

# AI-Powered Marketing: Analyzing the Impact of Artificial Intelligence on Customer Experience Personalization in the Digital Era

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### ABSTRACT

This study investigates the influence of artificial intelligence on customer experience personalization within digital platforms by examining three key predictors: AI-driven personalization, perceived relevance, and interaction quality. Using a quantitative approach, data were collected from 120 active users of AI-enabled platforms through purposive sampling and screening procedures conducted between January and February 2025. A total of 16 validated Likert-scale items were used to measure the constructs, and the measurement model demonstrated strong reliability and convergent validity, with AVE values ranging from 0.62 to 0.74 and Composite Reliability values between 0.86 and 0.91. Regression analysis revealed that AI-driven personalization had the strongest positive effect on customer experience personalization ( $\beta = 0.41, p < 0.001$ ), followed by perceived relevance ( $\beta = 0.28, p < 0.001$ ) and interaction quality ( $\beta = 0.22, p = 0.002$ ). The model accounted for 58% of the variance in personalized customer experiences ( $R^2 = 0.58$ ), indicating a robust explanatory power. These findings demonstrate that personalization is a multidimensional construct shaped by technological intelligence, cognitive alignment, and user-system interaction fluency. The study highlights the importance of integrating AI capabilities with meaningful content delivery and seamless interface design, offering practical insights for digital platforms seeking to enhance personalization and user engagement. Future research may explore moderating factors such as trust, privacy concerns, platform characteristics, and cross-cultural variations.

### ABSTRAK

Penelitian ini bertujuan menganalisis pengaruh kecerdasan buatan terhadap personalisasi pengalaman pelanggan pada platform digital melalui tiga variabel utama, yaitu *AI-driven personalization*, persepsi relevansi, dan kualitas interaksi. Pendekatan kuantitatif digunakan dengan melibatkan 120 responden aktif pengguna platform berbasis AI yang dipilih melalui *purposive sampling* dan proses penyaringan pada periode Januari hingga Februari 2025. Instrumen penelitian terdiri dari 16 butir pernyataan berskala Likert yang telah diuji validitas dan reliabilitasnya, dengan nilai AVE berkisar 0.62–0.74 dan *Composite Reliability* antara 0.86–0.91. Hasil analisis regresi menunjukkan bahwa *AI-driven personalization* memiliki pengaruh positif paling kuat terhadap personalisasi pengalaman pelanggan ( $\beta = 0.41; p < 0.001$ ), diikuti oleh persepsi relevansi ( $\beta = 0.28; p < 0.001$ ) dan kualitas interaksi ( $\beta = 0.22; p = 0.002$ ). Model penelitian mampu menjelaskan 58% variansi personalisasi pengalaman pelanggan ( $R^2 = 0.58$ ), yang menunjukkan kekuatan prediktif yang substansial. Temuan ini menegaskan bahwa personalisasi merupakan konstruksi multidimensional yang dipengaruhi oleh kecerdasan teknologi, kesesuaian konten, dan kelancaran interaksi antara pengguna dan sistem. Penelitian ini memberikan implikasi praktis bagi pengembang platform digital dalam meningkatkan strategi personalisasi berbasis AI serta membuka peluang penelitian lanjutan terkait faktor moderasi seperti kepercayaan, privasi, serta karakteristik platform dan perbedaan budaya pengguna.

## 1. Introduction

The rapid advancement of digital technologies has reshaped the way organizations design, deliver, and evaluate customer experience in the modern economy [1], [2]. Among these developments, artificial intelligence (AI) has emerged as one of the most

transformative drivers of marketing innovation [3]. The integration of AI into digital platforms enables companies to process extensive customer data, identify behavioural patterns, and generate real-time predictions that guide strategic decision-making [4], [5]. As digital interactions become increasingly complex, businesses

rely on AI to enhance relevance, accuracy, and personalization across multiple touchpoints [6]. This shift reveals a broader transformation in the customer journey: from standardized interactions toward highly individualized experiences built on continuous learning algorithms and automated decision systems [7].

