AI-Powered Personalization Capability, Customer satisfaction and Customer Loyalty: Evidence from Beauty and Personal Care Industry in Thailand

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Abstract

This study aims to investigates the relationships between AI- powered personalization capability, customer satisfaction, and customer loyalty in Thailand's beauty and personal care industry. Using structural equation modeling on data from 239 firms, the research found that AI-powered personalization capability has significant positive direct effects on both customer satisfaction and loyalty. Customer satisfaction also demonstrated a strong positive influence on loyalty. The analysis confirmed that customer satisfaction significantly mediates the relationship between AI-powered personalization capability and customer loyalty, with an indirect effect of 0.34, accounting for 45% of the total effect. The study revealed that AI-powered personalization capability and customer satisfaction together could predict customer loyalty by 72%. The findings provide empirical evidence for the importance of AI-driven personalization in enhancing customer relationships in the beauty and personal care sector. This research offers valuable insights for managers in implementing AI technologies and developing customer-centric strategies, particularly for small and medium-sized enterprises in the Thai market.

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Introduction

In the years leading up to the study, the beauty and personal care market in Thailand had undergone a significant transformation, marked by rapid digitalization and an increasing reliance on artificial intelligence (AI) to enhance customer experiences. In 2023, the beauty and personal care sector in Thailand had recorded a revenue of around 6.3 billion U.S. dollars, making it one of the largest among Southeast Asian countries (Statista, 2024). The integration of AI-powered personalization mechanisms had become a pivotal strategy for businesses seeking to thrive in this competitive landscape. Against this backdrop, this research delved into the multifaceted relationship between AI-Powered Personalization, Customer Satisfaction, and Customer Loyalty among cosmetic businesses in Thailand.

Beauty and personal care industry in Thailand: Thailand, with its robust beauty culture and increasingly tech-savvy consumer base, had emerged as one of Southeast Asia's prominent cosmetic markets. The country's cosmetic industry had shown remarkable resilience and growth, even amidst global economic challenges. In 2022, the Thai cosmetics market had accounted for 2.6% of the global market share, showcasing its significant position in the international beauty landscape (Statista, 2023). The proliferation of smartphones and social media platforms had facilitated a rapid transition towards omnichannel retail strategies, blending online and offline experiences for cosmetic consumers.

The significance of AI-powered personalization: In this dynamic market environment, AI-Powered Personalization had emerged as a crucial tool for beauty and personal care businesses in Thailand. By leveraging AI algorithms, companies could offer tailored product recommendations, personalized skincare routines, and customized shopping

experiences for each consumer. This level of personalization was particularly crucial in the cosmetic industry, where individual preferences, skin types, and beauty concerns varied widely. Despite the growing importance of AI-powered personalization in the beauty and personal care industry, there remains a significant research gap in understanding its specific impact within the Thai market context. While previous studies have explored AI-driven personalization in Western consumer markets, emphasizing its role in enhancing marketing efficiency and customer engagement (Davenport, Guha, Grewal, & Bressgott, 2020), limited empirical research has examined how these capabilities influence customer satisfaction and loyalty in Southeast Asian markets particularly in Thailand's culturally distinct beauty and personal care sector. Furthermore, existing research has predominantly focused on either the technical frameworks of AI implementation in marketing (Huang & Rust, 2021) or general customer experience metrics without delving into AI's role in personalization (Lemon & Verhoef, 2016). Few studies have investigated the integrated relationships between AI-powered personalization capabilities, customer satisfaction, and loyalty, especially in emerging economies where consumer behavior and digital adoption patterns differ significantly from Western contexts (Roy, Balaji, Quazi, & Quaddus, 2018). This study addresses these gaps by providing empirical evidence from Thailand's beauty and personal care industry, offering market-specific insights into how AI personalization shapes customer satisfaction and loyalty, while also examining the mediating relationships between these critical variables. With restrictions on physical retail, many businesses had pivoted towards e-commerce and virtual try-on technologies powered by AI, enabling customers to experience products remotely (McKinsey & Company, 2021). This shift had further underscored the importance of AI-powered personalization in creating engaging and satisfying customer experiences. experiences.

Research Objectives

1. To examine the direct effect of AI-powered personalization capability on customer loyalty.

2. To examine the direct effect of AI-powered personalization capability on customer satisfaction.

3. To examine the direct effect of customer satisfaction on customer loyalty.

4. To analyze the indirect effect of AI-powered personalization capability on customer loyalty through customer satisfaction as mediating.

