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Evaluation of Customers' Online Purchasing Behavior Using Artificial Intelligence Tools in the Retail Industry

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ABSTRACT

The objective of this study was to evaluate customers' online purchasing behavior based on artificial intelligence tools in the retail industry. Given the expansion of e-commerce and the increasing role of intelligent technologies in shaping customer experience, this study investigates the effects of smart capabilities, environmental readiness, environmental constraints, and the smart purchasing process on the smartization of customer experience and the perceived value of online consumers. The present study was applied in terms of purpose and descriptive-survey in terms of method. The data collection instrument in the quantitative section was a researcher-developed questionnaire designed based on the findings of the qualitative phase and distributed among 384 participants through non-probability random sampling. Data analysis was performed using structural equation modeling. The results of hypothesis testing indicated that all relationships in the model were significant and positive. Smart capabilities had a significant effect on environmental readiness for e-commerce, environmental constraints, and the smart purchasing process. In addition, environmental readiness played an important role in strengthening digital transformation and developing the smart purchasing process. The findings also demonstrated that, despite their challenging nature, environmental constraints could influence the improvement of customer experience and the purchasing process through the utilization of artificial intelligence technologies. The smart purchasing process directly enhanced the smartization of customer experience, and ultimately, the smartization of customer experience had the strongest effect on the perceived value of online consumers. Overall, the findings indicate that artificial intelligence can play a central role in improving online purchasing behavior, enhancing customer experience, and creating perceived value in the retail industry. These findings highlight the importance of investing in smart capabilities and developing digital infrastructures to achieve sustainable competitive advantage in the online marketplace.

Keywords: Online Purchasing Behavior, Artificial Intelligence, Retail Industry

Introduction

The rapid expansion of digital technologies and the accelerated growth of electronic commerce have fundamentally transformed consumer behavior patterns in the retail industry. In recent years, organizations have increasingly relied on intelligent technologies and artificial intelligence-based systems to understand consumer preferences, optimize customer interactions, and enhance online purchasing experiences. The integration of artificial intelligence into retail operations has shifted traditional transactional relationships toward data-driven and highly personalized interactions, enabling firms to improve customer engagement and create sustainable

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competitive advantages. The emergence of smart technologies, machine learning algorithms, predictive analytics, and recommendation systems has significantly altered the mechanisms through which customers search for products, evaluate alternatives, and make purchasing decisions in online environments (1, 2). As competition intensifies in digital marketplaces, retail organizations are increasingly required to adopt intelligent systems capable of analyzing customer behavior and generating personalized experiences that align with consumer expectations and preferences.

Artificial intelligence has become one of the most influential technological drivers in the transformation of contemporary retailing systems. Intelligent algorithms allow firms to process extensive volumes of customer data in real time, identify behavioral patterns, and provide tailored recommendations that improve purchasing efficiency and customer satisfaction. Recommendation systems based on machine learning models have become particularly important in online retail platforms because they enhance the relevance of products and services presented to customers, thereby increasing engagement and purchase probability (2). In addition, artificial intelligence technologies facilitate the automation of customer service operations, dynamic pricing systems, inventory management, and personalized advertising strategies, all of which contribute to the optimization of organizational performance and consumer experiences (1, 3). Consequently, understanding the role of intelligent capabilities in shaping online purchasing behavior has become a strategic necessity for retail organizations operating in digital environments.

The increasing reliance on digital platforms has also altered the structure of customer-firm interactions by emphasizing the importance of customer experience management. Modern consumers expect seamless, responsive, and personalized interactions across digital channels. Therefore, customer experience has become a central determinant of organizational success in online retailing. Integrating customer experience management with technological innovation enables firms to strengthen customer trust, improve service quality, and increase long-term loyalty (4). Artificial intelligence-based systems contribute to this process by enabling organizations to collect and analyze behavioral data continuously and transform such information into customized interactions and value-generating experiences. In this context, the smartization of customer experience refers to the utilization of intelligent technologies to personalize and optimize consumer interactions throughout the purchasing journey. Such transformations have redefined the dynamics of online purchasing behavior and have highlighted the importance of digital infrastructures and technological readiness in supporting intelligent retail ecosystems.

The effectiveness of intelligent technologies in retail environments is highly dependent on the environmental readiness of organizations and markets for electronic commerce. Environmental readiness encompasses technological infrastructure, digital literacy, organizational adaptability, and societal acceptance of digital technologies. Retail organizations operating in environments with advanced technological infrastructure and higher levels of digital acceptance are more capable of implementing artificial intelligence tools successfully and enhancing customer experiences (5, 6). During the COVID-19 crisis, the significance of environmental readiness became particularly evident as organizations increasingly adopted social media technologies and digital platforms to maintain customer relationships and continue commercial activities under unstable market conditions (5). Furthermore, Industry 4.0 technologies and intelligent systems have accelerated the digital transformation of small and medium-sized enterprises, enabling firms to improve operational flexibility, sustainability, and customer responsiveness (6). These developments suggest that environmental readiness is a critical factor influencing the

successful integration of artificial intelligence into retail systems and the enhancement of online purchasing behavior.