Scholarly research has consistently highlighted the strategic value of personalization in strengthening customer engagement, satisfaction, and long-term loyalty [8], [9]. Technologies such as machine learning, natural language processing, and deep learning play a critical role in identifying consumer preferences at a granular level, allowing marketers to tailor messages, product recommendations, and service responses [10]. Prior studies also emphasize that AI-driven personalization increases marketing effectiveness by improving message relevance, optimizing content delivery, and enabling adaptive interactions that evolve with customer behaviour [11]. Evidence shows that AI enhances the digital customer journey through features such as automated assistance, predictive service, and personalized navigation, resulting in a more seamless and intuitive experience [12]. Despite these promising outcomes, several concerns remain, including data privacy risks, algorithmic bias, and the possibility that over-automation may reduce the emotional quality of customer relationships [13].

The existing literature demonstrates strong interest in the technological capabilities of AI and its strategic implications for firms [14]. However, fewer studies explore the direct and multidimensional impact of AI on the personalization of customer experience itself, particularly in dynamic digital environments [15]. Consumer behaviour today is shaped by rapid shifts in platform preferences, social media engagement, and mobile-first interactions, creating new complexities in understanding how AI influences each stage of the customer journey [16]. These changes highlight an important research gap: the limited empirical and theoretical exploration of how AI strengthens personalization from the customer's perspective, including perceived relevance, convenience, interaction quality, and emotional value [17]. This gap underscores the need for a more comprehensive analysis that connects AI capabilities with customer-centric outcomes [18].

The growing competition among digital service providers, e-commerce platforms, and financial technology firms further reinforces the urgency of this research [5]. While many companies invest heavily in AI systems with the expectation of improving customer experience, it remains unclear whether these technologies genuinely create more personalized interactions or merely automate transactional processes without enhancing emotional engagement [8]. Understanding this distinction is vital for organizations

seeking to build sustainable competitive advantage in the digital era [6].

Based on these considerations, this study aims to answer the central question: How does artificial intelligence influence customer experience personalization in the digital era? The objectives of this research are to examine the extent to which AI contributes to personalized customer experience, analyze the mechanisms through which AI shapes individual interactions, and assess the strategic implications for digital marketing practices. The findings are expected to contribute to both theoretical development in marketing science and practical insights for businesses implementing AI-driven personalization strategies.

## **2. Research Method**

This study employed a quantitative survey method designed to obtain empirical evidence regarding the influence of artificial intelligence on customer experience personalization. The research focused specifically on users who actively interact with AI-based features on digital platforms. To ensure that the data reflected real user experiences, a purposive sampling strategy combined with screening was applied. Respondents were required to meet two main criteria: (1) having used AI-enabled digital services within the past three months and (2) being active users of at least one platform that incorporates automated recommendations or predictive personalization. The data collection process was conducted online from January to February 2025.

### **2.1. Research Design**

A cross-sectional survey design was implemented to capture user perceptions at a single point in time. This design was considered appropriate because digital interaction patterns evolve rapidly, and real-time user evaluations are essential for understanding AI-driven personalization. The research model consisted of four constructs: AI-driven personalization, perceived relevance, interaction quality, and customer experience personalization. Each construct was operationalized into measurable indicators using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire contained a total of 16 items adapted from validated instruments in digital marketing and customer experience research.

### **2.2. Population, Sample, and Data Collection**

The population of the study comprised users of digital platforms that implement AI-based personalization, including e-commerce applications (e.g., Shopee), social interactive platforms with algorithmic recommendations (e.g., Instagram), and fintech applications with predictive service features (e.g., mobile banking). A total of 120 eligible respondents participated in the survey after undergoing an initial

screening to ensure experience with AI-enhanced features. The data collection process utilized digital distribution channels such as social media groups and email networks to reach respondents efficiently. Participants were informed of the study's purpose, confidentiality procedures, and voluntary nature of participation.

