumer behavior (Türkdemir et al., 2023). This theory consists of three main components: the stimulus, which represents external factors; the organism, which describes an individual's cognitive and affective processes; and the response, which reflects the resulting behavior (Kim et al., 2020; Vieira, 2013). In this study, AI-driven personalization is positioned as the stimulus because it serves as an external stimulus provided by companies through personalized recommendations and experiences (Wang et al., 2025). Furthermore, perceived value functions as the organism, reflecting consumers' internal evaluation of the benefits derived from interactions with the AI system (Wang et al., 2025). Consumer decision-making, meanwhile, is the response that arises as a consequence of this evaluation process (Mogaji & Jain, 2024). The SOR theory provides a strong conceptual foundation for explaining how AI-based personalization can influence consumer decisions through the formation of perceived value.

This study also adopts Behavioral Decision Theory to explain how psychological factors influence the decision-making process. Behavioral Decision Theory posits that individuals often use heuristics or cognitive shortcuts when faced with complex information, so the resulting decisions do not always reflect fully rational choices (Veldwijk et al., 2023). Consumers are often confronted with a large amount of information and recommendations that must be processed in a short period of time, so they tend to rely on certain cognitive mechanisms to evaluate this information (Park & Ryu, 2025). Although SOR Theory is capable of explaining the basic mechanisms underlying the relationship between stimulus and response, this theory tends to assume that individuals' evaluation processes proceed in a relatively rational manner (Naylor et al., 2013). However, consumer decision-making is often influenced by cognitive limitations and various psychological biases that cause individuals to not always process information objectively (Halkiopoulos et al., 2022).

The integration of SOR Theory and Behavioral Decision Theory provides a more comprehensive theoretical framework for explaining consumer behavior in the era of AI-driven marketing. SOR Theory explains the primary mechanism by which AI-driven personalization, as a stimulus, shapes perceived value and subsequently influences consumer decision-making (Wang et al., 2025), while Behavioral Decision Theory explains why the strength of this relationship may vary across individuals (Takemura, 2021). In this study, cognitive bias is positioned as a psychological factor that moderates the influence of AI-driven personalization on perceived value as well as the influence of perceived value on consumer decision-making. Thus, this study not only explains the process of consumer decision-making from a rational perspective through value evaluation but also considers the non-rational aspects that arise due to individual cognitive limitations. This integrative approach is expected to provide a deeper understanding of how consumers respond to AI-based personalization strategies in an increasingly complex digital environment, as illustrated in Figure 1.

AI-Driven Personalization and Perceived Value

Advances in Artificial Intelligence (AI) have driven a transformation in marketing strategies, shifting from a one-size-fits-all approach toward more personalized and relevant experiences for each consumer (Davenport et al., 2020; Huang & Rust, 2021). AI-driven personalization enables companies to collect, analyze, and process consumer data in real time to generate product recommendations, promotions, and content tailored to individual needs and preferences (Libai et al., 2020). Through machine learning and predictive analytics, AI systems can understand consumer behavior patterns more accurately than conventional personalization methods (Huang & Rust, 2021). In the context of increasingly competitive digital marketing, a company's ability to deliver relevant experiences is a key factor in creating value for consumers (Bleier et al., 2019).

Based on Stimulus-Organism-Response (SOR) Theory, AI-driven personalization can be viewed as an external stimulus that influences consumers' internal evaluation of a product or service. When consumers receive recommendations that align with their needs and preferences, they tend to perceive greater benefits in the form of easier information retrieval, time savings, increased convenience, and reduced risk in decision-making (Bleier et al., 2019). This situation will enhance consumers' perception of the benefits they receive relative to the sacrifices they must make, thereby creating a higher perceived value (Zeithaml, 1988). In other words, the more relevant and accurate the personalization provided by the AI system, the greater the value consumers perceive during their interactions with the company.

A number of previous studies have shown that technology-based personalization can enhance consumers' perceived value by improving the relevance of information and the quality of the customer experience (Hassan et al., 2025; Tam & Ho, 2006). Consumers who receive recommendations tailored to their needs tend to believe that the company understands their preferences and is capable of providing more effective solutions than other alternatives. The system's ability to predict consumer needs with greater precision is expected to further strengthen the formation of perceived value. Therefore, it can be posited that the higher the level of personalization perceived by consumers through the use of AI technology, the higher the perceived value formed in their minds.

H1: AI-driven personalization has a positive effect on perceived value.

Perceived Value dan Consumer Decision-Making

Perceived value merupakan penilaian menyeluruh yang dilakukan konsumen mengenai manfaat yang diperoleh dari suatu produk atau layanan dibandingkan dengan biaya, waktu, dan usaha yang harus dikeluarkan untuk memperolehnya (Zeithaml, 1988). Perceived value is considered one of the key factors influencing consumer behavior because it reflects the final evaluation of the quality, utility, and benefits experienced during the consumption process (Fernández & Bonillo, 2007; Wu et al., 2024). When consumers assess that a product or service can provide greater benefits than the sacrifices made, they tend to develop a positive attitude and show a stronger inclination to make a purchase. Therefore, perceived value serves as a crucial element that bridges consumers' perceptions of a product with the decisions made during the purchasing process (Chang & Dibb, 2012).