Despite the opportunities associated with intelligent technologies, organizations also face various environmental and technological constraints that may affect the adoption and effectiveness of artificial intelligence systems in retail environments. Technical limitations, concerns regarding data privacy and security, insufficient infrastructure, and consumer skepticism toward digital systems may hinder the implementation of intelligent retail strategies. Privacy concerns have become increasingly important because artificial intelligence systems rely extensively on customer data collection and behavioral analysis. Consumers may perceive personalized advertising and recommendation systems as intrusive if organizations fail to establish transparency and trust in their digital interactions (7, 8). Moreover, the widespread use of microtargeting and behavioral analysis technologies has raised ethical and social concerns regarding manipulation, surveillance, and the misuse of personal information in digital environments (8). Consequently, organizations must balance technological innovation with ethical considerations and customer trust to ensure sustainable adoption of intelligent retail technologies.

Electronic word-of-mouth communication has emerged as another critical factor influencing online purchasing behavior in digital marketplaces. Social media platforms, online reviews, and user-generated content significantly shape consumer attitudes, perceptions, and purchase intentions. The increasing popularity of digital communication platforms has amplified the influence of electronic word-of-mouth on customer decision-making processes and brand evaluations (7, 9). Social media applications such as TikTok have become influential channels through which consumers exchange experiences, evaluate products, and influence purchasing intentions (9). Artificial intelligence technologies further strengthen these interactions by enabling firms to monitor consumer sentiment, personalize content, and optimize digital communication strategies. Additionally, social media marketing strategies increasingly rely on artificial intelligence tools to analyze audience behavior, predict preferences, and enhance engagement effectiveness (10). These developments demonstrate that online purchasing behavior is shaped not only by technological infrastructure but also by digital communication dynamics and social influence mechanisms.

The concept of perceived value has also become increasingly important in understanding online consumer behavior in intelligent retail environments. Perceived value refers to consumers' overall assessment of the benefits obtained from products, services, and purchasing experiences relative to the associated costs and efforts. Artificial intelligence technologies contribute to value creation by improving convenience, personalization, responsiveness, and purchasing efficiency. Customers who perceive higher levels of personalization and relevance in online interactions are more likely to experience satisfaction and develop positive attitudes toward digital retail platforms (2, 11). Moreover, awareness and ethical considerations significantly influence purchasing behavior, particularly in contexts related to sustainable and ethical consumption. Consumers increasingly evaluate firms based on ethical practices, transparency, and social responsibility, which affect their perceived value and purchase intentions (11). Therefore, intelligent retail systems must not only optimize operational efficiency but also align with customer values and ethical expectations to strengthen perceived value and long-term customer relationships.

Consumer purchasing behavior is also strongly influenced by psychological, sensory, and emotional factors. Sensory marketing strategies and emotionally engaging experiences can significantly affect customer perceptions and decision-making processes in online retail environments (12). Artificial intelligence technologies enhance these processes by analyzing behavioral patterns and enabling organizations to design more immersive and personalized customer experiences. Intelligent systems can adapt website interfaces, recommend products based on emotional

preferences, and optimize digital content to maximize consumer engagement and purchasing intentions. Furthermore, behavioral experiments have demonstrated that purchasing decisions are often shaped by contextual and psychological variables beyond rational economic considerations (13). Consequently, organizations that successfully integrate artificial intelligence with behavioral and sensory marketing strategies may achieve greater effectiveness in influencing online purchasing behavior and enhancing customer experiences.

Strategic management perspectives also emphasize the importance of authenticity, networking capability, and organizational adaptability in achieving sustainable competitive advantage within digital environments. Organizations that effectively integrate intelligent technologies into their strategic frameworks are more likely to strengthen customer relationships and improve organizational performance (14, 15). Networking capabilities facilitate knowledge sharing, technological collaboration, and innovation development, enabling firms to adapt more effectively to changing digital market conditions (15). Furthermore, authentic and transparent digital interactions contribute to customer trust and loyalty, which are essential determinants of success in online retailing environments (14). Political, social, and cultural factors also influence consumer perceptions and marketing effectiveness within digital environments, particularly in emerging markets characterized by dynamic institutional structures (16, 17). Therefore, the successful implementation of artificial intelligence tools in retail systems requires a comprehensive understanding of technological, behavioral, strategic, and environmental dimensions.

The growing integration of intelligent technologies into marketing and consumer analytics has also expanded the application of advanced statistical and analytical techniques in behavioral research. Structural equation modeling, factor analysis, and variance analysis methods are increasingly utilized to examine the complex relationships between intelligent capabilities, environmental factors, customer experiences, and purchasing behavior (18). These analytical approaches allow researchers to evaluate latent constructs and identify causal relationships among technological and behavioral variables more accurately. As retail systems become increasingly data-driven and technology-oriented, empirical investigations examining the role of artificial intelligence in shaping customer behavior have become essential for both academic research and managerial decision-making.