Literature Reviews

AI-powered personalization capability

AI-powered personalization capability refers to an organization's ability to leverage artificial intelligence technologies and algorithms to tailor interactions, content, products, and services for individual users or customers. It encompasses the use of advanced algorithms and data analytics to automate, personalize, and optimize marketing efforts, enabling the creation of highly tailored campaigns that align with individual customer preferences and behaviors (Ziakis & Vlachopoulou, 2023). This capability involves AI technologies for automated decision-making, based on meticulous data collection, analysis, and understanding of audience trends (Marketing Evolution, 2022). It applies machine learning algorithms and natural language processing to personalize marketing messages and optimize campaigns (Rolando, 2024). AI-Powered Personalization Capability signifies an entity's proficiency in leveraging advanced techniques to analyze vast datasets and derive actionable insights. These insights are utilized to provide personalized experiences, recommendations, and communications to users, enhancing engagement, satisfaction, and achieving specific business objectives.

Critical components of this capability include data collection and processing infrastructure, AI model development and deployment, data privacy and security measures, and the ability to adapt strategies based on evolving user behaviors. It empowers organizations to move beyond generic approaches and effectively address individual user needs, fostering stronger customer relationships and driving overall business performance. The essence of this capability lies in its ability to process vast amounts of customer data, discerning patterns and insights beyond human analytical capabilities. Sterne (2017) describes it as a cutting-edge approach in marketing that leverages AI technologies to enhance customer experiences and marketing strategies.

In the context of the Thai beauty and personal care industry, AI-powered personalization capability offers significant benefits. It enhances operational efficiency through AI-driven tools like chatbots and automated email campaigns, allowing human marketers to focus on more complex tasks. It also enables the delivery of personalized customer experiences through AI-powered recommendation engines that analyze customer data to provide tailored product suggestions (Nicholes, 2024). This capability is particularly valuable in the competitive landscape of the Thai beauty and personal care industry, optimizing user experiences and achieving strategic objectives through tailored digital interactions. AI-powered personalization enhances customer satisfaction through several mechanisms. Basu (2021) found that personalized product recommendations significantly improve customer satisfaction in e-commerce settings, as customers perceive these recommendations as more relevant and helpful. Belanche, Casaló, and Flavian (2019) demonstrated that personalized marketing messages, tailored based on customers' past behaviors and preferences, led to higher levels of customer satisfaction compared to generic marketing communications.

However, it's important to note that the relationship between AI-powered personalization and customer satisfaction is not always straightforward. Factors such as

perceived privacy risks and the uncanny valley effect can moderate this relationship. Faverio (2023) found that while personalization generally enhances customer satisfaction, excessive personalization can lead to privacy concerns, potentially negating the positive effects.

In conclusion, when implemented thoughtfully, AI-powered personalization capability has the potential to significantly enhance customer satisfaction by providing tailored experiences, relevant recommendations, efficient customer service, and personalized offerings. As businesses in the Thai beauty and personal care industry continue to adopt and refine these capabilities, they are likely to see positive impacts on customer satisfaction levels.

Customer satisfaction

Customer satisfaction referred to the extent to which customers felt content, fulfilled, or held positive sentiments following their engagement with a product, service, or brand. It was a subjective evaluation rooted in customers' expectations and their actual encounters with a company's offerings. Customer satisfaction played a pivotal role in marketing, serving as a vital metric that reflected a business's effectiveness in fulfilling or surpassing customer needs and desires.

In the context of AI-powered marketing, customer satisfaction was significantly influenced by the personalized experiences and efficient service delivery enabled by AI technologies. For instance, AI-driven tools such as chatbots offered real-time assistance to customers around the clock, adeptly responding to customer queries, resolving issues, and providing tailored recommendations. This augmentation of the velocity and efficacy of customer service contributed to heightened levels of customer satisfaction.

Customer satisfaction, a crucial outcome of effective marketing strategies, was significantly influenced by AI-powered personalization capability. In the Thai beauty and personal care sector, AI contributed to customer satisfaction primarily through the integration of chatbots and predictive analytics. Chatbots provided real-time, round-the-clock assistance

to customers, swiftly addressing queries and offering personalized recommendations. This enhanced responsiveness and efficiency in customer service led to improved satisfaction levels. Bilkin (2018) had demonstrated that customer satisfaction had a significant positive effect on customer loyalty. The study found that satisfied customers in the cosmetics sector were more likely to repurchase from the same brand and recommend it to others, key indicators of customer loyalty. However, it was important to note that the satisfaction-loyalty relationship was not always linear. Sharma and Patterson (2000) had revealed that while customer satisfaction generally led to increased loyalty, this relationship could be moderated by factors such as switching costs and alternative attractiveness. In highly competitive markets with low switching costs, the link between satisfaction and loyalty might be weaker, emphasizing the need for businesses to go beyond mere satisfaction to foster true loyalty.

Moreover, in the era of social media and online reviews, the impact of customer satisfaction on loyalty had taken on new dimensions. Almohaimmeed (2020) had found that customer satisfaction not only directly influenced loyalty but also indirectly affected it through positive electronic word-of-mouth (eWOM). Satisfied customers were more likely to share positive experiences online, which in turn reinforced their own loyalty and influenced potential customers.