Based on the Stimulus-Organism-Response (SOR) Theory, consumer behavior is the result of psychological processes that occur after an individual receives a stimulus from their surroundings (Haugtvedt et al., 2018). In this research model, perceived value is positioned as the "organism" component, representing consumers' internal evaluation of the benefits derived from AI-based personalization experiences. This evaluation subsequently influences the "response," which takes the form of consumer decision-making (Jacoby, 2002). When consumers perceive high value in a product, service, or experience provided by a company, they will have greater confidence in the benefits they will receive, thereby increasing their tendency to make decisions that benefit the company. Thus, perceived value functions as a psychological mechanism that translates consumer experiences into actual actions or decisions.

A number of previous studies have shown that perceived value is a key predictor in explaining consumer decisions across various marketing contexts, including digital environments (Kim et al., 2007). Consumers who perceive high functional, emotional, social, or economic benefits tend to exhibit stronger purchase intentions and decisions compared to those who perceive low value. A company's ability to create value through relevant and personalized experiences is expected to further strengthen the consumer decision-making process. Therefore, it can be posited that the higher the perceived value experienced by consumers, the greater the likelihood that they will make positive decisions regarding the products or services offered.

H2: Perceived value has a positive effect on consumer decision-making.

The Mediating Role of Perceived Value in the Relationship Between AI-Driven Personalization and Consumer Decision-Making

AI-driven personalization is an artificial intelligence-based marketing strategy that enables companies to provide recommendations, information, and offers tailored to each consumer's characteristics and preferences (Huang & Rust, 2021). Through advanced data analysis capabilities, AI systems can identify consumer needs more

accurately and provide a more relevant experience compared to conventional marketing approaches (Libai et al., 2020). In an increasingly competitive digital environment, AI-based personalization aims not only to improve the quality of interactions between companies and consumers but also to create value that can influence decision-making behavior. However, the influence of AI-driven personalization on consumer decision-making often does not occur directly, as consumers first evaluate the benefits they derive from the personalized experience (Hassan et al., 2025).

Based on the Stimulus-Organism-Response (SOR) Theory, AI-driven personalization can be positioned as a stimulus that influences the consumer's internal state (organism), which in turn generates a behavioral response (response) (Ding et al., 2025; Mehrabian & Russell, 1974). In this study, perceived value represents the organismic component that reflects consumers' evaluation of the benefits, utility, and value derived from AI-based personalization experiences (Zeithaml, 1988). When AI-generated recommendations are perceived as relevant, accurate, and aligned with consumers' needs, they will experience greater benefits in the form of time efficiency, ease of information retrieval, and reduced risk in decision-making. This positive perceived value subsequently enhances consumers' confidence in the products or services offered, thereby fostering more positive purchase decisions or product selection. Thus, perceived value serves as a crucial mechanism explaining how AI-based personalization translates into consumer decisions (Wang et al., 2025). Previous research has shown that AI-driven personalization can increase perceived value by improving the relevance and quality of the customer experience, while perceived value has been shown to be a key determinant in explaining consumer decision-making. This study argues that AI-driven personalization enhances consumer decision-making by increasing the perceived value experienced by consumers. In other words, the higher the level of personalization provided by the AI system, the higher the perceived value experienced by consumers, which ultimately leads to more positive consumer decisions.

H3: Perceived value mediates the positive effect of AI-driven personalization on consumer decision-making.

The Moderating Role of Cognitive Bias in the Relationship Between AI-Driven Personalization and Perceived Value

Cognitive bias refers to an individual's tendency to process, interpret, and evaluate information based on pre-existing beliefs, experiences, or preferences (Tversky & Kahneman, 1974; Zhou & Shen, 2022). In the context of Artificial Intelligence (AI)-based marketing, consumers are often presented with product recommendations, promotions, and information generated by algorithms. Although AI-driven personalization is designed to enhance the relevance of the information consumers receive, the effectiveness of such personalization is not always the same for every individual. According to Behavioral Decision Theory, individuals do not always evaluate information rationally; rather, they often use heuristics or cognitive shortcuts when processing information (Gigerenzer & Gaissmaier, 2011). Therefore, the impact of AI-driven personalization on perceived value is expected to depend on the level of cognitive bias consumers possess.

Consumers with a high level of cognitive bias tend to be more receptive to information that aligns with their existing preferences and beliefs (Ali, 2025). When AI systems provide recommendations relevant to their needs, consumers are more likely to view those recommendations as useful, accurate, and valuable information. As a result, the perceived benefits of AI-based personalization are greater for these consumers compared to those with low levels of cognitive bias. Conversely, more rational and critical consumers tend to evaluate AI-generated recommendations more thoroughly and do not automatically view such personalization as valuable. Thus, cognitive bias has the potential to strengthen the relationship between AI-driven personalization and perceived value.