Although previous studies have investigated artificial intelligence, electronic commerce, digital marketing, customer experience, and consumer behavior from different perspectives, limited research has comprehensively examined the simultaneous effects of intelligent capabilities, environmental readiness, environmental constraints, and smart purchasing processes on the smartization of customer experience and the perceived value of online consumers in the retail industry. Furthermore, the increasing complexity of digital retail ecosystems and the rapid advancement of artificial intelligence technologies necessitate further empirical investigation into the mechanisms through which intelligent systems influence customer behavior and value creation in online environments. Therefore, the present study aims to evaluate customers' online purchasing behavior using artificial intelligence tools in the retail industry by examining the effects of smart capabilities, environmental readiness, environmental constraints, and smart purchasing processes on the smartization of customer experience and the perceived value of online consumers.

Methods and Materials

The data collection method in the qualitative section was based on a library research approach. In this study, semi-structured interviews were conducted to identify the components of the model of customers' online purchasing behavior using artificial intelligence tools in the retail industry. The statistical population in the quantitative section

consisted of customers in the retail industry. Considering the target statistical population, the sampling method was non-probability random sampling, and the sample size was determined as 384 participants using G*Power software. In the quantitative section, field data were collected through a researcher-developed questionnaire designed based on the criteria extracted from the qualitative phase. Furthermore, in this study, a questionnaire was used to present customers' online purchasing behavior using artificial intelligence tools in the retail industry and to collect the required data. The questionnaire was developed according to the indicators derived from the characteristics of the influencing factors and was distributed online among participants. After confirming validity (construct validity using factor analysis) and reliability (Cronbach's alpha coefficient), the questionnaire was administered to respondents, and they were asked to answer the questions voluntarily based on their willingness and interest.

Findings and Results

In the quantitative section, considering the maximum variance and a 5% error level, it was determined that more than 400 questionnaires should be electronically distributed in order to increase the response rate and facilitate the implementation of the study. Among these, 384 respondents completed the questionnaire, and this number constituted the basis for data analysis and hypothesis testing. In this study, the selected variables were examined based on a conceptual model. The normality of the data was evaluated using skewness and kurtosis indices. The sample consisted of 384 respondents. The validity and reliability of the constructs were assessed using the measurement model and hypothesis testing, while model fit was evaluated through covariance-based structural equation modeling using SPSS software (Version 20) and SmartPLS software (Version 2). The use of structural equation modeling provided a more accurate representation of conceptual relationships in measuring latent variables. Cronbach's alpha and composite reliability were used to assess questionnaire reliability. The reliability results for each variable indicated that all values exceeded 0.70, demonstrating acceptable reliability. To assess validity, convergent and discriminant validity were employed. Table 1 presents the findings related to convergent validity. The obtained convergent validity values for the latent variables of the model were greater than 0.50; therefore, it can be concluded that the convergent validity of the measurement models was satisfactory.

Table 1. Results of Variable Reliability Assessment

Component	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)	Q^2
Trust and Security in Online Purchasing	0.890	0.893	0.919	0.695	0.522
Increased Trust and Transparency in Online Purchasing	0.771	0.775	0.854	0.595	0.239
Increased Customer Satisfaction	0.849	0.851	0.899	0.689	0.481
Increased Sales and Profitability of Online Retailers	0.704	0.709	0.834	0.626	0.215
Increased Customer Loyalty	0.514	0.775	0.725	0.510	0.105
Motivations for Online Shopping Experience	0.817	0.836	0.877	0.641	0.421
Improvement of User Experience in Shopping Platforms	0.705	0.718	0.836	0.631	0.160
Improvement of Purchase Decision-Making	0.710	0.710	0.838	0.633	0.312
AI-Based Smart Shopping Experience	0.871	0.873	0.912	0.722	0.551

Customer Informed Decision-Making in the Online Shopping Environment	0.796	0.744	0.795	0.548	0.152
Data-Driven Interaction Between Customer and Retail Platform	0.811	0.815	0.876	0.638	0.406
Intelligent Customer Interaction	0.900	0.905	0.923	0.669	0.552
Enhancement of Intelligent Customer Interaction	0.791	0.793	0.878	0.707	0.394
Development and Application of Artificial Intelligence Technologies	0.879	0.881	0.917	0.734	0.489
Development and Expansion of Electronic Commerce	0.817	0.825	0.892	0.733	0.482
Digital Transformation	0.893	0.898	0.909	0.573	0.298
Information Technology Infrastructure	0.812	0.825	0.869	0.573	0.338
Personalization of Services and Recommendations	0.733	0.763	0.848	0.652	0.269
Intelligent Personalization of Shopping Experience	0.874	0.880	0.903	0.574	0.464
Environmental Readiness for Electronic Commerce	0.896	0.911	0.913	0.521	0.346
Smart Capabilities	0.905	0.917	0.919	0.510	0.320
Environmental Constraints	0.904	0.908	0.919	0.588	0.432
Smart Purchasing Process	0.897	0.915	0.915	0.567	0.330
Economic and Cost Factors	0.833	0.835	0.888	0.666	0.371
Culture and Technology Acceptance in Society	0.786	0.809	0.852	0.539	0.388
Technical and Infrastructure Constraints	0.807	0.807	0.873	0.633	0.433
Privacy Concerns	0.829	0.829	0.887	0.662	0.467
Development of Digital Value Creation	0.887	0.902	0.906	0.572	0.282