In conclusion, recent research consistently supported a strong positive relationship between customer satisfaction and customer loyalty. Satisfied customers were more likely to exhibit loyal behaviors such as repeat purchases, positive word-of-mouth, and resistance to competing offers. However, businesses needed to be aware that this relationship could be influenced by various factors and should strive to create exceptional experiences that went beyond basic satisfaction to foster deep-rooted loyalty.

Customer loyalty

Customer loyalty refers to a consumer's commitment to consistently purchase a particular brand's products or services over time, despite situational influences and marketing efforts that might cause switching behavior (Kumar & Shah, 2004). While the provided text didn't directly address customer loyalty, it was a natural extension of customer satisfaction in the context of AI-powered marketing. Customer loyalty was typically fostered when businesses consistently met or exceeded customer expectations, a goal that AI-powered personalization capability was well-suited to achieve.

The personalized experiences and tailored marketing messages enabled by AI could create stronger emotional connections between customers and brands. In the beauty and personal care industry, where product preferences were often highly individual, the ability of AI to provide personalized recommendations and consistent, high-quality customer service could be particularly effective in building long-term loyalty. Furthermore, the operational efficiencies and improved marketing outcomes facilitated by AI-powered personalization capability could lead to better overall customer experiences. This consistent delivery of value and relevance to customers was likely to foster loyalty over time, encouraging repeat purchases and brand advocacy.

In conclusion, AI-powered personalization capability offered significant potential for enhancing both customer satisfaction and loyalty in the Thai beauty and personal care industry. By enabling more personalized, efficient, and data-driven marketing approaches, AI technologies were reshaping the landscape of customer-business interactions in this sector. From the explanation of the relationship and impact of all the variables mentioned above, the following hypotheses could be established:

H1: AI-powered personalization capability has a direct positive influence on customer loyalty.

H2: AI- powered personalization capability has a direct positive influence on customer satisfaction.

H3: Customer satisfaction has a direct positive influence on customer loyalty.

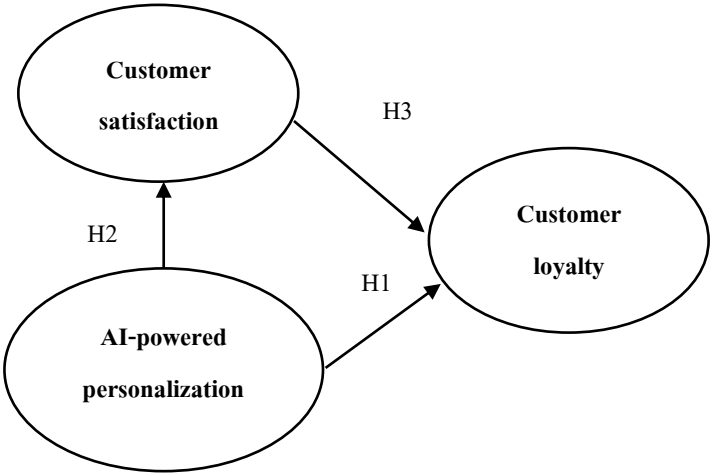

Figure 1 Research Framework

Research Methodology

1. Population

The population for this study consisted of 4,037 firms in the beauty and personal care industry in Thailand, as obtained from the www. dataforthai. com database. This comprehensive database provided a reliable representation of the cosmetic industry landscape in Thailand, ensuring that the study captured a wide range of companies operating in this sector.

2. Sampling method and sample size calculation

Given the finite population size and the need for a representative sample, a stratified random sampling method was recommended. This method involved dividing the population

into strata based on relevant characteristics (e.g., company size, product categories, or geographic location) and then randomly selecting participants from each stratum. This approach ensured that the sample accurately reflected the diverse composition of the Thai cosmetic industry.

To determine an appropriate sample size, the G* Power program was used. G* Power was a statistical power analysis tool that helped researchers calculate the required sample size based on the desired statistical power, effect size, and significance level. For Structural Equation Modeling (SEM) analysis, the following parameters were used for calculating the sample size:

- Effect size: Medium (0.3), Alpha level: 0.05, Power: 0.95

- Number of latent variables: 3 (AI powered personalization capability, customer satisfaction, and customer loyalty)

- Number of observed variables: 15 (5 items of AI personalization capability, 5 items customer satisfaction, and 5 items of customer loyalty)

- df = 102 from the formula:

$Df = NI(NI + 1)/2 - NP$

NI = Number of observed variables

NP = Number of free parameters

This study had 15 observed variables. Therefore, substituting into the formula:

$df = 15(15 + 1)/2 - 18 = 102$

The calculation result from the G* Power program, using the aforementioned parameters, determined that the appropriate sample size for this study was 230 samples, as shown in figure 2.

