FACTORS AFFECTING CONSUMER PURCHASE INTENTION IN AI-DRIVEN LIVE-STREAMING COMMERCE: A MULTIPLE REGRESSION ANALYSIS OF DIGITAL CONSUMERS IN SHANGQIU CITY, HENAN PROVINCE*

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Abstract

This research article aims to: 1) examine the descriptive levels of AI streamer attributes (Anthropomorphism, Perceived Interactivity, Consumer Trust, and Information Quality) and consumer Purchase Intention in AI-driven live-streaming commerce in Shangqiu City; 2) compare differences in Purchase Intention across demographic groups; and 3) identify which factor exerts the greatest predictive influence on Purchase Intention. It is a quantitative, cross-sectional study collecting data from 385 valid respondents who are active users of live-streaming platforms (Douyin, Taobao Live, and Kuaishou) in Shangqiu City, analyzed using Multiple Regression Analysis (MRA), supported by t-test, One-Way ANOVA, and Pearson Correlation.

The research results found that: 1) The integrated four-factor model explained 61.2% of the variance in Purchase Intention (R^2 = .612, $F(4,380)$ = 149.851, $p < .001$), and all four hypotheses were supported. 2) Purchase Intention

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differed significantly by age group (F = 3.245, p = .022), with consumers aged 18–25 (the “Digital Natives”) reporting the highest intention, while no significant differences were found by gender or platform preference. 3) Perceived Interactivity was the strongest predictor (β = .345), followed by Anthropomorphism (β = .282), Consumer Trust (β = .214), and Information Quality (β = .176), indicating that agentic commerce success depends on a strategic synergy of “approachable realism” and synchronous responsiveness, prioritizing low-latency dialogue over pure visual fidelity.

Keywords: AI-Driven Live-Streaming, Social Presence Theory, Purchase Intention, Anthropomorphism, Perceived Interactivity

Introduction

The global retail landscape has entered an era defined by “Agentic Commerce,” in which autonomous AI agents optimize the shopping journey for both consumers and merchants (McKinsey & Company, 2025). Globally, AI has shifted from backend logistics to frontend “digital humans,” with forecasts projecting AI-driven retail sales reaching $5 trillion by 2030 (Lengow, 2025). China remains the epicenter of this transformation: as of 2026, China has remained the world’s largest online retail market for 13 consecutive years, with digital consumption exceeding 23.8 trillion yuan (SCIO, 2026). Chinese platforms such as Douyin and Taobao have pioneered AI-driven virtual streamers with photorealistic avatars powered by large language models (LLMs) and computer vision, providing 24/7 product demonstrations that address the high labor turnover of human influencers (Li et al., 2024).

Henan Province represents a critical node in China’s “Digital Village” initiative and “Rural Revitalization” strategy. The digital economy in Henan has significantly improved regional resource allocation efficiency, with live-streaming e-commerce transactions surpassing 680 billion yuan in 2023, a 34.7% year-on-

year growth driven by broadband access to 98% of rural townships (MOFCOM, 2024). At the city level, Shangqiu formally designated a "National E-commerce Demonstration City" and a national logistics hub, recording total e-commerce transactions exceeding 85 billion yuan in 2023, with AI-assisted live-streaming transactions rising from 11% in 2021 to 39% in 2023 (iResearch, 2024; Shangqiu Municipal Bureau of Commerce, 2024). This rapid penetration in a lower-tier market makes Shangqiu an empirically significant research site.

Despite the rapid deployment of AI streamers in Shangqiu, a critical research gap persists: the psychological and functional drivers of consumer purchase intention in Tier-3 regional markets remain under-researched. A key theoretical tension is the "Uncanny Valley" (Mori et al., 2012) as AI approaches human likeness while remaining imperfect; consumer responses may shift from empathy to revulsion rather than trust. Furthermore, the extent to which perceived interactivity influences purchase intention has not been empirically quantified in the Shangqiu market. Without data-driven insights, local SMEs may misallocate resources into AI tools that fail to build the Consumer Trust necessary for long-term loyalty. This study employs Multiple Regression Analysis (MRA) to identify which factors best predict purchase intention, addressing three research questions: (1) What are the descriptive levels of AI streamer attributes and Purchase Intention in Shangqiu? (2) Do significant differences in Purchase Intention exist across demographic groups? (3) Which variable demonstrates the greatest predictive influence on Purchase Intention?