Previous research has largely explained the formation of perceived value through technological characteristics, information quality, or the quality of digital services. However, there is still limited research that considers the role of psychological factors in determining the effectiveness of AI-based personalization. In fact, in a digital environment increasingly saturated with algorithmic recommendations, the way consumers process information has become a critical factor in determining the success of personalization strategies. Therefore, this study argues that cognitive bias amplifies the positive influence of AI-driven personalization on perceived value, meaning that increased personalization will result in higher perceived value among consumers with high levels of cognitive bias.

H4: Cognitive bias strengthens the positive influence of AI-driven personalization on perceived value.

The Moderating Role of Cognitive Bias in the Relationship Between Perceived Value and Consumer Decision-Making

Perceived value is a consumer's overall evaluation of the benefits derived from a product or service compared to the costs or sacrifices required to obtain it (Fernández & Bonillo, 2007). Perceived value is regarded as one of the key determinants driving purchase decisions, as consumers tend to choose the alternative that provides the greatest benefits in line with their needs and preferences (Hu et al., 2025). However, consumer decisions are not always determined by rational value evaluations. Consumers often face information constraints, complex choices, and time pressures that lead them to use heuristics or cognitive shortcuts in decision-making (Ali,

2025; Gigerenzer & Gaissmaier, 2011). Therefore, the relationship between perceived value and consumer decision-making is potentially influenced by individual psychological characteristics, one of which is cognitive bias.

According to Behavioral Decision Theory, individuals often deviate from perfect rationality because the decisions they make are influenced by how they process and interpret information (Xia & Madni, 2024). Thus, cognitive bias can influence the extent to which perceived value translates into actual decisions. Consumers with high levels of cognitive bias tend to rely more on pre-existing perceptions and are more likely to accept information that supports their beliefs (Ali, 2025). When they perceive a product or service to have high value, that perception is more quickly converted into a purchase decision because they tend to shorten the process of evaluating alternatives and rely more on their initial, pre-formed judgments. Conversely, consumers with low levels of cognitive bias tend to conduct a more in-depth evaluation, compare various alternatives, and consider various risks before making a decision. As a result, the influence of perceived value on consumer decision-making is relatively weaker compared to that on consumers with high levels of cognitive bias.

Although previous research has widely confirmed that perceived value is an important predictor of consumer decision-making, most studies still assume that this relationship is universal and applies equally to every individual. In fact, the perspective of behavioral economics suggests that psychological characteristics can influence how consumers translate perceptions into actual actions (Leonov, 2023). The limitations of previous research in integrating cognitive bias as a factor influencing the effectiveness of perceived value create an opportunity to expand our understanding of the consumer decision-making process. Therefore, this study argues that cognitive bias acts as a moderating variable that strengthens the relationship between perceived value and consumer decision-making, such that the influence of perceived value on consumer decisions will be stronger among individuals with high levels of cognitive bias.

H5: Cognitive bias strengthens the positive influence of perceived value on consumer decision-making.

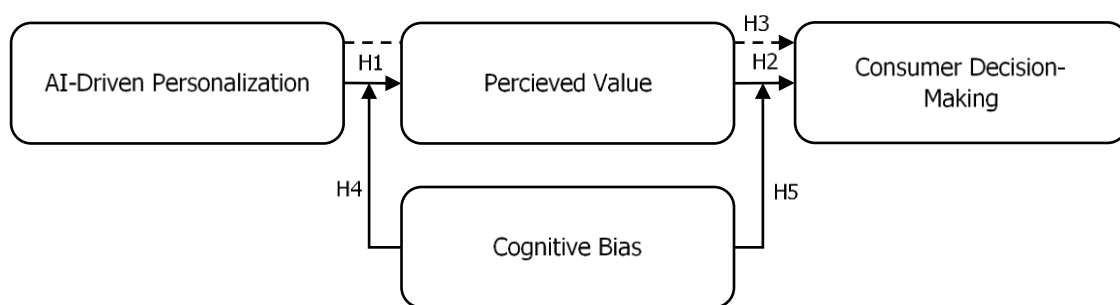


Figure 1 Theoretical Framework

METHODS

This study employs a quantitative approach to examine the effect of AI-driven personalization on consumer decision-making through perceived value, as well as to examine the moderating role of cognitive bias in that relationship. The research design is explanatory in nature, as it aims to explain the causal relationships among variables based on a theoretical framework developed from Stimulus-Organism-Response (SOR) Theory and Behavioral Decision Theory. The unit of analysis in this study is individual consumers who have interacted with digital platforms that use AI-based personalization technology, such as e-commerce sites, social media, streaming apps, or other digital platforms that provide personalized product or service recommendations.