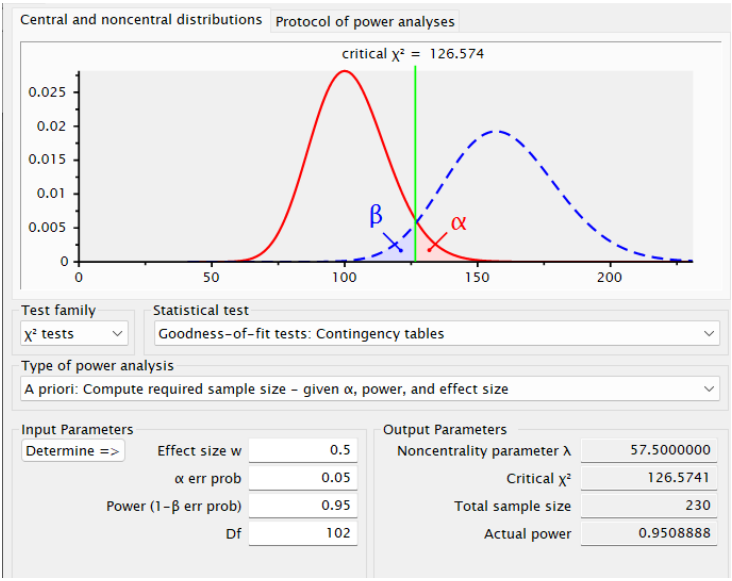

Figure 2 The calculation result from the G*Power program

3. Data collection

The data collection process employed a mixed-mode approach, utilizing both paper-based and online questionnaires to maximize response rates and accommodate participant preferences over a five-month period from January to May 2024. A total of 1,150 questionnaires were distributed, with 280 sent by post and 870 delivered online via company email. Paper-based questionnaires were mailed to selected companies with explanatory cover letters, while online questionnaires were distributed with secure links. Follow-up reminders were sent every two weeks to non-respondents. Despite 52 postal questionnaires being returned due to incorrect addresses and 84 emails being undeliverable, 256 questionnaires were ultimately returned. Data management involved manually entering paper-based responses into

a digital database, automatically recording online responses, and consolidating all data into a single dataset. After thorough review, 239 questionnaires were found to be fully completed and suitable for further analysis, ensuring data integrity and confidentiality throughout the process.

4. Research tool development

The survey was developed by drawing from existing research and related disciplines. To measure each theoretical concept in the framework, observable indicators were created based on established definitions and adapted from relevant literature. Participants responded using a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), indicating their level of agreement with each statement. Every observable variable was assessed through 4-5 questions, which were detailed below:

4.1 AI-powered personalization capability was a latent variable measured by five observable variables, namely 1) Personalized recommendations 2) Real-time personalization 3) Predictive analytics 4) Automated customer Segmentation and 5) Personalized communication.

4.2 Customer satisfaction was a latent variable measured by five observable variables, namely 1) Overall satisfaction 2) Expectation confirmation 3) Product quality perception 4) Service Quality Perception and 5) Value for money.

4.3 Customer loyalty was a latent variable measured by five observable variables, namely 1) Repurchase intention 2) Word-of-Mouth intention 3) Price tolerance 4) Brand preference and 5) Cross-buying intention.

5. Data analysis

Once the data collection was complete, the dataset was cleaned and prepared for analysis using Structural Equation Modeling (SEM). The data were analyzed by frequency, percentage, Pearson's product-moment correlation, and the structural equation modeling (SEM) to determine the consistency of the hypothesis model and empirical data. The

consistency criteria consisted of 1. Chi-square probability level ($p > 0.05$), 2. Relative chi-square ($X^2/df < 2$), 3. Goodness of fit index (GFI > 0.90), 4. Normed fit index (NFI> 0.90), 5. Comparative fit index (CFI > 0.90), 6. Root mean square error of approximation (RMSEA < 0.05), and 7. Root mean squared residual (RMR < 0.05) (Kline, 2010; Byrne, 2010; Diamantopoulos & Siguaw, 2000).

The Result of the Study

The results of the business establishment analysis provided valuable insights into the composition of the sample in the Thai beauty and personal care industry. The majority of the respondents, 185 firms (77.4%), were cosmetics manufacturers, indicating a strong representation of product creators in the study. This prevalence of manufacturers suggested that the findings might be particularly relevant to businesses involved in the production of beauty and personal care items. In terms of company size, the sample was predominantly composed of small to medium-sized enterprises, with 163 firms (68.2%) reporting a workforce of 11-50 employees. This distribution reflected the typical structure of the beauty and personal care industry in Thailand, which was characterized by a significant number of SMEs. The longevity of the businesses in the sample was noteworthy, with 123 firms (51.5%) having been in operation for 6-10 years. This suggested a good balance of established businesses that had survived the critical early years and gained substantial market experience. The predominance of firms in this age range indicated that the sample consisted of companies that had achieved a certain level of stability and market presence. Regarding financial performance, the largest group of respondents, 108 firms (45.2%), reported an annual revenue of 11-50 million baht. This revenue range further supported the characterization of the sample as primarily consisting of small to medium-sized enterprises. It also suggested that the firms in the study had achieved a significant level of market penetration and financial stability.