Objectives

1. To examine the descriptive levels of AI streamer attributes (Anthropomorphism, Perceived Interactivity, Consumer Trust, and Information Quality) and consumer Purchase Intention in AI-driven live-streaming commerce in Shangqiu City.

2. To compare differences in consumer Purchase Intention across demographic groups (gender, age group, and platform preference).

3. To analyze which factor exerts the greatest predictive influence on consumer Purchase Intention in AI-driven live-streaming commerce in Shangqiu City.

Literature Review

1. Social Presence Theory (SPT) and Anthropomorphism

Social Presence Theory, originally developed by Short, Williams, and Christie (1976), defines social presence as the psychological phenomenon in which other persons or AI entities are perceived as physical, "real" persons in technology-mediated communication. Kreijns et al. (2022) reformulated SPT using a triangular framework to resolve the "jingle-fallacy" in which conceptually distinct constructs were erroneously collapsed: Sociability (the platform's technical capacity to enable social presence), Social Presence (the consumer's subjective perceptual illusion of "being there" with a real entity), and Social Space (the network of interpersonal and emotional connections characterized by trust and community cohesion). This framework establishes that Anthropomorphism functions as a sociability attribute that elicits social presence. Wang et al. (2023) further identified Cognitive Social Presence (the perception of AI as an intelligent, competent actor) and Affective Social Presence (emotional warmth toward the virtual human) as critical sub-dimensions, with Consumer Trust as a vital mediator between these dimensions and Purchase Intention.

Anthropomorphism, the attribution of human-like characteristics, motivations, and emotions to non-human agents, is constrained by the Uncanny Valley theory (Mori, 1970; Mori et al., 2012). As an AI entity approaches "almost human" appearance while remaining imperfect, consumer responses shift abruptly from empathy to uncanniness through perceptual mismatches,

expectation violations, and pathogen-avoidance mechanisms. Zhu et al. (2023) demonstrated, in a scenario-based experiment with 350 participants, that moderate anthropomorphism, "approachable realism," positively predicted consumer-AI intimacy and purchase behavior. In contrast, extreme realism without perfect synchrony triggered trust collapse. Li and Zhang (2024) confirmed that behavioral anthropomorphism (natural speech cadence, emotional reactivity) has a significantly stronger impact on trust than visual realism alone in Tier-3 Chinese cities, suggesting that the psychological foundation of purchase intention in Shangqiu is built through interaction rather than appearance. The regional cultural dimension is further amplified by Guanxi (social networks) and Renqing (social favor) norms prevalent in Henan Province: when an AI streamer utilizes local dialects or cultural references, it reduces psychological distance (Trope & Liberman, 2010) and transforms the AI from an automated vending tool into a trusted digital assistant (Zhang & Yuan, 2023).

2. Technology Acceptance Model (TAM) and Perceived Interactivity

Davis's (1989) Technology Acceptance Model posits that adoption is driven by Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), with Behavioral Intention as the immediate predictor of actual use. Extensions into TAM2 and TAM3 incorporate social influence, cognitive-instrumental processes, and technology gratification, the satisfaction derived from convenience and innovative platform features. Applied to AI live-streaming in Shangqiu, TAM establishes the functional side of purchase intention: Perceived Usefulness is high when AI provides 24/7 accurate product and logistics data, while Perceived Ease of Use increases with naturalistic anthropomorphism. Natasia et al. (2022) demonstrated that facilitating conditions (technical and organizational support) significantly enhance perceived usefulness, and that positive user attitudes serve as the critical bridge to adoption in emerging digital environments.