The study population includes all consumers who have experience using AI-based digital platforms within the past six months. Given that the exact population size is unknown, this study employs purposive sampling, with criteria including respondents who are at least 18 years old, have received product or service recommendations generated by an AI system, and have conducted searches or made purchases via a digital platform. Data collection was conducted via an online survey using a structured questionnaire. To meet the requirements for Structural Equation Modeling (SEM) analysis, the sample size consisted of 240 respondents.

The research instruments were developed based on measurement scales validated in previous studies. All items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The AI-driven personalization variable was measured through consumers' perceptions of the relevance, accuracy, and suitability of the recommendations provided by the AI system. The perceived value variable was measured based on consumers' perceptions of the benefits, efficiency, and value they derived from their experience using the digital platform. The consumer decision-making variable was measured through consumers' tendencies to make purchasing decisions or choose recommended products. Meanwhile, cognitive bias was measured through individuals' tendencies to use heuristics or subjective judgments when evaluating information received during the decision-making process.

Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM). The analysis began with testing the measurement model by evaluating convergent validity, discriminant validity, and construct reliability. Convergent validity was evaluated using factor loadings and Average Variance Extracted (AVE), while construct reliability was measured using Composite Reliability (CR) and Cronbach's Alpha. Next, the structural model was evaluated by testing the coefficient of determination (R^2), predictive relevance (Q^2), and effect size (f^2). The testing of the moderating effect of cognitive bias was conducted using an interaction effect approach to evaluate whether cognitive bias strengthens the relationship between AI-driven personalization and perceived value, as well as the relationship between perceived value and consumer decision-making.

RESULT

The results of the measurement model testing presented in Table 1 show that all constructs met the validity and reliability criteria required in PLS-SEM analysis. Cronbach's Alpha values ranged from 0.684 to 0.880, while Composite Reliability (CR) values ranged from 0.724 to 0.882. All CR values exceeded the minimum threshold of 0.70, indicating a good level of internal consistency (Mastana, 2025). Furthermore, the Average Variance Extracted (AVE) values for all constructs ranged from 0.584 to 0.641, which is higher than the recommended minimum value of 0.50 (Fornell & Larcker, 1981; Mastana, 2025). These findings indicate that each construct is able to explain more than 50% of the variance in its indicators, thus fulfilling the criterion for convergent validity. Based on the outer loading values, all indicators showed values above 0.60, ranging from 0.672 to 0.843 for Perceived Value, 0.727 to 0.838 for Consumer Decision-Making, 0.691 to 0.852 for Cognitive Bias, and 0.712 to 0.843 for AI-Driven Personalization. These values meet the minimum thresholds recommended for both exploratory and confirmatory research (Hair et al., 2021; Mastana, 2025). Thus, all indicators were found to adequately reflect the constructs they measure. Overall, the test results indicate that the research instrument has good levels of reliability and validity, making it suitable for structural equation modeling and further hypothesis testing.

Table 1 Validity and Reliability Test Results

Variables	Cronbach's alpha	Composite reliability	AVE	Outer Loading
AI-Driven Personalization	0.719	0.724	0.641	ADP3 (0.712) – (0.843) ADP2
Perceived Value	0.880	0.882	0.584	PV7 (0.672) – (0.822) PV4
Consumer Decision-Making	0.880	0.882	0.626	CDM6 (0.727) – (0.838) CDM7
Cognitive Bias	0.684	0.725	0.608	CB5 (0.691) – (0.852) CB2

Source: Data Proceed, 2026

Table 2 Heterotrait-Monotrait Ratio Test Results

Variables	Heterotrait-monotrait ratio (HTMT)
Cognitive Bias <-> AI-Driven Personalization	0.156
Consumer Decision-Making <-> AI-Driven Personalization	0.179
Consumer Decision-Making <-> Cognitive Bias	0.312
Perceived Value <-> AI-Driven Personalization	0.254
Perceived Value <-> Cognitive Bias	0.429
Perceived Value <-> Consumer Decision-Making	0.816

Source: Data Proceed, 2026

The results of the discriminant validity test presented in Table 2 show that all HTMT values fall below the recommended threshold (Henseler et al., 2015). The HTMT values ranged from 0.156 to 0.816, with the highest value found in the relationship between Perceived Value and Consumer Decision-Making (HTMT = 0.816). Although the two constructs have a relatively strong conceptual relationship, their values still fall below the established threshold, thus indicating no discriminant validity issues (Henseler et al., 2015). Furthermore, the low HTMT values for the other construct pairs indicate that each variable in the research model has distinct characteristics and is capable of measuring unique concepts. Thus, the HTMT test results confirm that discriminant validity has been met and that all constructs in this study can be empirically distinguished from one another.

