

DIGITAL INTELLIGENCE-DRIVEN FACTORS INFLUENCING CUSTOMER PURCHASE INTENTION IN OMNICHANNEL NEW RETAIL: EVIDENCE FROM SHANGQIU CITY, CHINA^{*}

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Abstract

This study aims to: 1) examine the impact of AI-powered personalization quality, omnichannel integration quality, intelligent customer service responsiveness, data transparency and trust, and privacy/security guarantees on customer purchase intention in omnichannel new retail; 2) identify the strongest predictors of digital intelligence while simultaneously analyzing these factors; and 3) provide practical recommendations for retailers seeking to improve customer conversion rates through responsible digital intelligence. A quantitative cross-sectional survey was conducted on 400 consumers in Shangqiu City, China, who had used online and offline retail touchpoints in the past six months. The questionnaire used a five-point Likert scale, and the data were analyzed using descriptive statistics, reliability and validity tests, assessment of common method bias, correlation analysis, collinearity diagnosis, and multiple regression. The results show that: 1) the full regression model is statistically significant, explaining 24.9% of the variance in customer purchase intention; 2) omnichannel integration

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quality is the strongest predictor, followed by privacy/security guarantees; 3) AI-supported personalization quality and intelligent customer service responsiveness also have significant positive effects; and 4) after controlling for shared variance among predictors, data transparency and trust show positive but insignificant effects. The findings indicate that smart retail technologies, supported by seamless channel integration, reliable service execution, and visible data protection, are most effective at stimulating purchase intent. This research provides empirical evidence from the developing retail environment of Chinese cities and elucidates the relative importance of digital capabilities for value creation and risk mitigation in omnichannel new retail.

Keywords: Digital intelligence, omnichannel new retail, customer purchase intent, AI-powered personalization, privacy and security protection

Introduction

Omnichannel retail has reshaped how consumers search for products, compare different options, complete transactions, receive goods, and obtain after-sales service. Today's retail competition no longer views physical stores, mobile apps, e-commerce platforms, social e-commerce, membership systems, payment tools, and logistics as separate channels, but increasingly relies on how to harmonize and integrate these touchpoints into a continuous customer journey(Tueanrat et al., 2021)conceptualized omnichannel retail as a broader trend that transcends traditional multichannel retail, as customers switch between channels during the same decision-making process.(Huang & Rust, 2021)further emphasize that omnichannel management requires integrating technology, operations, customer experience, and supply chain capabilities, rather than simply adding digital channels. Digital intelligence is a core mechanism of this transformation. Retailers leverage customer data, AI-based analytics, algorithmic recommendations, intelligent customer service, and data

governance systems to enhance personalization, responsiveness, information consistency, and perceived security. These capabilities can increase purchase intention by reducing search costs and making service interactions more relevant. However, digital intelligence can also lead to hesitation when recommendations are intrusive, channel information is inconsistent, service systems fail to address issues, or customers are uncertain about how their data is collected and protected. Therefore, the impact of digital intelligence on purchase intention should be assessed as a series of interacting value-creating and risk-reducing capabilities (Ngo et al., 2025).

Shangqiu City provides a meaningful empirical case study for exploring this issue. As an emerging urban retail market in China, Shangqiu consumers increasingly combine in-store shopping with mobile browsing, online ordering, digital payments, home delivery, self-pickup, and after-sales communication. However, the level of omnichannel implementation may vary among retailers, and customer trust in digital service systems is not always stable. For retailers in these cities, understanding which digital intelligence drivers are most predictive of customer purchase intention is crucial to allocating resources to the most impactful capabilities.

This study addresses the research question that technology alone cannot guarantee higher purchase intentions. Existing omnichannel literature has established the importance of channel integration, and technology acceptance literature explains how usability and ease of use influence technology-related behavior (Khan, 2024). However, more empirical evidence is needed to compare the simultaneous impact of personalization, integration, intelligent service responsiveness, transparency, trust and privacy, and security guarantees in the Chinese mid-sized retail market. Therefore, this study tests a comprehensive model of five digital intelligence drivers influencing customer purchase intentions in omnichannel new retail (Juaneda-Ayensa et al., 2016).

Objectives

1. Explore the impact of five digital intelligence drivers on customer purchase intention in omnichannel new retail in Shangqiu City, China.
2. Analyze the strongest predictors of customer purchase intention based on AI-enabled personalization quality, omnichannel integration quality, intelligent customer service response speed, data transparency and trust, and privacy and security.
3. Based on empirical results, propose practical recommendations for omnichannel retailers.