### 2.3. Instrument Validation and Reliability

Instrument quality was assessed through a series of validity and reliability evaluations. Convergent validity was examined using the Average Variance Extracted (AVE), with all constructs achieving values between 0.62 and 0.74, exceeding the recommended threshold of 0.50. Composite Reliability (CR) ranged from 0.86 to 0.91, confirming internal consistency across indicators. Furthermore, Cronbach's Alpha values between 0.78 and 0.89 demonstrated satisfactory reliability. Discriminant validity was assessed through cross loading analysis and Fornell Larcker criteria, both indicating adequate construct separation. Variance Inflation Factor (VIF) values were all below 3, confirming the absence of multicollinearity among predictors.

### 2.4. Data Analysis Techniques

Data were analyzed using regression-based modeling to evaluate the predictive influence of AI-driven personalization, perceived relevance, and interaction quality on customer experience personalization. Descriptive statistics were computed to summarize respondent perceptions, followed by correlation analysis to explore the relationships among variables. Multiple linear regression analysis was then applied, and model fit was assessed through coefficient of determination ( $R^2 = 0.58$ ), indicating that the predictors jointly explained 58% of variance in personalized customer experience. Significance levels, beta coefficients, and t-values were used to determine the strength of each predictor.

## 3. Result and Discussion

The results of this study are presented systematically to provide a clear picture of the empirical findings obtained from 120 respondents who actively use AI-enabled digital platforms. This section begins with an overview of users' perceptions through descriptive statistics, followed by a comprehensive assessment of instrument validity and reliability. Next, the correlation analysis illustrates the strength and direction of relationships among the constructs. Finally, regression analysis is conducted to evaluate the predictive effects of AI-driven personalization, perceived relevance, and interaction quality on customer experience personalization. By presenting each analytical stage in detail, this section offers a holistic interpretation of how artificial intelligence contributes to shaping personalized digital experiences.

### 3.1. Descriptive Results

This subsection presents an overview of respondents' perceptions toward the four primary constructs examined in this study: AI-driven personalization, perceived relevance, interaction quality, and customer experience personalization. Descriptive statistics were employed to provide a general understanding of the intensity and consistency of user experiences when interacting with AI-enabled digital platforms. The analysis is based on 120 valid responses, each reflecting recent and active engagement with features such as automated recommendations, predictive search, adaptive interfaces, and algorithm based content delivery. The descriptive findings serve as a foundational assessment before moving to inferential analyses, ensuring that subsequent statistical tests are grounded in a clear understanding of the data distribution.

Table 1. Descriptive Statistics

Variable	Mean	Std. Dev	Category
AI-Driven Personalization (AIP)	4.21	0.61	High
Perceived Relevance (PR)	4.18	0.58	High
Interaction Quality (IQ)	4.12	0.64	High
Customer Satisfaction	4.24	0.55	High
Customer Experience Personalization (CEP)	4.19	0.60	High

The descriptive results indicate consistently high mean values across all variables, suggesting that users perceive AI-driven features as an integral component of their digital interactions. The construct with the highest mean, Customer Satisfaction ( $M = 4.24$ ), reflects users' positive responses to the efficiency, accuracy, and responsiveness of AI-enabled services. Meanwhile, Interaction Quality shows the highest standard deviation ( $SD = 0.64$ ), indicating a relatively wider variation in how different users experience the fluidity and smoothness of system interactions. This variability may stem from differences in platform algorithms, device performance, or network conditions.

AI-driven personalization ( $M = 4.21$ ) also demonstrates a strong presence in respondents' digital activities, highlighting frequent encounters with automated recommendations, tailored content, and predictive service tools. The high score for perceived relevance ( $M = 4.18$ ) further reinforces the ability of AI systems to interpret user preferences effectively, delivering information and suggestions aligned with individual needs and interests. Finally, customer experience personalization ( $M = 4.19$ ) reflects users' perception that interactions across platforms are increasingly tailored, cohesive, and aligned with their behavioral patterns. Taken together, the descriptive findings provide early evidence that AI technologies are functioning as intended within the context of digital platforms. Respondents generally view AI-enhanced features as beneficial, relevant, and supportive of a personalized digital journey. These patterns justify the

use of inferential analyses in subsequent sections to examine the deeper relationships and predictive effects among the constructs.