Table 3 R-square Adjusted Test Results

Variables	R-square	R-square adjusted
Consumer Decision-Making	0.523	0.516
Perceived Value	0.262	0.252

Source: Data Proceed, 2026

Table 3 presents the results of the adjusted R-squared test, which show that the model has a fairly good explanatory power for the endogenous variables. The adjusted R-squared value for Consumer Decision-Making, at 0.516, indicates that 51.6% of the variation in consumer decisions can be explained by the variables in the model namely, AI-Driven Personalization, Perceived Value, Cognitive Bias, and their interaction while the remaining 48.4% is influenced by other factors outside the research model. Meanwhile, the adjusted R-squared value for Perceived Value of 0.252 indicates that 25.2% of the variation in perceived value can be explained by AI-Driven Personalization, Cognitive Bias, and their interaction, while the remaining 74.8% is influenced by other variables not included in the model. Based on PLS-SEM criteria, an adjusted R-squared value of 0.516 can be categorized as

moderate predictive power, while a value of 0.252 indicates relatively weak to moderate predictive power (Hair et al., 2021; Leguina, 2015). Overall, these results indicate that the model has adequate explanatory power, particularly in explaining Consumer Decision-Making.

Table 4 F-square Test Results

Variables	f-square
AI-Driven Personalization -> Consumer Decision-Making	0.242
AI-Driven Personalization -> Perceived Value	0.546
Perceived Value -> Consumer Decision-Making	0.920
Cognitive Bias x AI-Driven Personalization -> Perceived Value	0.073
Cognitive Bias x Perceived Value -> Consumer Decision-Making	0.217

Source: Data Proceed, 2026

Table 5 Model Fit Test Results

	Saturated model	Estimated model
SRMR	0.073	0.074
NFI	0.757	0.755

Source: Data Proceed, 2026

The results of the F-square (F^2) test in Table 4 show that Perceived Value has the greatest influence on Consumer Decision-Making, with an F^2 value of 0.920, which falls into the category of a large effect (Cohen, 2013; Hair et al., 2021). This finding indicates that perceived value is the primary factor driving consumer decision-making in the context of AI-based marketing. Additionally, AI-Driven Personalization also has a significant effect on Perceived Value ($F^2 = 0.546$) (Cohen, 2013), suggesting that personalization generated by AI technology plays a crucial role in enhancing consumers' perceived benefits. Meanwhile, the direct effect of AI-Driven Personalization on Consumer Decision-Making falls into the moderate category ($F^2 = 0.242$) (Cohen, 2013), indicating that most of the effect of personalization on consumer decisions occurs through the mechanism of perceived value formation.

The f-square result for the interaction effect of Cognitive Bias $\times$ AI-Driven Personalization on Perceived Value shows a small effect size ($F^2 = 0.073$) (Cohen, 2013), meaning that cognitive bias only provides a limited additional influence in strengthening this relationship. In contrast, the Cognitive Bias $\times$ Perceived Value interaction on Consumer Decision-Making yielded a moderate effect size ($F^2 = 0.217$) (Cohen, 2013). This indicates that cognitive bias plays a more significant role in reinforcing the process of transforming perceived value into actual consumer decisions. Overall, these results confirm that the success of AI-driven personalization strategies in influencing consumer decisions depends primarily on their ability to create perceived value, while cognitive bias serves as a psychological factor that reinforces the influence of perceived value on consumer decision-making.

The model fit evaluation in Table 5 shows that the SRMR value of 0.074 is below the recommended threshold (<0.08), indicating that the model has a good level of fit with the empirical data. Furthermore, the NFI value of 0.755 indicates that the model adequately explains the structure of the relationships among the variables, although it has not yet achieved a very high level of fit. Overall, the results of the goodness-of-fit tests confirm that the research model is of sufficient quality to explain the relationships between AI-Driven Personalization, Perceived Value, Cognitive Bias, and Consumer Decision-Making in the context of artificial intelligence-based marketing.

Table 6 Hypothesis Test Results

Variables	Original sample	T statistics	P values
AI-Driven Personalization -> Consumer Decision-Making	0.012	0.199	0.842
AI-Driven Personalization -> Perceived Value	0.206	3.026	0.002
Perceived Value -> Consumer Decision-Making	0.726	18.596	0.000
Cognitive Bias x AI-Driven Personalization -> Perceived Value	0.013	0.140	0.889
Cognitive Bias x Perceived Value -> Consumer Decision-Making	0.058	2.649	0.009
AI-Driven Personalization -> Perceived Value -> Consumer Decision-Making	0.149	2.971	0.003

Source: Data Proceed, 2026

The results of the hypothesis testing in Table 6 show that AI-Driven Personalization has a positive effect on Perceived Value ($\beta = 0.206$; $t = 3.026$; $p = 0.002$), thus accepting the hypothesis. These findings indicate that the higher the level of personalization provided by the AI system, the higher the value perceived by consumers. Relevant recommendations, information tailored to individual preferences, and a more efficient experience allow consumers to derive greater benefits during the product search and evaluation process. Additionally, AI-based personalization serves as a stimulus that influences consumers' internal evaluations in the form of perceived value. These findings also indicate that consumers value personalized experiences more highly because they reduce the cost of searching for information, increase convenience, and provide solutions that better meet their needs.