Literature Review

Customer Purchase Intention in Omnichannel New Retail

Customer purchase intention refers to a consumer's motivation and willingness to purchase goods from a retailer soon. In the omnichannel new retail model, this intention is influenced not only by product attractiveness but also by the consistency, convenience, reliability, and security of the entire shopping experience. Since consumers typically switch between online and offline touchpoints before deciding whether to buy, issues such as inconsistent product information, delayed service response, unclear return processes, or uncertain data protection can all undermine consumer confidence and reduce their purchase intention. Channel integration research indicates that customers perceive retailers as an interconnected system, rather than isolated sales channels (Du et al., 2025).

AI-Powered Personalization Quality

AI-enabled personalization quality refers to customers' perception of algorithmic recommendations, promotional information, and service content—that is, whether they are relevant, useful, timely, and appropriate to the customer's shopping context. Technology acceptance theory suggests that

consumers are more likely to respond positively to technologies that enhance usability and reduce decision-making difficulty(Ashrafuzzaman et al., 2025). Personalized advertising research also indicates that personalization can improve marketing effectiveness, but its effectiveness depends on timing, relevance, and perceived intrusion(Yeo et al., 2025). In omnichannel retail, personalization can promote purchase intention if it helps customers find suitable products; however, its effectiveness is greatly reduced if recommendations appear too intrusive or are out of touch with actual inventory and service. Therefore, this paper proposes Hypothesis H1: AI-enabled personalization quality has a positive impact on customers' purchase intention.

Omnichannel Integration Quality

Omnichannel integration quality refers to the consistency and coordination perceived by consumers across online and offline channels in terms of product information, pricing, promotions, inventory visibility, membership benefits, order fulfillment, returns, and customer service. It is the core difference between true omnichannel retailing and ordinary multichannel operations. When integration quality is high, consumers can search on one channel, purchase on another, and receive support at all touchpoints without having to repeat themselves or face conflicting information. Previous research has linked channel integration quality to customer engagement, loyalty, and trust in retailers (Liu et al., 2024). Therefore, this paper proposes Hypothesis H2: Omnichannel integration quality has a positive impact on customer purchase intention.

Intelligent Customer Service Response Capabilities

Intelligent customer service responsiveness refers to the speed, accuracy, continuity, and problem-solving capabilities of AI-assisted or digitally supported customer service. Chatbots, intelligent search, automated routing, and AI-supported human customer service can reduce uncertainty in product comparison, checkout, logistics tracking, returns, and complaint processes. Recent research on chatbots for online stores indicates that factors such as

usability, ease of use, responsiveness, and trustworthiness are crucial to brand preference and purchase intention (Puertas et al., 2024). In the omnichannel new retail model, responsiveness is particularly important because service inquiries may begin online but require offline completion or begin in a physical store but continue through mobile platforms. Hypothesis H3 is proposed: Intelligent customer service responsiveness has a positive impact on customer purchase intention.

Data Transparency, Trust, and Privacy Security

Data transparency and trust refer to consumers' perceptions that retail information is clear, traceable, and credible. Privacy/security refers to consumers' confidence that their personal data, identity information, payment records, and behavioral data are protected and used responsibly. The privacy trade-off theory explains that consumers weigh the benefits of digital convenience and personalization against privacy and security risks when deciding whether to disclose data or complete a transaction. In omnichannel retail, this assessment becomes more complex due to the sharing of customer data among membership systems, mobile applications, payment tools, logistics partners, and physical stores (Puertas et al., 2024). Therefore, this paper proposes Hypothesis H4: Data transparency and trust have a positive impact on customer purchase intention. Simultaneously, this paper also proposes Hypothesis H5: Privacy and security have a positive impact on customer purchase intention.

Research Model

This conceptual model uses customer purchase intention as the dependent variable and five digital intelligence drivers as predictor variables. The model assumes that personalization, integration, responsiveness, transparency, trust, and privacy security all function simultaneously. This test of simultaneity is crucial because while some predictor variables may be significant individually,

their impact diminishes after controlling for common differences among digital retail capabilities.

Methodology

This study employed a quantitative approach. This design was well-suited for measuring consumers' current perceptions of digitally driven retail capabilities and examining the predictive power of these perceptions on consumer purchase intentions at a given point in time. The target population consisted of consumers in Shangqiu City, China, who had recently experienced omnichannel new retail, including at least one online retail channel and one offline retail touchpoint. Respondents were required to be at least 18 years old, have used omnichannel retail services within the past six months, and be able to rate characteristics such as personalization, channel integration, intelligent customer service, transparency/trust, and privacy/security. A total of 400 valid questionnaires were retained for analysis. This sample size exceeds the typical requirement for multiple regression analysis including five main predictor variables and provides sufficient stability for reliability and validity assessments (Izah et al., 2023). The questionnaire used a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). This study measured six constructs: AI-enabled personalization quality (AIP), Omnichannel integration quality (OIQ), Smart customer service response speed (SCR), Data transparency and trust (DTT), Privacy/security assurance (PSA), and customer purchase intention (CPI). Construct scores were calculated by averaging all items under each construct. Scale assessments followed general criteria for internal consistency, convergent validity, discriminant validity, and regression suitability (Usakli & Rasoolimanesh, 2023).