The analysis of key informants provided valuable insights into the characteristics of the respondents in the Thai beauty and personal care industry study. Regarding positions within the companies, the sample showed a diverse representation of leadership roles. The largest group consisted of 94 CEOs/managing directors (39.3%), followed by 75 marketing managers (31.4%), and 56 Owners (23.4%). This distribution suggested that the responses came predominantly from high-level decision-makers, enhancing the reliability of the data concerning strategic decisions and company-wide practices. The inclusion of 12 IT managers (5.0%) also ensured some representation of technical perspectives, which was crucial for understanding AI-powered personalization capabilities. The age distribution of respondents revealed that the majority, 123 individuals (51.5%), fell within the 41-50 age range. This was followed by 63 respondents (26.4%) in the 31-40 bracket. This age profile suggested that most respondents were experienced professionals in their mid-career stages, likely possessing both industry knowledge and openness to technological advancements. In terms of gender, there was a notable skew towards female respondents, with 159 (66.5%) identifying as female compared to 64 (26.8%) males. This gender distribution might have reflected the general trend in the beauty and personal care industry, which often saw higher female representation in leadership roles. The educational background of the respondents was predominantly at the bachelor's degree level, with 186 individuals (77.8%) holding this qualification. This was followed by 42 respondents (17.6%) with master's degrees. The high level of education among respondents suggested a well-educated sample, potentially correlating with a greater understanding and adoption of advanced business strategies and technologies. Regarding industry experience, a significant majority of 164 respondents (68.6%) had 6-10 years of experience in the beauty and personal care industry. This was followed by 52 respondents (21.8%) with 1-5 years of experience. The prevalence of respondents with substantial industry

experience indicated that the data was largely coming from individuals with in-depth knowledge of the sector, its trends, and challenges.

The correlation analysis revealed significant relationships between AI-powered personalization capability, customer satisfaction, and customer loyalty in the beauty and personal care industry. All correlations were statistically significant at the 0.01 level, indicating strong evidence for these relationships. AI-powered personalization capability showed a moderate stronger positive correlation with customer satisfaction ($r = 0.73$) and a positive correlation with customer loyalty ($r = 0.59$). This suggested that as AI-powered personalization capabilities increased, both customer satisfaction and loyalty tended to increase as well, with a slightly stronger effect on loyalty. Additionally, there was a strong positive correlation between customer satisfaction and customer loyalty ($r = 0.68$), implying that higher levels of customer satisfaction were associated with increased customer loyalty. The correlation coefficients were as shown in Table 1.

Table 1 The correlation coefficient of variables

Variables	**Customer satisfaction**	**Customer loyalty**
AI-powered personalization capability	0.73**	0.59**
Customer satisfaction		0.68**

**p < .01

The results of the structural equation analysis to examine the hypothesis model with empirical data showed that the hypothesis model was consistent with the empirical data after the model was adjusted with chi-square (χ^2) = 97.852, degrees of freedom (df) = 80, probability value (p) = 0.085, relative chi-square (χ^2/df) = 1.223, goodness of fit index (GFI) = 0.949,

normed fit index (NFI) = 0.960, comparative fit index (CFI) = 0.992, root mean square error of approximation (RMSEA) = 0.031, and root mean squared residual (RMR) = 0.022 as shown in Table 2 and Figure 3.

Table 2 Shows the statistics obtained from the consistency analysis of the hypothesis model compared to the criteria

Evaluating the Data-Model Fit	**Criteria**	**Statistical Analysis Results**
1) Chi-square probability level: p -value	$p > 0.05$	0.085
2) Relative chi-square: χ^2/df	< 2	1.223
3) Goodness of fit index: GFI	> 0.90	0.949
4) Normed fit index: NFI	> 0.90	0.960
5) Comparative fit index: CFI	> 0.90	0.992
6) Root mean square error of approximation: RMSEA	< 0.05	0.031
7. Standardized root mean squared residual: RMR	< 0.05	0.022