Perceived Interactivity is defined as a psychological state experienced by the user, comprising three dimensions per Liu and Shrum (2002): Active Control

(user ability to influence content), Two-Way Communication (reciprocal information flow), and Synchronicity (perception of real-time response). Steuer (1992) identified interactivity alongside vividness as the two main pillars creating telepresence in virtual environments. Zhao et al. (2025) empirically demonstrated using SEM on 550 Douyin and Taobao Live users that Synchronicity and Active Control were the strongest predictors of flow state (β = 0.42, $p < 0.001$), with flow state driving a 35% increase in purchase intention through "instant gratification" mechanisms. Lee and Chen (2024) found that AI's real-time responsiveness to user chat was a stronger driver of sales conversion than video production quality among 500 Asian live-stream viewers, establishing that, in Tier-3 markets, prioritizing functional responsiveness, Perceived Interactivity is the primary commercial conversion mechanism.

3. Trust-Commitment Theory and Consumer Trust

Morgan and Hunt's (1994) Trust-Commitment Theory, the Commitment-Trust Theory of Relationship Marketing, posits that Trust and Relationship Commitment are the "Key Mediating Variables" (KMV) determining cooperative behavior and commercial success. Trust is built on three perceived characteristics of the trustee from Mayer et al.'s (1995) ABI Model: Ability (competencies enabling domain influence), Benevolence (perceived positive intent toward the consumer), and Integrity (adherence to acceptable principles). The KMV model identifies five antecedents: Shared Values (which directly influence both trust and commitment), Communication, Opportunistic Behavior (negatively correlated with trust), Relationship Benefits, and Relationship Termination Costs. In the digital era, Wang et al. (2020) confirmed that privacy risk, privacy control, and collaborative norms are significant determinants of digital trust, with both relationship commitment and trust positively mediating brand value co-creation. Yeboah et al. (2023) demonstrated that privacy concerns statistically predict online engagement in emerging economies, while He et al. (2022) established

consumer trust as the dominant mediator between AI attributes and purchase intention in lower-tier cities of Central China, directly attributable to Guanxi-based social norms in which relational commitment historically precedes financial transactions.

4. Research Hypotheses

Drawing from the multi-theoretical framework, four hypotheses are proposed:

H1: Anthropomorphism has a significant positive effect on Consumer Purchase Intention in AI-driven live-streaming commerce in Shangqiu City.

H2: Perceived Interactivity has a significant positive effect on Consumer Purchase Intention in AI-driven live-streaming commerce in Shangqiu City.

H3: Consumer Trust has a significant positive effect on Consumer Purchase Intention in AI-driven live-streaming commerce in Shangqiu City.

H4: Information Quality has a significant positive effect on Consumer Purchase Intention in AI-driven live-streaming commerce in Shangqiu City.

Methodology

1. Research Design

This study employs a quantitative, explanatory, cross-sectional research design. Primary data were collected via a structured online questionnaire to enable objective measurement and statistical hypothesis testing. Multiple Regression Analysis (MRA) was selected as the primary statistical technique for its robustness in evaluating how a set of independent variables explains variance in a dependent variable and identifying the relative importance of each predictor. The cross-sectional design captures a snapshot of consumer behavior during the peak of China's AI live-streaming boom in Shangqiu, during its digital transition period.

2. Population, Sample, and Sampling Technique

The target population comprises active users of live-streaming platforms (Douyin, Taobao Live, Kuaishou) residing in Shangqiu City who have experienced AI-mediated shopping within the past six months. Shangqiu had a population of approximately 7 million residents, with total e-commerce transactions exceeding 85 billion yuan in 2023 and AI-assisted live-streaming penetration reaching 39% (iResearch, 2024). Sample size was determined using G*Power with parameters of medium effect size ($f^2 = 0.15$), $\alpha = 0.05$, power = 0.95, and four predictors, requiring a minimum of approximately 85 respondents. A target of 400+ respondents was set to ensure representativeness across geographic strata. Geographic stratified random sampling was applied across four administrative sub-areas of Shangqiu: Urban Core (Liangyuan and Suiyang Districts), Yongcheng City, peri-urban counties, and peripheral townships, with distribution through stratum-specific digital channels (WeChat groups, Taobao Live communities, Kuaishou and Douyin groups). A total of 420 responses were collected; after screening for incomplete responses, "straight-lined" answers, and non-residents, 385 valid datasets were retained.