Data analysis included respondent profile analysis, descriptive statistics, Cronbach's alpha coefficient, combined reliability, mean variance extracted (AVE), HTMT discriminant validity, Harman univariate test, Pearson correlation analysis,

variance inflation factor (VIF) diagnostics, hierarchical regression, and hypothesis testing. A reliability coefficient greater than 0.70, an AVE greater than 0.50, and a VIF value lower than the commonly used threshold are interpreted as indicating acceptable measurement quality and the absence of evidence of serious multicollinearity.

Results

The respondent profile showed a balanced and relevant consumer sample. Female respondents accounted for 53.0%, and male respondents accounted for 47.0%. The largest age group was 25-34 years old (33.0%), followed by 18-24 years old (27.3%). All respondents had recent omnichannel retail experience and were therefore suitable for evaluating the study constructs.

Table 1. Descriptive statistics, reliability, and convergent validity.

Construct	Mean	SD	Cronbach's α	CR	AVE
AIP	3.035	0.736	0.818	0.880	0.647
OIQ	2.983	0.680	0.785	0.862	0.609
SCR	3.000	0.692	0.801	0.870	0.627
DTT	2.946	0.671	0.794	0.866	0.618
PSA	2.962	0.706	0.820	0.882	0.651
CPI	3.008	0.831	0.864	0.908	0.711

As shown in Table 1, all constructs demonstrated acceptable internal consistency and convergent validity. Cronbach's alpha ranged from .785 to .864, composite reliability ranged from .862 to .908, and AVE ranged from .609 to .711.

These values indicate that the measurement scales were suitable for subsequent regression analysis. Harman’s single-factor test showed that the first unrotated factor explained 26.55% of variance, below the 50% rule-of-thumb threshold, suggesting that common method bias was not a dominant concern.

Table 2. Collinearity diagnostics and zero-order correlations.

Predictor	VIF	Tolerance	Correlation with CPI
AIP	1.272	0.786	.287
OIQ	1.309	0.764	.373
SCR	1.208	0.828	.258
DTT	1.232	0.812	.240
PSA	1.197	0.835	.304

Table 2 shows that all VIF values were below 1.31, indicating that multicollinearity was not problematic. All five predictors were positively correlated with CPI, with OIQ showing the highest zero-order correlation ($r = .373$), followed by PSA ($r = .304$) and AIP ($r = .287$).

Table 3. Regression model summary.

Model	R	R ²	Adjusted R ²	F	p
Controls only	.218	.047	.005	1.120	.331
Full model	.499	.249	.205	5.667	< .001
ΔR^2	-	.201	-	20.168	< .001

Table 4. Hypothesis testing results.

Hypothesis	Relationship	β	t	p	Decision
H1	AIP -> CPI	.114	2.226	.027	Supported
H2	OIQ -> CPI	.214	4.106	< .001	Supported
H3	SCR -> CPI	.110	2.214	.027	Supported
H4	DTT -> CPI	.077	1.531	.127	Not supported
H5	PSA -> CPI	.158	3.166	.002	Supported

The full model was statistically significant and explained 24.9% of the variance in customer purchase intention. OIQ was the strongest predictor ($\beta = .214$, $p < .001$), followed by PSA ($\beta = .158$, $p = .002$). AIP ($\beta = .114$, $p = .027$) and SCR ($\beta = .110$, $p = .027$) also had significant positive effects. DTT was positive but not statistically significant ($\beta = .077$, $p = .127$).