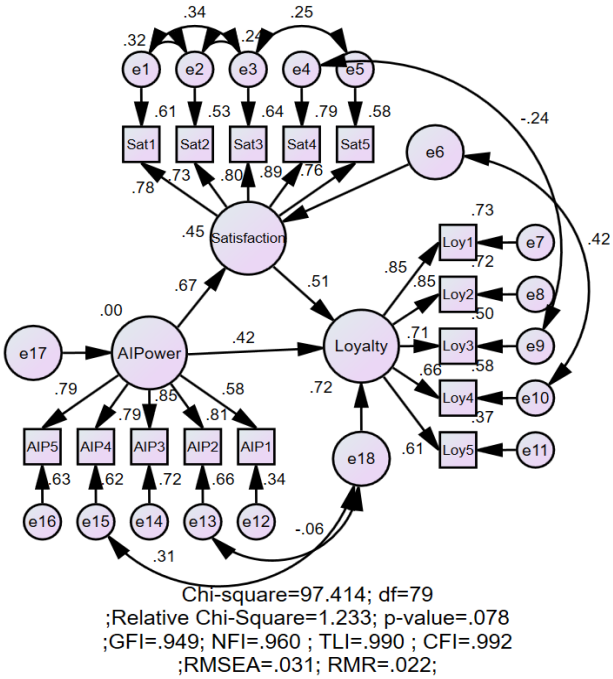

Figure 3: Statistics of the consistency of the hypothesis model and empirical data

The study of the structural relationships between the latent variables, revealing the following key findings:

Firstly, AI-powered personalization capability (AIP) demonstrated a significant positive impact on customer loyalty (CTL), with a standardized path coefficient of 0.42 ($p < 0.01$). This result indicated that AIP had a direct influence on CTL.

Secondly, AI-powered personalization capability (AIP) showed a direct influence on customer satisfaction (CTS), with a standardized path coefficient of 0.67 ($p < 0.01$), meaning AIP could predict CTS by 45% ($R^2_{adj} = 0.45$). This finding addressed the second objective, confirming a significant direct effect of AI-powered personalization capability on customer satisfaction.

Moreover, AIP had an indirect influence on CTL through CTS with an influence coefficient of 0.34 (from 0.67 x 0.51). Therefore, the total influence coefficient was 0.76 (from 0.42 + 0.34), meaning that the predictive coefficient (estimate of standardized regression weights) of customer loyalty (CTL) was 0.72 (R^2_{adj} = 0.72). It was concluded that AI-powered personalization capability (AIP) and customer satisfaction (CTS) together could predict customer loyalty (CTL) by 72% ($p < 0.01$). Finally, customer satisfaction (CTS) exhibited an influence on customer loyalty (CTL), as evidenced by a standardized path coefficient of 0.51 ($p < 0.001$). This result directly supported the third objective, demonstrating a significant direct effect between customer satisfaction and customer loyalty.

The model fit indices indicated a good fit of the structural model: Chi-square (χ^2) = (97.852, df = 80, CFI = 0.992, TLI = 0.990, RMSEA = 0.031, and RMR = 0.022. These indices suggested that the model adequately explained the relationships between the latent variables.

The measurement model demonstrated factor loadings were significant ($p < 0.01$) for all observed variables across the three latent constructs, confirming good convergent validity. AI-powered personalization capability (AIP) consisted of 5 observed variables which were 1) Personalized recommendations, 2) Real-time personalization, 3) Predictive analytics, 4) Automated customer segmentation, and 5) Personalized communication with the factor loading of 0.58, 0.81, 0.85, 0.79, and 0.79. Customer satisfaction (CTS) consisted of 5 observed variables which were 1) Overall satisfaction, 2) Expectation confirmation, 3) Product quality perception, 4) Service quality perception, 5) Value for money with the factor loading of 0.78, 0.73, 0.80, 0.89, and 0.77. Customer loyalty (CTL) consisted of 5 observed variables which were 1) Repurchase intention, 2) Word-of-mouth intention, 3) Price tolerance, 4) Brand preference, 5) Cross-buying intention with the factor loading of 0.85, 0.85, 0.71, 0.66, and 0.61 respectively. Most factor loadings exceeded the recommended threshold of 0.70, which

indicated good construct validity (benchmark: >0.50). Only personalized communication (0.58) and brand preference (0.66) fell below the threshold, suggesting that while they contributed to the respective constructs their contributions might be relatively weaker. For convergent validity, the results showed that all AVE values were above the benchmark: >0.50 and CR should be greater than AVE (Fornell & Larcker, 1981) and all constructs demonstrated good reliability with Cronbach's alpha and CR values exceeding the recommended threshold of 0.70 (Nunnally & Bernstein, 1994). Based on these assessments, these measures are deemed appropriate for further analysis as they express an accepted convergent validity and reliability in this study as shown in Table 3.