3. Research Instruments and Data Analysis

A structured questionnaire with 25 items across five sections was employed, all measured on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Anthropomorphism (5 items) measured visual realism, emotional empathy, social cues, movement fluidity, and voice naturalness, grounded in SPT Para-social Presence. Perceived Interactivity (5 items) assessed active control, two-way communication, real-time response, synchronicity, and context-aware answers, based on Liu and Shrum (2002). Consumer Trust (5 items) measured ability, benevolence, integrity, privacy, security, and reliability per the ABI Model. Information Quality (5 items) evaluated accuracy, relevance, completeness, logistics clarity, and professional knowledge per Cognitive Social Presence.

Purchase Intention (5 items) captured willingness to buy, purchase probability, recommendation likelihood, and future usage intention across three dimensions: Willingness to Buy, Purchase Probability, and Willingness to Recommend (Lu et al., 2022). Content validity was established via expert review (IOC ≥ 0.50); reliability was confirmed by a pilot study with Cronbach's Alpha > 0.70 for all constructs. Analysis used SPSS for descriptive statistics, Independent-Samples t-tests, One-Way ANOVA with Tukey HSD post hoc tests, Pearson Correlation, assumption testing (multicollinearity via VIF, autocorrelation via Durbin-Watson, normality via Shapiro-Wilk), and Multiple Regression Analysis.

Results

1. Demographic Profile and Descriptive Analysis

The 385 valid respondents were predominantly female (55.3%), aged 26–35 (38.4%), holding a Bachelor's degree (63.6%), and preferring Douyin as their primary platform (51.4%). This profile reflects the core digital consumer demographic in Shangqiu's lower-tier market, with sufficient digital literacy to evaluate AI streamer constructs.

Table 1 presents descriptive statistics for all study variables. Information Quality achieved the highest mean ($\bar{x}$ = 3.78), confirming that AI streamers in Shangqiu effectively address the value-for-money mindset through accurate and relevant product data. Perceived Interactivity followed closely ($\bar{x}$ = 3.77), with Synchronicity (real-time response) recording the highest sub-score ($\bar{x}$ = 3.84, C.V. = 19.5%) the lowest dispersion across all items, reflecting a strong consensus that AI streamers provide immediate, context-aware responses. Anthropomorphism and Consumer Trust both averaged $\bar{x}$ = 3.55, placing them solidly in the High range while revealing internal gaps: emotional empathy scored Moderate ($\bar{x}$ = 3.42, C.V. = 26.9%) in Anthropomorphism consistent with the Uncanny Valley hypothesis, while Benevolence scored Moderate ($\bar{x}$ = 3.45, C.V. = 27.2%) in

Consumer Trust, indicating lingering consumer concerns about AI profit motives. Purchase Intention averaged $\bar{X}$ = 3.72 at a High level, confirming a regional "Digital Leapfrog" readiness for AI-mediated commerce.

Table 1 Descriptive Statistics for All Study Variables (N = 385)

Variable	**Mean ($\bar{X}$)**	**S.D.**	**Interpretation**
Anthropomorphism (X1)	3.55	0.88	High
Perceived Interactivity (X2)	3.77	0.78	High
Consumer Trust (X3)	3.55	0.90	High
Information Quality (X4)	3.78	0.78	High
Purchase Intention (Y)	3.72	0.82	High

Note. Five-interval scale: 4.51–5.00 = Highest; 3.51–4.50 = High; 2.51–3.50 = Moderate. Author's Compilation.

2. Comparative Analysis of Purchase Intention

An Independent-Samples t-test by Gender found no statistically significant difference (t = −1.584, p = 0.114; Male. $\bar{X}$ = 3.65 vs. Female $\bar{X}$ = 3.78), indicating that AI-driven marketing consistently influences purchase intention across genders in Shangqiu's lower-tier market.