The results of the hypothesis testing also show that perceived value has a proven positive effect on consumer decision-making ($\beta = 0.726$; $t = 18.596$; $p < 0.001$), indicating that perceived value is a key factor driving consumer decision-making. The magnitude of the path coefficient indicates that perceived value plays a much stronger role in shaping consumer decisions than other variables in the research model. These findings indicate that consumers tend to make decisions when they believe that the benefits derived from a product or

service outweigh the costs or sacrifices involved. These results confirm that a company's success in influencing consumer decisions depends not only on the sophistication of the personalization technology used but also on its ability to create real and relevant value for consumers. Therefore, perceived value can be viewed as the primary mechanism that bridges AI-based personalization experiences with the decisions made by consumers.

The results of the mediation analysis show that Perceived Value significantly mediates the relationship between AI-Driven Personalization and Consumer Decision-Making ($\beta = 0.149$; $t = 2.971$; $p = 0.003$). This finding confirms that the influence of AI-Driven Personalization on consumer decisions occurs through the mechanism of perceived value formation. Given that the direct effect of AI-Driven Personalization on Consumer Decision-Making is not significant, while the indirect effect through Perceived Value is significant, Perceived Value can be categorized as a full mediator. Thus, the success of AI-based personalization strategies in influencing consumer decisions depends heavily on their ability to create relevant and meaningful value for consumers, rather than through the direct influence of personalization itself.

The results of the moderation test indicate that Cognitive Bias does not moderate the relationship between AI-Driven Personalization and Perceived Value ($\beta = 0.013$; $t = 0.140$; $p = 0.889$), thus rejecting the first moderation hypothesis. These findings indicate that the formation of perceived value from AI-based personalization is relatively consistent across various levels of cognitive bias. In other words, the quality of personalization provided by AI is a stronger determinant of perceived value than consumers' cognitive bias tendencies. Conversely, cognitive bias was found to strengthen the relationship between perceived value and consumer decision-making ($\beta = 0.058$; $t = 2.649$; $p = 0.009$), thus accepting the second moderation hypothesis. These results suggest that consumers with higher levels of cognitive bias are more likely to convert perceived value into actual decisions compared to more rational and analytical consumers.

DISCUSSION

AI-Driven Personalization and Perceived Value

The research results show that AI-Driven Personalization has a positive effect on Perceived Value, thus confirming the proposed hypothesis. These findings indicate that the higher the level of personalization provided by the AI system, the higher the value perceived by consumers. AI technology's ability to analyze consumer preferences, needs, and behavior enables companies to provide recommendations that are more relevant and tailored to individual characteristics (Davenport et al., 2020; Huang & Rust, 2021; Libai et al., 2020). These conditions lead consumers to perceive the information they receive as more useful, make the product search process more efficient, and minimize the risk of making mistakes when selecting products (Bleier & Eisenbeiss, 2015; Tam & Ho, 2006). Consequently, consumers tend to rate the experience provided by digital platforms as having higher value compared to platforms that offer a generic and less personalized experience. When consumers receive recommendations that align with their preferences and needs, they tend to perceive greater benefits—whether in terms of functionality, emotional satisfaction, or time efficiency (Chen et al., 2025). In other words, AI-based personalization enhances consumers' perception of the benefits they receive, thereby strengthening their assessment of the value offered by the company (Ding et al., 2025; Hassan et al., 2025). These findings indicate that the effectiveness of AI in marketing lies not only in its ability to process data but also in its ability to create relevant and valuable experiences for consumers (Davenport et al., 2020; Huang & Rust, 2021).

These results align with the study by Tam & Ho (2006) which found that technology-based personalization can enhance consumers' perceived value by providing information that is more relevant and tailored to individual needs. These findings also support the research by Bleier & Eisenbeiss (2015) which showed that digital personalization enhances consumers' positive evaluations of the shopping experience by improving the relevance and quality of interactions. Furthermore, recent studies on AI-based marketing indicate that personalization supported by artificial intelligence contributes to an increase in consumers' perceived value through experiences that are more personalized, efficient, and aligned with their preferences. Therefore, the results of this study strengthen the digital marketing literature by providing evidence that AI-driven personalization is a key factor in building perceived value, which in turn serves as the foundation for more positive consumer behavioral responses.

Perceived Value and Consumer Decision-Making

The results of the study show that perceived value has a positive effect on consumer decision-making. These findings indicate that the higher the value consumers perceive in a product, service, or experience provided by a company, the more likely they are to make a positive decision. Consumers generally compare the benefits they receive with the costs, time, and effort required before making a decision (Chen et al., 2025; Zeithaml, 1988). When the perceived benefits exceed the sacrifices made, consumers will have greater confidence in the choice they have made and will tend to reduce uncertainty in the decision-making process (Fernández & Bonillo, 2007; Kim et al., 2007). Therefore, perceived value is a key factor influencing consumer preferences and choices in an increasingly competitive marketing environment (Chen et al., 2025; Zeithaml, 1988). When consumers perceive that a product or service offers high value, they form positive perceptions that ultimately drive purchasing decisions or product selection (Luo et al., 2022; Xu et al., 2022; Yin & Qiu, 2021). The magnitude of the path coefficients

found in this study indicates that perceived value is a very strong psychological mechanism in explaining consumer behavior; thus, decisions are influenced more by perceived value than by the technological characteristics or features offered directly.