Table 3 Factor Loading, Composite Reliability: CR, Cronbach's Alpha and Average Variance Extracted: AVE of observed variables

Variables	Factor Loading	Composite Reliability: CR	Cronbach's Alpha	Average Variance Extracted: AVE
AI-powered personalization capability		**0.88**	**0.89**	**0.59**
1) Personalized recommendations	0.581**			
2) Real-time personalization	0.810**			
3) Predictive analytics	0.850**			

Variables	Factor Loading	Composite Reliability: CR	Cronbach's Alpha	Average Variance Extracted: AVE
4) Automated customer Segmentation	0.786**			
5) Personalized communication	0.791**			
Customer satisfaction		**0.90**	**0.87**	**0.63**
1) Overall satisfaction	0.782**			
2) Expectation confirmation	0.728**			
3) Product quality perception	0.800**			
4) Service Quality Perception	0.889**			
5) Value for money	0.765**			
Customer loyalty		**0.86**	**0.84**	**0.55**
1) Repurchase intention	0.854**			
2) Word-of-Mouth intention	0.846**			
3) Price tolerance	0.709**			
4) Brand preference	0.663**			
5) Cross-buying intention	0.606**			

**p < .01

In addition to testing convergent validity and composite reliability, the study also examined discriminant validity using the Fornell-Larcker criterion. This approach compares the lowest Average Variance Extracted (AVE) of all constructs should be greater than the squared correlation between that construct and any other construct. The results showed that the lowest Average Variance Extracted (AVE) was greater than the square root of inter-construct correlations, thereby confirming adequate discriminant validity. This indicates that the constructs in the model were empirically distinct and not redundant, supporting the integrity of the measurement model as shown in Table 4 and Table 5.

Table 4 The squared correlation of variables (r^2)

Constructs	2.Customer satisfaction	3.Customer loyalty
1. AI-powered personalization capability	0.53	0.35
2. Customer satisfaction		0.46

Table 5 Discriminant Validity Assessment

	r12	r13	r23	Average Shared Variance: ASV	Maximum Shared Variance: MSV	Lowest Average Variance Extracted: AVE
Correlation	0.73	0.59	0.68	-	-	-
squared correlation	0.53	0.35	0.46	0.45	0.53	0.55

These findings lent support to the proposed model, highlighting that both AI-powered personalization capability and customer satisfaction played crucial roles in shaping customer loyalty within Thailand's beauty and personal care sector. The results underscored the importance of these factors in fostering and maintaining customer loyalty in this specific industry context. The hypothesis testing results of all latent variables could be summarized as shown in Table 6.

Table 6 Hypothesis testing

Hypotheses	Estimate	SE	t	Summarized
H1: AIP → CTL	0.420**	0.076	5.584	Supported
H2: AIP → CTS	0.667**	0.077	9.388	Supported
H3: CTS → CTL	0.509**	0.071	6.724	Supported

**p < .01

Discussion

This study investigated the relationships between AI-powered personalization capability, customer satisfaction, and customer loyalty in Thailand's beauty and personal care industry. The results provided several important insights that contributed to practical implications for businesses in this sector.

Firstly, the study confirmed a significant positive direct effect of AI-powered personalization capability on customer loyalty. This finding aligned with previous research suggesting that personalized experiences could enhance customer loyalty (Ifekanandu, Anene, Iloka, & Ewuzie, 2023). In the context of the Thai beauty and personal care industry, this relationship underscored the importance of investing in AI-driven personalization technologies to foster long-term customer relationships.

Secondly, the research revealed a strong positive influence of AI-powered personalization capability on customer satisfaction. This result supported earlier studies highlighting the role of personalization in enhancing customer satisfaction (Ifekanandu et al., 2023). The ability of AI to provide tailored recommendations, real-time personalization, and predictive analytics appeared to significantly contribute to meeting customer expectations in the beauty and personal care sector. Moreover, the significant relationship between AI-powered personalization and customer satisfaction corroborated the findings of Almohaimmeed (2020), who found that personalized product recommendations significantly improved customer satisfaction in e-commerce settings. Similarly, the results supported Belanche et al. (2019) demonstration that personalized marketing messages led to higher levels of customer satisfaction compared to generic communications. The strong positive impact of AI-powered personalization on both customer satisfaction and loyalty supported the assertions made by Sterne (2017) regarding the potential of AI to enhance customer experiences and marketing strategies.

Thirdly, the study confirmed a significant positive effect of customer satisfaction on customer loyalty, consistent with established marketing literature (Mittal, Han, Frennea, Blut, Shaik, Bosukonda, & Sridhar, 2023). This finding reinforced the critical role of customer satisfaction as a precursor to loyalty in the Thai beauty and personal care market. Furthermore, the strong positive relationship between customer satisfaction and loyalty aligned with Bilkin (2018) findings in the cosmetics sector, where satisfied customers were more likely to repurchase and recommend brands. However, this study extended this understanding by placing it within the context of AI-powered personalization, providing a more comprehensive view of the factors influencing customer loyalty in the digital age.