One-Way ANOVA by Age Group revealed a statistically significant difference (F = 3.245, p = 0.022), with a clear downward trend as age increases: 18–25 years ($\bar{X}$ = 3.82), 26–35 years ($\bar{X}$ = 3.75), 36–45 years ($\bar{X}$ = 3.61), and 46+ years ($\bar{X}$ = 3.52). Tukey HSD post hoc analysis identified the only significant pairwise difference between the 18–25 and 46+ groups (mean difference = 0.30, p = 0.043), reflecting a "psychological readiness" divide: younger Digital Natives exhibit higher technology gratification and lower Uncanny Valley discomfort. At the same time, older consumers may prioritize traditional Guanxi-based human-to-human commerce. One-Way ANOVA by Platform Preference was non-

significant (F = 2.114, p = 0.122), with Douyin users reporting the highest purchase intention ($\bar{x}$ = 3.81) but no statistically significant platform differences, confirming that AI streamer effectiveness is a cross-platform phenomenon driven by the technology's inherent sociability rather than platform-specific attributes.

3. Correlation Analysis and Assumption Testing

Pearson Correlation Analysis confirmed statistically significant positive associations between all four independent variables and Purchase Intention (all $p < 0.01$). Perceived Interactivity demonstrated the strongest bivariate correlation ($r = .615$), followed by Anthropomorphism ($r = .582$), Consumer Trust ($r = .548$), and Information Quality ($r = .521$). No intercorrelations among predictors exceeded $r = .524$ (Anthropomorphism–Perceived Interactivity), confirming variable distinctiveness. VIF values ranged from 1.466 to 1.701 (all < 5.0) and Tolerance values ranged from 0.588 to 0.682 (all > 0.2), confirming the absence of multicollinearity. The Durbin-Watson statistic (1.912) confirmed error independence; the Shapiro-Wilk test ($W = .986$, $p = .142$) confirmed normality of residuals.

4. Multiple Regression Analysis

The integrated model yielded $R = .782$, $R^2 = .612$, with ANOVA confirming overall model significance ($F(4,380) = 149.851$, $p < .001$). The four AI streamer attributes collectively explained 61.2% of the variance in Consumer Purchase Intention, with all four hypotheses supported (Table 2). The standardized regression equation is: ZY = 0.345ZX2 (Perceived Interactivity) + 0.282ZX1 (Anthropomorphism) + 0.214ZX3 (Consumer Trust) + 0.176ZX4 (Information Quality), confirming that the agentic commerce experience in Shangqiu is optimized when psychological experience, social, and interactive take precedence over mere technological utility.

Table 2 Multiple Regression Coefficients: Predictors of Purchase Intention (N = 385)

Predictor	B	SE	β	t	p	Hypothesis
(Constant)	0.612	0.142		4.310	< .001	
X1: Anthropomorphism	0.245	0.038	.282	6.447	.001**	H1: Supported
X2: Perceived Interactivity	0.312	0.041	.345	7.610	< .001***	H2: Supported
X3: Consumer Trust	0.184	0.039	.214	4.718	< .001***	H3: Supported
X4: Information Quality	0.152	0.042	.176	3.619	< .001***	H4: Supported

*Note. R = .782; R^2 = .612; Adjusted R^2 = .608; F(4,380) = 149.851, p < .001; ** p < .01; *** p < .001. Author's Compilation.*

Discussion

1. Perceived Interactivity as the Dominant Purchase Driver (H2)

Perceived Interactivity's emergence as the strongest predictor (β = .345) aligns precisely with Zhao et al.'s (2025) finding that Synchronicity and Active Control trigger a "Flow State" in which consumers lose track of time, experience instant gratification, and demonstrate a 35% increase in purchase intention on Douyin and Taobao Live. Lee and Chen's (2024) reinforcing conclusion that real-time responsiveness to user chat is a stronger sales driver than high-definition video quality is directly reflected in the descriptive data: Synchronicity ($\bar{x}$ = 3.84, C.V. = 19.5%) achieved the highest sub-score with the lowest variance of any item across all four constructs, confirming universal consensus that AI streamers in Shangqiu provide the immediate, context-aware dialogue that converts passive viewers into active buyers. From a TAM perspective, this validates Steuer's (1992)

proposition that interactivity alongside vividness creates telepresence. This functional bridge transforms the digital broadcast from an automated presentation into an interactive social commerce experience. In the logistics-centric economy of Shangqiu, where consumers prioritize value-for-money and precise product information, the AI's ability to respond immediately to queries about shipping timelines, pricing, and product specifications is the decisive commercial mechanism.