This index indicates the compatibility between the quality of the structural model and the measurement model and is calculated as follows:

Table 2. Model Fit Indices

Model Fit Index	Estimated Value	Acceptable Threshold
SRMR	0.092	Less than 0.10

In this study, the root mean square residual (SRMR), which is considered one of the most important indices in confirmatory factor analysis model evaluation, was employed. The acceptable threshold for this index is 0.10. Since the obtained value for the model was 0.092, which is below the threshold of 0.10, it can be concluded that the model demonstrated an appropriate fit and that the data of this study had a satisfactory fit with the factor structure and theoretical foundation of the research.

The second category of findings in this study examined the structural model test. After confirming validity and reliability, the structural model of the study was evaluated. This model enables the examination of the research models. Figure 1 presents the results obtained from the SMARTPLS2 software output. According to this model, factor loadings were significant at the 95% confidence level, and all t-statistic values were outside the range of -1.96 to +1.96.

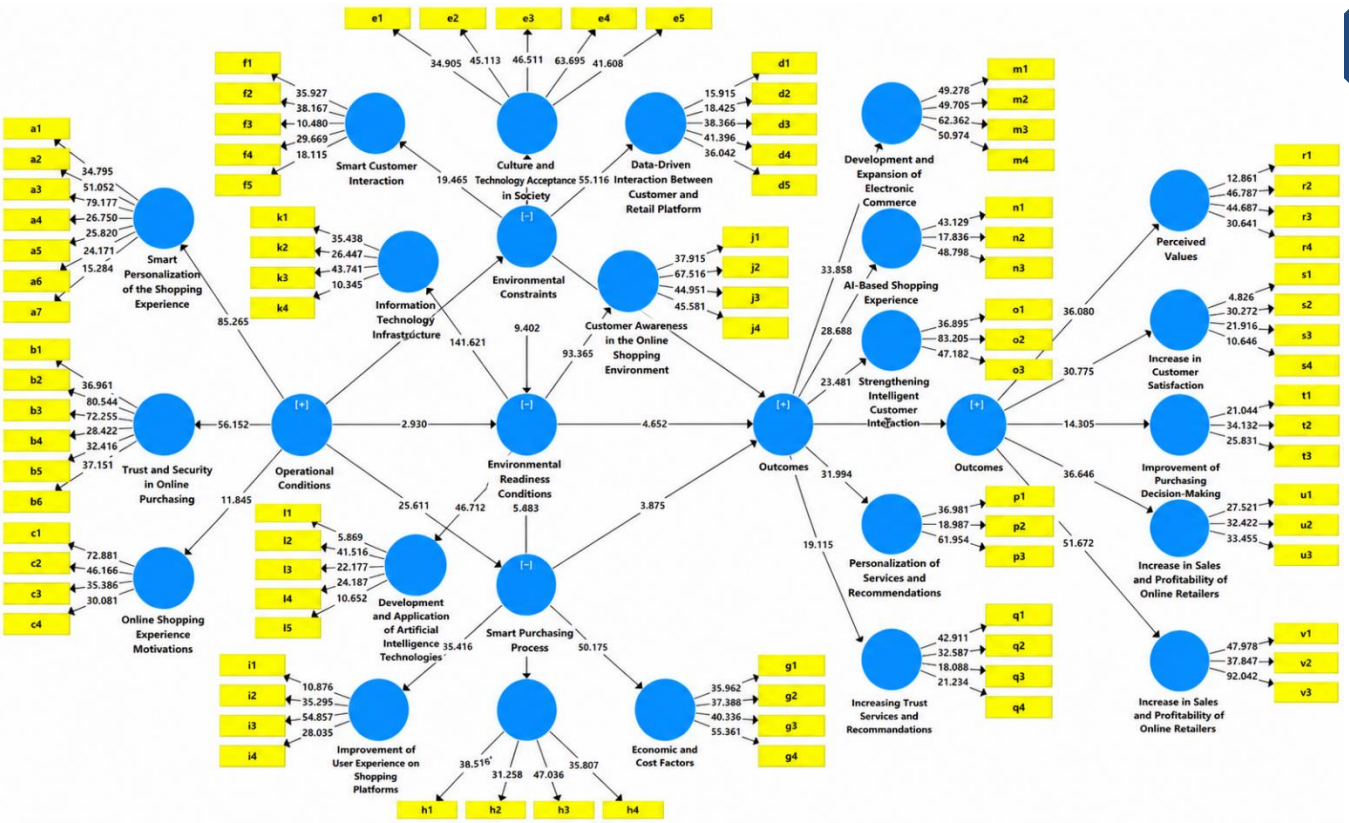

Figure 1. Structural Research Model in the Significance State

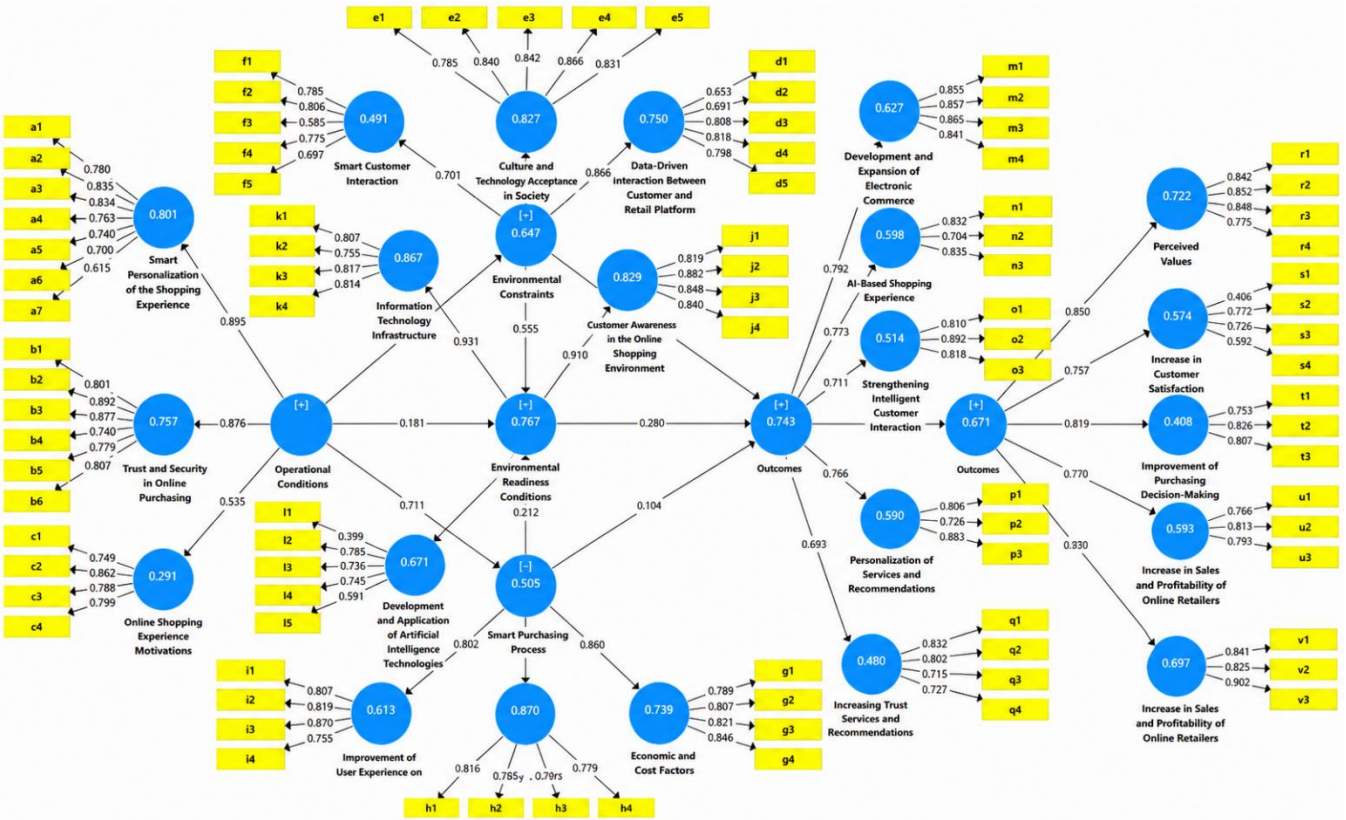

Figure 2. Structural Research Model in the Standardized State

In the quantitative section, the research model was analyzed using SmartPLS software.

The first hypothesis stated that smart capabilities have a significant effect on environmental readiness for electronic commerce. The research hypothesis regarding the effect of smart capabilities on environmental readiness for electronic commerce obtained a significance value of 29.370, which was significant at the 95% confidence level (the absolute value of the t-statistic was greater than 1.96). Therefore, the researcher's claim was confirmed with 95% confidence. The positive beta coefficient (0.804) indicates that smart capabilities have a significant effect on environmental readiness for electronic commerce.

The second hypothesis stated that smart capabilities have a significant effect on environmental constraints. The research hypothesis regarding the effect of smart capabilities on environmental constraints obtained a significance value of 25.611, which was significant at the 95% confidence level (the absolute value of the t-statistic was greater than 1.96). Therefore, the researcher's claim was confirmed with 95% confidence. The positive beta coefficient (0.711) indicates that smart capabilities have a significant effect on environmental constraints.