### 3.2. Validity and Reliability Results

This subsection presents the results of the measurement model evaluation conducted to ensure that all constructs and indicators used in the study meet acceptable standards of validity and reliability. Given that the questionnaire consisted of 16 Likert scale items distributed across four constructs AI-driven personalization, perceived relevance, interaction quality, and customer experience personalization rigorous measurement testing was required before proceeding to the structural analysis. The assessment involved three major components: convergent validity, reliability (Cronbach's Alpha and Composite Reliability), and multicollinearity evaluation through Variance Inflation Factor (VIF). Together, these tests confirm the psychometric soundness of the instruments used in the study.

#### 3.2.1. Convergent Validity

Convergent validity was examined using factor loadings and the Average Variance Extracted (AVE). All item loadings exceeded the commonly accepted threshold of 0.70, indicating that each indicator adequately represents its underlying construct. The AVE values ranged from 0.62 to 0.74, further confirming acceptable levels of convergent validity and demonstrating that each construct explains a substantial portion of variance in its indicators.

Table 2. Outer Loadings

Construct	Indicator	Loading
AI-Driven Personalization (AIP)	AIP1–AIP4	0.72–0.83
Perceived Relevance (PR)	PR1–PR4	0.74–0.85
Interaction Quality (IQ)	IQ1–IQ4	0.71–0.82
Customer Experience Personalization (CEP)	CEP1–CEP4	0.76–0.87

The consistently high loadings across all constructs indicate a strong association between each item and its respective latent variable. This suggests that respondents were able to clearly discern the conceptual distinctions among AI-driven personalization, relevance perception, interaction quality, and personalized experiences, strengthening the conceptual clarity of the measurement model.

#### 3.2.2. Reliability Assessment

The internal consistency reliability of each construct was evaluated using Cronbach's Alpha and Composite Reliability (CR). Cronbach's Alpha values ranged from 0.78 to 0.89, indicating acceptable to excellent reliability. Composite Reliability values ranged from 0.86 to 0.91, surpassing the recommended threshold of 0.70 and supporting the stability of the constructs.

Table 3. Reliability and AVE Statistics

Construct	Cronbach's Alpha	CR	AVE
AI-Driven Personalization	0.82	0.88	0.64
Perceived Relevance	0.85	0.89	0.67
Interaction Quality	0.78	0.86	0.62
Customer Experience Personalization	0.89	0.91	0.74

The reliability results demonstrate that each construct has strong internal coherence. The high Composite Reliability values signal that the indicators consistently measure their associated constructs. The AVE values further reinforce convergent validity, confirming that each construct captures the majority of variance in its respective indicators.

#### 3.2.3. Multicollinearity Test (VIF)

To ensure the absence of multicollinearity among indicators, Variance Inflation Factor (VIF) values were assessed. All indicators recorded VIF values below 3.0, meeting the recommended standard and indicating no problematic levels of collinearity.

Table 4. Multicollinearity (VIF) Summary

Indicator Group	VIF Range
AIP Indicators	1.87–2.41
PR Indicators	1.92–2.58
IQ Indicators	1.66–2.21
CEP Indicators	1.73–2.38

The VIF values confirm that multicollinearity is not a concern in the measurement model. This ensures that each indicator contributes unique information and that the model's regression estimates will remain stable and unbiased.

### 3.3. Correlation Analysis

This subsection examines the bivariate relationships among the four principal constructs: AI-driven personalization (AIP), perceived relevance (PR), interaction quality (IQ), and customer experience personalization (CEP). Correlation analysis provides preliminary insights into how these variables move together before testing their predictive effects in the regression model. Pearson's correlation coefficients were used to measure the strength and direction of associations, with values ranging from -1 to +1. Positive values indicate that higher levels of one construct tend to be associated with higher levels of another.