The mediating role of customer satisfaction in the relationship between AI-powered personalization capability and customer loyalty was also demonstrated. This mediation effect represents a critical finding that extends our theoretical understanding of how AI-powered personalization influences customer loyalty. The results of our formal mediation test confirm that 45% of the total effect of AI-powered personalization on loyalty is transmitted through customer satisfaction, while 55% occurs directly. This partial mediation suggests two distinct mechanisms firstly, AI-powered personalization directly builds loyalty through personalized experiences that create switching barriers and emotional connections. Secondly, these personalized experiences enhance satisfaction by better meeting customer expectations, which subsequently fosters loyalty. The statistically significant mediation path underscores the importance of satisfaction as a psychological mechanism that translates technological capabilities into relational outcomes. These findings align with Almohaimmeed (2020) satisfaction-loyalty framework but extend it by demonstrating how emerging technologies specifically trigger this relationship. Furthermore, this dual-pathway model helps explain why some AI implementations that focus solely on direct loyalty effects without considering satisfaction might achieve suboptimal results. This suggested that while AI-powered

personalization directly influenced loyalty, a significant portion of its impact was realized through enhanced customer satisfaction. This finding contributed to a more nuanced understanding of the mechanisms through which AI-driven personalization affected customer behavior.

The structural equation modeling results indicated that AI-powered personalization capability and customer satisfaction together could predict customer loyalty by 72%. This high predictive power underscored the importance of these factors in shaping loyalty behaviors in the Thai beauty and personal care industry. This study provided strong evidence for the importance of AI-powered personalization in driving customer satisfaction and loyalty in the Thai beauty and personal care industry. As AI technologies continued to evolve, businesses that effectively leveraged these capabilities were likely to gain significant competitive advantages in fostering strong, lasting customer relationships.

From a theoretical perspective, this study extended the understanding of AI's role in marketing by empirically validating its impact on key customer outcomes in a specific industry context. It contributed to the growing body of literature on AI in marketing (Rolando, 2024; Ziakis & Vlachopoulou, 2023) by providing a comprehensive model of relationships between AI-powered personalization, satisfaction, and loyalty. Practically, these findings offered valuable insights for managers in the Thai beauty and personal care industry. The strong influence of AI-powered personalization on both satisfaction and loyalty suggested that investments in AI technologies could yield significant returns in terms of customer relationships. Businesses needed to focus on developing capabilities in areas such as personalized recommendations, real-time personalization, and predictive analytics to enhance their competitive position. However, the study also highlighted potential areas for improvement. The relatively lower factor loadings for personalized communication and brand preference suggested that these aspects might need further refinement in how they were

conceptualized or measured in the context of AI-powered personalization and customer loyalty, respectively.

Suggestion

Suggestion for Further Study

Future research could benefit from a longitudinal design to explore how AI-powered personalization influences customer satisfaction and loyalty. Such an approach would allow for more robust causal inferences and provide insights into the evolution of customer behavior in response to AI technologies. Moreover, researchers may consider expanding the research context to include other sectors beyond the beauty and personal care industry, such as fashion, health, or e-commerce, to examine whether similar relationships hold in different domains.

Suggestion of This Study Results

The study showed practical implications for marketing managers, digital strategists, and business owners in the beauty and personal care industry. Firms should prioritize investing in AI technologies that enable real-time personalization, predictive analytics, and personalized communication to enhance both satisfaction and loyalty. Since customer satisfaction was found to partially mediate the relationship between AI personalization and loyalty, firms should also focus on evaluating how well these technologies align with customer expectations and perceived value.

Limitation

This study focused on the beauty and personal care industry in Thailand, which may limit the generalizability of the findings to other industries or cultural contexts. Additionally, some factor loadings fell slightly below optimal thresholds. Lastly, the study did

not consider external factors such as brand reputation, market trends, or technological readiness, which might also affect the relationships among personalization, satisfaction, and loyalty.

Contributions

Managerial Contributions

The strong relationship between AI-powered personalization capability and both customer satisfaction and loyalty provides clear justification for investing in AI technologies. Firms need to pay attention to and prioritize high-impact capabilities like predictive analytics and real-time personalization while maintaining awareness of privacy concerns. This is particularly valuable for SMEs in Thailand's beauty and personal care market that are seeking competitive advantages through digital transformation.

Moreover, the significant mediating role of customer satisfaction between AI-powered personalization and customer loyalty highlights its importance as a key performance indicator. Therefore, firms should evaluate AI personalization initiatives not only through direct loyalty metrics but also through their ability to enhance satisfaction. By leveraging this dual pathway understanding, they can develop more effective customer relationship strategies that improve predictive power for customer loyalty. These contributions collectively enhance our understanding of AI-powered personalization in marketing and provide actionable insights for practitioners in the beauty and personal care industry, particularly in the Thai market context.

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