The third hypothesis stated that smart capabilities have a significant effect on the smart purchasing process. The research hypothesis regarding the effect of smart capabilities on the smart purchasing process obtained a significance value of 2.930, which was significant at the 95% confidence level (the absolute value of the t-statistic was greater than 1.96). Therefore, the researcher's claim was confirmed with 95% confidence. The positive beta coefficient (0.181) indicates that smart capabilities have a significant effect on the smart purchasing process.

The fourth hypothesis stated that environmental readiness for electronic commerce has a significant effect on the smartization of customer experience. The research hypothesis regarding the effect of environmental readiness for electronic commerce on the smartization of customer experience obtained a significance value of 9.331, which was significant at the 95% confidence level (the absolute value of the t-statistic was greater than 1.96). Therefore, the researcher's claim was confirmed with 95% confidence. The positive beta coefficient (0.464) indicates that environmental readiness for electronic commerce has a significant effect on the smartization of customer experience.

The fifth hypothesis stated that environmental readiness for electronic commerce has a significant effect on the smart purchasing process. The research hypothesis regarding the effect of environmental readiness for electronic commerce on the smart purchasing process obtained a significance value of 9.402, which was significant at the 95% confidence level (the absolute value of the t-statistic was greater than 1.96). Therefore, the researcher's claim was confirmed with 95% confidence. The positive beta coefficient (0.555) indicates that environmental readiness for electronic commerce has a significant effect on the smart purchasing process.

The sixth hypothesis stated that environmental constraints have a significant effect on the smartization of customer experience. The research hypothesis regarding the effect of environmental constraints on the smartization of customer experience obtained a significance value of 3.875, which was significant at the 95% confidence level (the absolute value of the t-statistic was greater than 1.96). Therefore, the researcher's claim was confirmed with 95% confidence. The positive beta coefficient (0.184) indicates that environmental constraints have a significant effect on the smartization of customer experience.

The seventh hypothesis stated that environmental constraints have a significant effect on the smart purchasing process. The research hypothesis regarding the effect of environmental constraints on the smart purchasing process obtained a significance value of 5.483, which was significant at the 95% confidence level (the absolute value of the t-statistic was greater than 1.96). Therefore, the researcher's claim was confirmed with 95% confidence.

The positive beta coefficient (0.212) indicates that environmental constraints have a significant effect on the smart purchasing process.

The eighth hypothesis stated that the smart purchasing process has a significant effect on the smartization of customer experience. The research hypothesis regarding the effect of the smart purchasing process on the smartization of customer experience obtained a significance value of 4.652, which was significant at the 95% confidence level (the absolute value of the t-statistic was greater than 1.96). Therefore, the researcher's claim was confirmed with 95% confidence. The positive beta coefficient (0.280) indicates that the smart purchasing process has a significant effect on the smartization of customer experience.

The ninth hypothesis stated that the smartization of customer experience has a significant effect on the perceived value of online consumers. The research hypothesis regarding the effect of the smartization of customer experience on the perceived value of online consumers obtained a significance value of 46.681, which was significant at the 95% confidence level (the absolute value of the t-statistic was greater than 1.96). Therefore, the researcher's claim was confirmed with 95% confidence. The positive beta coefficient (0.819) indicates that the smartization of customer experience has a significant effect on the perceived value of online consumers.

Table 3. Hypothesis Testing Results

Hypotheses	Beta	t-value	Significance Level	Hypothesis Status	Direction of Relationship
Smart Capabilities → Environmental Readiness for Electronic Commerce	0.804	29.370	0.000	Confirmed	+
Smart Capabilities → Environmental Constraints	0.711	25.611	0.000	Confirmed	+
Smart Capabilities → Smart Purchasing Process	0.181	2.930	0.004	Confirmed	+
Environmental Readiness for Electronic Commerce → Digital Transformation	0.464	9.331	0.000	Confirmed	+
Environmental Readiness for Electronic Commerce → Smart Purchasing Process	0.555	9.402	0.000	Confirmed	+
Environmental Constraints → Smartization of Customer Experience	0.184	3.875	0.000	Confirmed	+
Environmental Constraints → Smart Purchasing Process	0.212	5.483	0.000	Confirmed	+
Smart Purchasing Process → Smartization of Customer Experience	0.280	4.652	0.000	Confirmed	+
Smartization of Customer Experience → Perceived Value of Online Consumers	0.819	46.681	0.000	Confirmed	+

Discussion and Conclusion

The findings of the present study demonstrated that smart capabilities have a significant and positive effect on environmental readiness for electronic commerce. This result indicates that the development of intelligent technological capabilities within retail organizations enhances the preparedness of digital environments for the implementation and expansion of electronic commerce activities. Organizations equipped with advanced artificial intelligence infrastructures, data analytics systems, and intelligent communication technologies are more capable of adapting to dynamic digital market conditions and responding effectively to changing customer expectations. These findings are consistent with the results reported by (6), who emphasized the role of Industry 4.0 acceptance

in strengthening organizational sustainability and digital adaptability among small and medium-sized enterprises. Similarly, (5) highlighted the importance of technological and environmental factors in facilitating the adoption of digital platforms during periods of market instability. The findings also align with the arguments of (1), who demonstrated that artificial intelligence tools significantly contribute to the development of digital financial services and marketing capabilities. In practice, organizations possessing higher levels of intelligent capability are more likely to establish integrated digital infrastructures that facilitate seamless electronic commerce operations and improve online customer experiences.