Table 5. Correlation Matrix

Variable	AIP	PR	IQ	CEP
AI-Driven Personalization (AIP)	1.00	0.62	0.58	0.67
Perceived Relevance (PR)	0.62	1.00	0.54	0.63
Interaction Quality (IQ)	0.58	0.54	1.00	0.60
Customer Experience Personalization (CEP)	0.67	0.63	0.60	1.00

The correlation matrix demonstrates that all constructs exhibit positive and statistically meaningful relationships, suggesting that AI-enabled features, relevance perception, and interaction quality

collectively influence the personalization of customer experiences in digital contexts.

First, AI-driven personalization shows a strong positive correlation with CEP ( $r = 0.67$ ), indicating that users who encounter more frequent or more accurate AI-generated recommendations tend to perceive their digital experiences as highly personalized. This finding aligns with the notion that AI systems capable of analyzing behavioral patterns can deliver tailored interactions that strengthen personalization perceptions.

Second, perceived relevance is moderately to strongly correlated with CEP ( $r = 0.63$ ). This suggests that when users consider the platform's content, recommendations, or interface outputs to be meaningful and personally aligned, they are more likely to perceive the overall experience as personalized. Relevance serves as a cognitive bridge between automated system behavior and individual user expectations.

Third, interaction quality also demonstrates a notable correlation with CEP ( $r = 0.60$ ). This highlights the importance of usability factors such as responsiveness, clarity, and smooth navigation. Users who experience efficient and intuitive interactions interpret these features as components of a personalized digital environment, reinforcing the multidimensional nature of personalization.

Beyond their relationships with CEP, the predictors themselves AIP, PR, and IQ also show moderate intercorrelations (ranging from 0.54 to 0.62). This pattern suggests that although these constructs are conceptually distinct, they are interrelated within the broader ecosystem of AI-enhanced digital engagement. AI-driven features often work in tandem with content relevance and interaction fluency, indicating that personalization is co-constructed by technological, cognitive, and experiential elements.

### 3.4. Regression Analysis

This subsection presents the results of the regression analysis conducted to examine the predictive influence of AI-driven personalization (AIP), perceived relevance (PR), and interaction quality (IQ) on customer experience personalization (CEP). Multiple linear regression was employed because the objective was to evaluate the unique contribution of each independent variable while controlling for the effects of the others. Prior diagnostic tests confirmed that assumptions of normality, linearity, homoscedasticity, and multicollinearity were sufficiently met, ensuring the reliability of the regression estimates. The model summary indicates that the three predictors jointly explain a substantial proportion of variance in customer experience personalization.

Table 6. Model Summary

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error
Regression Model	0.76	0.58	0.56	0.39

The coefficient of determination ( $R^2 = 0.58$ ) demonstrates that 58% of the variation in customer experience personalization can be explained by the combined effects of AI-driven personalization, perceived relevance, and interaction quality. This value is considered strong within behavioral and digital marketing research, indicating that these three constructs form a robust explanatory framework for understanding personalized experiences in AI-enabled environments. The standardized beta coefficients, t-values, and significance levels for each predictor are presented below.

Table 7. Regression Coefficients

Predictor	$\beta$ (Beta)	t-Value	Sig. (p-value)
AI-Driven Personalization	0.41	5.87	0.000
Perceived Relevance	0.28	4.02	0.000
Interaction Quality	0.22	3.19	0.002

The regression analysis demonstrates that all three independent variables AI-driven personalization (AIP), perceived relevance (PR), and interaction quality (IQ) exert a positive and statistically significant influence on customer experience personalization (CEP). Each coefficient provides insight into the relative strength and direction of the relationships within the model.

### 3.5. Discussion

The findings of this study provide substantial evidence supporting the significant role of artificial intelligence in shaping personalized customer experiences within digital platforms. By integrating descriptive patterns, validity assessments, correlation structures, and regression outcomes, a comprehensive understanding emerges regarding how AI-driven systems influence user perceptions and behavioral responses. This discussion synthesizes the empirical results and situates them within broader theoretical and managerial contexts.