2. Anthropomorphism and the Approachable Realism Threshold (H1)

Anthropomorphism's second-ranked predictive power (β = .282) validates SPT's Para-social Presence mechanism and simultaneously confirms the operational relevance of the Uncanny Valley in the Shangqiu market. The Moderate rating for emotional empathy ($\bar{x}$ = 3.42) with the highest variation (C.V. = 26.9%) represents the empirical manifestation of the Uncanny Valley threshold. When AI streamers simulate complex emotional responses without perfect synchrony, consumer reactions diverge sharply, producing the high dispersion characteristic of the "valley" effect. This finding aligns with Zhu et al.'s (2023) nonlinear anthropomorphism-trust relationship and Li and Zhang's (2024) identification that behavioral anthropomorphism, natural speech cadence, and emotional reactivity drive trust more powerfully than visual realism in Tier-3 cities. The implication is strategic: current AI streamers in Shangqiu have achieved "approachable realism" that triggers Para-social Presence without systematic Uncanny Valley rejection. The regional Guanxi culture amplifies this effect: when AI streamers approximate familiar human communication patterns, they reduce psychological distance (Trope & Liberman, 2010) and activate the social reciprocity norms that underpin Henan's commerce culture (Zhang & Yuan, 2023).

3. Consumer Trust as the Psychological Gatekeeper (H3)

Consumer Trust's significant predictive contribution (β = .214) validates Morgan and Hunt's (1994) KMV Model in the AI context: trust remains the essential psychological gatekeeper mediating the transition from technological fascination to financial commitment. The Benevolence gap is the sole Moderate-rated item ($\bar{x}$ = 3.45, C.V. = 27.2%) is theoretically revealing. Per Mayer et al.'s (1995) ABI Model, consumers recognize the Ability ($\bar{x}$ = 3.68) and Integrity ($\bar{x}$ = 3.52) of AI streamers but harbor persistent doubts about Benevolence, whether the AI acts in their best interest rather than in pursuit of platform profit. This finding mirrors Wang et al.'s (2020) identification that privacy risk and the perception of opportunistic information asymmetry are primary trust-eroding factors in digital social commerce. In the Henan regional context, where He et al. (2022) established trust as the dominant mediator between AI attributes and purchase intention in lower-tier Chinese cities, this Benevolence gap represents the most critical consumer psychology challenge for AI commerce development: functional competence is acknowledged, but genuine benevolent intent toward the consumer characteristic of Guanxi relationships has not yet been convincingly attributed to non-human agents.

4. Information Quality as Cognitive Scaffolding (H4)

Information Quality's significant but smallest beta coefficient (β = .176) reflects its role as necessary cognitive scaffolding rather than an emotional or interactive driver. The highest sub-score for relevance ($\bar{x}$ = 3.82, C.V. = 19.4%) confirms that AI streamers effectively satisfy Shangqiu consumers' cognitive purchase decision needs, particularly in terms of logistics details, pricing clarity, and product specifications aligned with the value-for-money orientation prevalent in lower-tier markets. The low coefficient of variation across all Information Quality items (range: 19.4%–21.9%) indicates high consensus that functional product information delivery is already well-executed, suggesting that further investment in this dimension yields diminishing returns relative to

interactivity or trust-building interventions. This corresponds to Natasia et al.'s (2022) finding that perceived usefulness enhances attitudes but may not directly translate into behavioral intention without the affective bridge provided by positive user experience, as captured in this study's terms by the interactive and social presence dimensions X2 and X1.