Another important finding of the study revealed that smart capabilities significantly influence environmental constraints. Although environmental constraints are generally perceived as barriers to digital transformation, the results suggest that intelligent technologies may mitigate or manage these limitations effectively. Artificial intelligence systems improve organizational flexibility and allow firms to respond proactively to technological, infrastructural, and operational challenges. Intelligent systems can optimize resource allocation, automate decision-making processes, and reduce inefficiencies associated with environmental barriers. This finding supports the perspectives proposed by (3), who argued that artificial intelligence-based strategic analysis enhances organizational competitiveness and adaptability in technology-intensive industries. Furthermore, the findings correspond with the work of (15), which emphasized the importance of networking capability and organizational collaboration in overcoming environmental and technological barriers. Artificial intelligence technologies provide firms with enhanced analytical and predictive capabilities that improve their ability to manage uncertainties and environmental limitations in digital marketplaces.

The findings also demonstrated that smart capabilities significantly affect the smart purchasing process. This result confirms that artificial intelligence tools and intelligent systems directly influence how consumers search for information, evaluate alternatives, and make purchasing decisions in online environments. Intelligent recommendation systems, predictive analytics, and personalized digital interfaces facilitate more efficient and customized purchasing experiences. These findings are strongly supported by (2), who emphasized that machine learning algorithms and recommendation systems substantially improve customer engagement and purchasing effectiveness by offering personalized products and content based on behavioral data. The results are also consistent with the arguments presented by (7), who identified electronic word-of-mouth and digital interactions as major determinants of online consumer behavior. Intelligent technologies strengthen these interactions by providing consumers with more relevant information, personalized recommendations, and interactive purchasing environments that improve purchasing convenience and customer satisfaction.

The present study further revealed that environmental readiness for electronic commerce has a significant positive effect on the smartization of customer experience. This finding indicates that the existence of appropriate digital infrastructure, technological acceptance, and organizational preparedness facilitates the successful implementation of intelligent customer experience systems. Organizations operating in technologically supportive environments are more capable of integrating artificial intelligence tools into customer interactions and delivering personalized digital services. This result is aligned with the findings of (5), who emphasized the importance of environmental and technological readiness in digital platform adoption during crisis conditions. Likewise, (6) highlighted the significance of technological readiness and digital sustainability in improving organizational responsiveness and competitiveness. The findings also correspond with the integrated customer experience management model proposed by (4), which emphasized that technological integration and customer experience

management jointly contribute to superior organizational decision-making and customer value creation. Therefore, environmental readiness appears to serve as a foundational requirement for the successful implementation of intelligent customer experience systems in online retailing.

The findings additionally indicated that environmental readiness significantly influences the smart purchasing process. This result suggests that technological infrastructure and digital preparedness create favorable conditions for intelligent purchasing systems and advanced online retail operations. Retail organizations operating within digitally mature environments can implement artificial intelligence technologies more effectively and optimize purchasing procedures for customers. These findings align with the results of (1), who reported that intelligent technologies significantly improve organizational service delivery and digital marketing performance. Moreover, the findings support the perspective of (14), who emphasized that organizational authenticity and strategic adaptability are essential for maintaining competitive performance in evolving market environments. In digitally prepared environments, organizations are more capable of integrating intelligent systems into purchasing processes, improving transaction efficiency, and enhancing customer confidence in online purchasing activities.

Another major finding demonstrated that environmental constraints significantly influence the smartization of customer experience and the smart purchasing process. Although environmental constraints are generally considered obstacles, the positive relationship identified in the study suggests that organizations may respond to these limitations by adopting innovative technological solutions and improving digital customer engagement strategies. Environmental challenges may encourage organizations to invest in artificial intelligence technologies that enhance operational efficiency and customer interaction quality. This finding corresponds with the arguments of (8), who emphasized that digital targeting technologies significantly influence online interactions and customer engagement mechanisms. The findings are also consistent with (16), who highlighted the role of strategic and institutional adaptation in emerging digital environments. Furthermore, organizations facing infrastructural and competitive challenges may increasingly rely on intelligent systems to optimize operational performance and improve customer experiences despite existing limitations.