The results of this study align with Zeithaml (1988) research, which asserts that perceived value is the primary determinant of consumer behavior because it reflects an overall evaluation of perceived benefits and sacrifices. These findings also support the research by Sweeney & Soutar (2001) which shows that consumers tend to make purchasing decisions when they perceive high functional, emotional, and social value in a product or service. Furthermore, various recent studies in the context of digital marketing and e-commerce have found that perceived value is a strong predictor of purchase intent, purchase decisions, and consumer loyalty. Thus, the results of this study expand the literature on AI-based marketing by demonstrating that the success of personalization strategies and digital technologies in influencing consumer behavior ultimately depends on a company's ability to create value that is tangible, relevant, and meaningful to consumers.

The Mediating Role of Perceived Value in the Relationship Between AI-Driven Personalization and Consumer Decision-Making

Test results show that Perceived Value significantly mediates the relationship between AI-Driven Personalization and Consumer Decision-Making. These findings indicate that the influence of AI-based personalization on consumer decisions does not occur directly, but rather through an increase in the value perceived by consumers (Bleier et al., 2019; Tam & Ho, 2006). In other words, the success of AI-driven personalization strategies in influencing consumer decisions depends heavily on their ability to create relevant benefits, improve the efficiency of information search, and provide experiences tailored to individual needs and preferences (Davenport et al., 2020; Ding et al., 2025). When consumers perceive that AI-generated recommendations help them find more suitable products and reduce the effort involved in the search process, they will view the experience as more valuable (Chen et al., 2025; Zeithaml, 1988), which ultimately drives purchasing decisions or product selection (Xu et al., 2022; Yin & Qiu, 2021). Significant mediation results indicate that consumers do not directly respond to the personalization provided by the AI system, but first evaluate the benefits they derive from the experience. When personalization successfully enhances perceived value, consumers become more confident in the available options and find it easier to make decisions. This finding also reinforces the results of the direct effect test, which showed that AI-driven personalization does not have a significant effect on consumer decision-making, thus indicating that perceived value acts as a full mediator in this relationship.

These research results align with the study by Tam dan Ho (2006) which found that the effectiveness of digital personalization in influencing consumer behavior depends on how consumers evaluate the benefits of the experience provided. These findings also support the research by Bleier dan Eisenbeiss (2015) which shows that personalization enhances consumer response by increasing the perceived benefits and quality of the shopping experience. Furthermore, various recent studies in the context of AI-based marketing indicate that perceived value is the primary mechanism bridging the relationship between personalization technology and consumer behavior. Thus, this study makes a theoretical contribution by expanding the application of SOR Theory in the context of AI marketing, while also demonstrating that value creation is the primary pathway explaining how AI-based personalization can translate into actual consumer decisions.

The Moderating Role of Cognitive Bias in the Relationship Between AI-Driven Personalization and Perceived Value

The test results show that cognitive bias does not moderate the relationship between AI-driven personalization and perceived value, indicating that the effect of AI-driven personalization on perceived value is relatively consistent across various levels of cognitive bias among consumers. In other words, consumers with both high and low levels of cognitive bias tend to evaluate the value they receive based on the quality and relevance of the personalization provided by the AI system (Ali, 2025; Korteling et al., 2023). This suggests that when AI recommendations are perceived as aligned with consumers' needs and preferences, the perceived benefits will continue to increase without being significantly influenced by individual cognitive bias tendencies (Tam & Ho, 2006). Therefore, the formation of perceived value appears to be determined more by the objective characteristics of the personalization provided than by consumers' psychological characteristics (Bleier et al., 2019).

Behavioral Decision Theory argues that cognitive biases tend to influence individuals during interpretation and decision-making, particularly when there is uncertainty or complexity in the information (Takemura, 2021). However, during the formation of perceived value, consumers primarily evaluate the functional benefits they receive (Zeithaml, 1988), such as the relevance of recommendations, the ease of finding information, and time efficiency (Gigerenzer & Gaissmaier, 2011; Tversky & Kahneman, 1974). The benefits generated by AI-driven personalization are quite tangible and easily observable, thereby limiting the scope for cognitive biases to influence evaluations. These results also indicate that AI-driven personalization stimuli can elicit relatively uniform internal responses in the form of perceived value (Jacoby, 2002; Mehrabian & Russell, 1974), regardless of differences in individual psychological characteristics.