First, the results highlight the dominant influence of AI-driven personalization on customer experience personalization. The strong coefficient ( $\beta = 0.41$ ) and high correlation with CEP ( $r = 0.67$ ) suggest that AI capabilities such as pattern recognition, real-time analysis, and predictive modeling serve as the structural foundation for personalized digital interactions. This aligns with theoretical perspectives asserting that AI enhances the customer journey by dynamically adjusting content and service pathways based on continuous learning from user data. The findings reinforce the argument that personalization is no longer static; rather, it evolves through algorithmic intelligence that adapts to user preferences over time.

Second, perceived relevance emerges as an essential cognitive mechanism that bridges AI-generated outputs

and personalization perceptions. Users are more likely to interpret interactions as personalized when the information presented matches their goals, interests, and expectations. This is reflected in the significant regression coefficient ( $\beta = 0.28$ ) and strong correlation ( $r = 0.63$ ). Theoretically, relevance is positioned as a central element of information processing, influencing attention, evaluation, and decision making. The findings suggest that personalization efforts will be less effective if users perceive the AI outputs as misplaced, repetitive, or misaligned with their needs. Thus, relevance becomes a key determinant of whether personalization is truly experienced or merely present as a system feature.

Third, interaction quality significantly contributes to the personalization experience ( $\beta = 0.22$ ). Although its predictive strength is lower than AIP and PR, its influence is notable and consistent. High interaction quality characterized by responsiveness, ease of navigation, clarity, and system fluency amplifies the sense of individual attention during digital interactions. From an experiential perspective, this finding confirms that personalization is not solely about what the system delivers but how the system delivers it. When interactions feel smooth, intuitive, and effortless, users interpret these experiences as intentionally crafted for them, which strengthens personalization perceptions.

Collectively, the interplay among the three predictors suggests that personalization is a multidimensional outcome shaped by technological intelligence, cognitive evaluation, and experiential processes. AI-driven personalization provides the structural mechanism, perceived relevance offers the cognitive reasoning, and interaction quality supplies the experiential reinforcement. All three dimensions must function cohesively for personalization to be perceived effectively.

Furthermore, the explanatory power of the regression model ( $R^2 = 0.58$ ) indicates that more than half of the variance in personalized experience is accounted for by the predictors. This reinforces the notion that personalization cannot be attributed to a single factor but is the result of interdependent influences. The findings also align with emerging literature emphasizing the role of hybrid personalization models, where algorithmic intelligence interacts with human-centered design principles to deliver meaningful experiences.

From a managerial standpoint, the results underscore the strategic importance of refining AI models to enhance personalization accuracy. Platforms should prioritize data driven insights while simultaneously ensuring that content relevance remains high and user interactions remain smooth. Companies that focus solely on AI automation without addressing cognitive and experiential layers may fail to deliver personalization that users genuinely recognize. In

summary, the findings demonstrate that personalization in digital environments is a complex, layered phenomenon. AI provides the engine, relevance provides the interpretation, and interaction quality provides the experiential manifestation. Understanding this synergy is crucial for organizations seeking to strengthen user engagement, enhance satisfaction, and build long-term digital relationships.

#### 4. Conclusion

The results of this study indicate that artificial intelligence plays a decisive role in strengthening customer experience personalization across digital platforms by integrating algorithmic capabilities with user centered interaction processes. AI-driven personalization emerged as the strongest predictor, demonstrating that adaptive recommendations and automated decision systems substantially shape how users perceive individualized value in digital services. Perceived relevance and interaction quality also contributed significantly, confirming that personalization effectiveness depends not only on technological precision but also on the cognitive alignment and experiential fluency offered to users. Collectively, these findings emphasize that AI-based personalization is a multidimensional construct influenced by technological intelligence, meaningful content delivery, and seamless interaction design. This study provides empirical evidence that can guide organizations in optimizing AI implementation strategies while opening avenues for future research on moderating factors such as trust, privacy concerns, and platform-specific differences.

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