The results further indicated that the smart purchasing process has a significant positive effect on the smartization of customer experience. This finding demonstrates that intelligent purchasing systems enhance customers' perceptions of convenience, personalization, and responsiveness throughout the purchasing journey. Consumers increasingly value digital interactions that are adaptive, predictive, and personalized according to their preferences and behavioral patterns. These findings are strongly supported by (2), who argued that recommendation systems and machine learning algorithms significantly improve customer satisfaction and digital engagement through personalized interactions. Additionally, the findings correspond with the study conducted by (12), which demonstrated that sensory and experiential marketing significantly influence purchasing behavior and consumer engagement. Intelligent purchasing systems contribute to the creation of immersive and customized shopping experiences that enhance emotional engagement and strengthen customer satisfaction.

The strongest relationship identified in the study was the significant positive effect of the smartization of customer experience on the perceived value of online consumers. This finding suggests that intelligent customer experiences substantially enhance consumers' perceptions of value, satisfaction, and purchasing effectiveness. Personalized services, adaptive interfaces, and intelligent customer interactions increase customers' perceptions of convenience and relevance, thereby strengthening perceived value and purchase intentions. These findings align closely with the results of (11), who reported that perceived value significantly influences ethical purchasing behavior and

customer attitudes toward green marketing. Likewise, (13) emphasized that consumer purchasing decisions are strongly affected by perceived benefits and contextual behavioral factors. Artificial intelligence technologies improve perceived value by reducing cognitive effort, increasing purchasing accuracy, and creating personalized experiences that align with customer expectations.

The findings of the present study also reinforce the growing importance of social media, digital communication, and behavioral analytics in shaping online purchasing behavior. The increasing role of electronic word-of-mouth and social media interactions in digital retail environments has transformed consumer decision-making processes and marketing strategies. These findings correspond with the studies of (10) and (9), both of which emphasized the significant influence of social media marketing and digital communication platforms on consumer purchasing intentions and online engagement. Artificial intelligence technologies strengthen these dynamics by enabling firms to analyze audience behavior, personalize digital content, and optimize communication strategies. In addition, the results are conceptually aligned with the findings of (17) and (19), which demonstrated that digital messaging, behavioral analysis, and psychologically informed marketing strategies significantly influence consumer perceptions and decision-making processes. Intelligent systems provide organizations with unprecedented capabilities to influence consumer attitudes and optimize digital purchasing experiences through data-driven personalization and predictive analytics.

From a methodological perspective, the use of structural equation modeling and advanced quantitative analyses in the present study contributed to a more accurate understanding of the complex relationships among intelligent capabilities, environmental factors, customer experience, and purchasing behavior. This approach aligns with the analytical recommendations presented by (18), who emphasized the importance of advanced statistical methods for evaluating behavioral and organizational relationships in empirical research. Overall, the findings of the present study provide strong empirical evidence that artificial intelligence technologies play a central role in improving online purchasing behavior, enhancing customer experience, and increasing perceived value in the retail industry. The integration of intelligent technologies into digital retail systems enables organizations to strengthen competitiveness, improve customer engagement, and create sustainable value in increasingly complex and technology-driven marketplaces.

One limitation of the present study was that data collection was restricted to customers in the retail industry within a specific context, which may limit the generalizability of the findings to other industries or geographic regions. In addition, the use of self-reported questionnaires may have increased the possibility of response bias and subjective interpretation by participants. Another limitation relates to the cross-sectional design of the study, which restricted the ability to examine causal changes in customer behavior over time. Furthermore, rapid technological developments in artificial intelligence may influence customer expectations and digital purchasing behaviors continuously, meaning that some findings may evolve as intelligent technologies become more advanced and widely adopted.

Future research should investigate the role of artificial intelligence in online purchasing behavior across different industries and cultural contexts to improve the external validity of findings. Comparative studies between developed and emerging markets may provide deeper insights into how environmental readiness and technological infrastructure influence intelligent purchasing systems. Researchers are also encouraged to employ longitudinal designs to examine changes in customer behavior and perceived value over time as artificial intelligence technologies evolve. Additionally, future studies may explore the moderating effects of demographic variables,

digital literacy, and consumer trust on the relationship between intelligent technologies and online purchasing behavior. The integration of qualitative approaches may also contribute to a more comprehensive understanding of consumer perceptions and emotional responses toward artificial intelligence-based retail systems.

Retail organizations should prioritize investment in intelligent technologies, digital infrastructure, and customer analytics systems to enhance online purchasing experiences and strengthen perceived customer value. Managers should focus on developing personalized recommendation systems, adaptive interfaces, and intelligent customer interaction mechanisms that align with consumer preferences and behavioral patterns. Organizations should also improve transparency, privacy protection, and ethical data management practices to strengthen customer trust in digital environments. Enhancing employee digital competencies and organizational readiness for artificial intelligence implementation is essential for maximizing the effectiveness of intelligent retail systems. Furthermore, firms should integrate customer experience management with artificial intelligence strategies to create seamless, engaging, and value-oriented purchasing environments that improve customer satisfaction, loyalty, and long-term competitiveness in the online marketplace.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adheried in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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