These research findings differ from initial theoretical arguments that assumed cognitive bias could amplify the influence of AI-driven personalization on perceived value. However, these findings align with a number of studies showing that the benefits of digital technology are often evaluated based on their usefulness and relevance, rather than on users' psychological characteristics (Kim et al., 2007; Yin & Qiu, 2021). These findings also suggest that consumers are becoming increasingly accustomed to AI-based personalization technologies, leading them to evaluate the benefits they receive in a more rational and objective manner (Kozyreva et al., 2021; Mogaji & Jain, 2024). Thus, this study makes an important contribution by demonstrating that the role of cognitive bias in the context of AI-based marketing does not emerge during the formation of perceived value, but is more likely to emerge during the translation of that value into actual consumer decisions.

The Moderating Role of Cognitive Bias in the Relationship Between Perceived Value and Consumer Decision-Making

The test results show that cognitive bias was found to strengthen the relationship between perceived value and consumer decision-making, thus supporting the proposed hypothesis. These findings indicate that the influence of perceived value on consumer decisions is stronger among individuals with higher levels of cognitive bias. When consumers perceive that a product, service, or recommendation has high value, they tend to be more confident in the choice they will make. However, this confidence is not translated uniformly by all consumers. Individuals with high levels of cognitive bias tend to rely more on initial perceptions and pre-formed subjective judgments (Gigerenzer & Gaissmaier, 2011; Tversky & Kahneman, 1974), so that they are quicker to translate their perceived value into actual decisions (Ali, 2025). Conversely, consumers with low levels of cognitive bias tend to conduct additional evaluations, compare other alternatives, and consider various pieces of information before making a final decision. When consumers perceive high value in a product or service, the presence of cognitive bias makes it easier for them to trust that assessment and use it as the basis for decision-making (Takemura, 2021). Thus, cognitive bias acts as a psychological mechanism that accelerates the transformation of value evaluations into concrete actions (Korteling et al., 2023). These findings indicate that although perceived value is a rational factor driving consumer decisions, the strength of its influence is still shaped by an individual's psychological characteristics in processing information and making decisions (Zeithaml, 1988).

The results of this study align with various studies in the literature showing that consumer decisions are often influenced by cognitive biases, particularly when individuals face numerous choices and complex information (Ali, 2025; Xia & Madni, 2024). These findings support the view of Tversky & Kahneman (1974) that individuals tend to use heuristics in decision-making, so that established perceptions have a greater influence on actual behavior. Furthermore, recent studies on digital consumer behavior indicate that psychological factors can strengthen the relationship between consumer evaluations and the decisions made (Wang et al., 2025). Thus, this study contributes to the AI-based marketing literature by demonstrating that consumer decisions are determined not only by perceived value but also by cognitive biases that influence how that value is translated into actual decisions. These findings expand our understanding of the integration between rational factors (perceived value) and non-rational factors (cognitive bias) in explaining consumer behavior in the era of AI-driven marketing (Korteling et al., 2023; Takemura, 2021).

CONCLUSION

This study aims to analyze the effect of AI-Driven Personalization on Consumer Decision-Making through the mediating role of Perceived Value and the moderating role of Cognitive Bias. The results show that AI-Driven Personalization does not have a direct effect on Consumer Decision-Making, but it does have a positive effect on Perceived Value. Furthermore, Perceived Value was found to have a positive effect on Consumer Decision-Making and acts as a full mediator in the relationship between AI-Driven Personalization and Consumer Decision-Making. These findings indicate that the effectiveness of AI-based personalization in influencing consumer decisions depends on its ability to create value as perceived by consumers. Additionally, the research results show that Cognitive Bias does not moderate the relationship between AI-Driven Personalization and Perceived Value; however, it was found to strengthen the relationship between Perceived Value and Consumer Decision-Making. This finding suggests that cognitive bias plays a greater role in the stage of translating perceived value into actual decisions than in the stage of value formation itself.

This study contributes to the development of Stimulus-Organism-Response (SOR) Theory by providing empirical evidence that the influence of AI-Driven Personalization as a stimulus on Consumer Decision-Making as a response occurs through Perceived Value as the organism. These findings reinforce the argument that consumers do not respond directly to personalization technology but first evaluate the benefits they receive. Furthermore, this study expands the application of Behavioral Decision Theory by demonstrating that Cognitive Bias acts as a psychological factor influencing the strength of the relationship between Perceived Value and Consumer Decision-Making. Thus, this study offers a more comprehensive perspective by integrating rational factors (perceived value) and non-rational factors (cognitive bias) in explaining consumer behavior within an AI-based marketing environment.

The research findings also have important implications for companies that implement AI technology in their marketing strategies. These findings indicate that the success of AI-Driven Personalization is determined not only by the algorithm's ability to generate accurate recommendations but also by its ability to create relevant and meaningful value for consumers. Therefore, companies need to focus the development of AI systems on enhancing the benefits perceived by consumers, such as the relevance of recommendations, ease of information retrieval, time efficiency, and a more personalized experience. Furthermore, understanding the role of cognitive biases can help companies design more effective marketing communications by leveraging how consumers process information and make decisions. Thus, AI-based personalization strategies focused on value creation and an understanding of consumer behavior have the potential to increase marketing effectiveness and drive more positive consumer decisions.

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