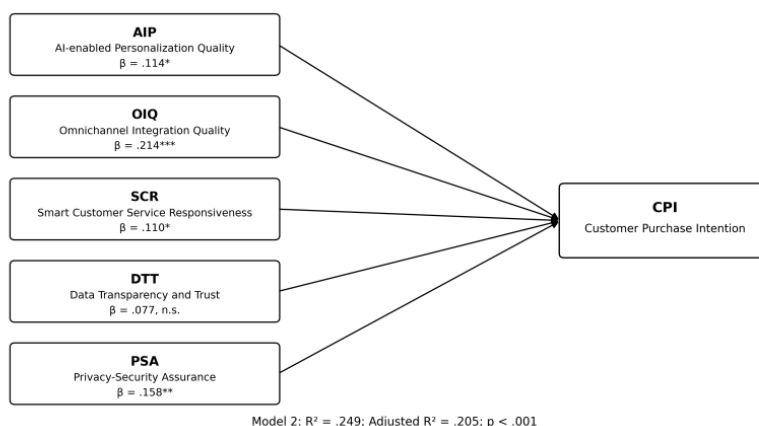


Figure 1. Empirical model of digital intelligence-driven factors and customer purchase intention

Discussion

The findings indicate that omnichannel integration quality is the most important digital intelligence-driven predictor of customer purchase intention. This result is theoretically consistent with the view that omnichannel value creation stems from the channel operating as a coordinated system rather than as isolated touchpoints (Cai & Lo, 2020; Verhoef et al., 2015). For consumers in Shangqiu, consistent product information, coordinated order fulfillment, stable membership benefits, and reliable return processes appear to be more important than isolated smart features. This finding also supports the view that channel integration quality can enhance customer engagement and confidence in the retail system (Gao & Huang, 2021; Lee et al., 2019).

Privacy and security are the second largest predictor. This finding suggests that customers are more willing to purchase when they believe their payment information, identity data, browsing history, and membership data are protected. This result aligns with the privacy trade-off theory, which posits that consumers weigh the benefits of digital technology against privacy and security risks (Dinev & Hart, 2006; Zhu et al., 2017). In omnichannel retail, privacy and security are not only compliance requirements but also important factors in driving conversions, as customers often need to share data across apps, payment systems, logistics services, and brick-and-mortar stores. AI-powered personalization quality and intelligent customer service response speed can significantly predict purchase intention, but their impact is less than that of integration and assurance. This model suggests that intelligent technologies can create value by reducing decision-making complexity and providing timely support, but their contribution is limited if the retail system is fragmented or perceived as insecure. Personalization can improve relevance, but it must be supported by accurate inventory, transparent promotional rules, and reliable service execution. Similarly, intelligent services must go beyond response speed and provide

accurate, consistent, and human-assisted problem-solving services when necessary.

Data transparency and trust are positively correlated with purchase intention, but this did not reach statistical significance in the full model. This result should not be interpreted as transparency being unimportant. Rather, transparency may overlap with privacy/security and channel integration, as customers typically experience transparency through concrete signals such as secure payments, consistent information, clear return processes, and controlled authorization options. In this sample, transparency itself may be considered a basic expectation rather than a differentiated purchase driver.

A new finding of this study is the ranking of digital intelligence drivers in China's emerging omnichannel retail environment. Empirical models show that operational integration and visible assurance are fundamental conditions, while personalization and intelligent services provide added value. This finding offers a more balanced interpretation of digital intelligence: the evaluation of retail technology should not be based solely on its degree of automation but should focus on its effectiveness in enhancing customer confidence, service continuity, and purchase intention.

Recommendation

Omnichannel retailers should prioritize channel integration before expanding advanced AI capabilities. Product information, pricing, promotions, membership benefits, inventory status, shipping options, pickup arrangements, return policies, and customer service records should be synchronized across all online and offline touchpoints. Retailers should consider data integration, inventory visibility, fulfillment coordination, and cross-channel service recovery as core competencies, not back-end technical issues.

Privacy and security should be integrated throughout the entire customer journey. Retailers should provide clear and concise privacy statements, clear authorization management, secure payment signals, transparent account protection options, and employee or chatbot scripts that explain data protection measures in plain language. These safeguards should not be hidden in legal documents but integrated into interface design, service conversations, and transaction confirmation processes.

Personalization should be responsible, relevant, and controllable. AI recommendations should help customers compare products and reduce decision-making complexity, while avoiding over-targeting, unexplained personalized pricing, or repeating irrelevant suggestions to prevent discomfort. Retailers should allow customers to adjust recommendation preferences and should monitor whether personalized information improves customer satisfaction, not just increases exposure.

Evaluation criteria for intelligent customer service should include problem-solving quality and response speed. Chatbots and automated systems should accurately answer routine questions, identify complex cases, smoothly transfer customers to human agents, and maintain service records across different platforms such as apps, stores, and hotlines. This avoids customers repeatedly explaining the same issues and enhances customer trust in retailers.

Future research should examine mediating variables such as perceived value, satisfaction, perceived risk, and trust; compare Shangqiu with other major Chinese cities; and use longitudinal or behavioral purchase data to examine whether customer purchase intentions translate into actual purchases over time.

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