Conclusion

This study empirically validated a four-factor model of Consumer Purchase Intention in AI-driven live-streaming commerce in Shangqiu City, demonstrating that Perceived Interactivity (β = .345), Anthropomorphism (β = .282), Consumer Trust (β = .214), and Information Quality (β = .176) collectively explain 61.2% of the variance in Purchase Intention (R^2 = .612, $F(4,380) = 149.851$, $p < .001$). All four hypotheses were supported, confirming that agentic commerce success in a Tier-3 regional market depends on the strategic integration of social (Para-social Presence), interactive (synchronous dialogue), psychological (trust), and cognitive (information accuracy) dimensions. The regression hierarchy confirms the central empirical contribution of this study: in Shangqiu's lower-tier market, the functional experience of synchronous, context-aware interactive dialogue is a more powerful purchase driver than the visual realism of AI appearance, prioritizing "approachable realism" and low-latency responsiveness over photorealistic fidelity.

Three findings carry particular theoretical significance. First, Perceived Interactivity's primacy over Anthropomorphism challenges a common assumption that visual realism is the key differentiator of AI commerce effectiveness: for regional consumers prioritizing functional utility and information access, the "Flow State" triggered by synchronous dialogue (Zhao et al., 2025) is the decisive commercial mechanism. Second, the Benevolence gap in Consumer Trust ($\bar{x}$ = 3.45, the only Moderate-rated sub-dimension) identifies the most

critical psychological barrier to AI commerce scaling in Henan: consumers recognize AI competence and integrity but have not yet attributed the benevolent intent characteristic of Guanxi relationships to non-human agents. Third, the generational purchase intention divide between 18–25 Digital Natives and 46+ consumers is significantly greater ($p = 0.043$), identifying both the primary target demographic and the long-term adoption challenge as AI live-streaming penetrates older consumer segments.

These findings have direct implications for quality-of-life dimensions in Shangqiu's digital economic transition. Effective AI-driven live-streaming commerce characterized by high interactivity, approachable anthropomorphism, and transparent trust is not merely a commercial optimization tool but a potential equalizer for consumer access to quality products and information in lower-tier markets. The "Digital Leapfrog" phenomenon (Purchase Intention $\bar{x}$ = 3.72) suggests that Shangqiu residents are actively transitioning from traditional physical markets to AI-mediated commerce, a shift that, when implemented responsibly, can improve material access, reduce geographic commercial disadvantage, and enhance the efficiency of daily consumption decisions for the city's 7 million residents. Conversely, the Benevolence gap and privacy concerns (Security $\bar{x}$ = 3.54) signal that, without ethical governance frameworks, AI commerce risks exacerbating rather than alleviating consumer vulnerability, particularly among older demographics that already exhibit lower purchase intention. The quality of digital commercial life in Shangqiu thus depends on resolving the AI benevolence gap through transparent data governance, authentic user-oriented design, and AI systems that demonstrably prioritize consumer benefit over platform revenue extraction.

Recommendation

Strategic recommendations are prioritized by beta coefficient. For local SMEs and marketers, the highest priority is investment in LLM-based interactivity systems that minimize response latency and maximize context-awareness, prioritizing dialogue quality over visual production costs. To address the Anthropomorphism-Uncanny Valley challenge, developers should focus on behavioral Social Intelligence (natural speech cadence, emotional reactivity, integration of local dialects) rather than hyper-realistic visual fidelity, which risks triggering uncanny responses within current AI capabilities. The Benevolence gap should be addressed through transparent data-use disclosure, objective product-comparison features, and AI persona design that explicitly positions the streamer as a consumer advocate rather than a sales agent. Marketing campaigns should segment by age, initially focusing on the 18–25 cohort while designing progressive anthropomorphism and simplified interactivity interfaces for 46+ consumers to reduce psychological barriers. For policymakers, continued investment in digital literacy programs and internet infrastructure in rural Shangqiu townships is essential to create the enabling conditions for AI technology adoption (Natasia et al., 2022), while clear regulatory standards for AI streamer data governance are needed to institutionalize the Consumer Trust foundation that commercial growth requires.

This study acknowledges four limitations. The geographic focus on a single Tier-3 city limits generalizability; comparative analyses across Tier-1 through Tier-3 markets would clarify whether the Perceived Interactivity primacy is context-specific or universal. The quantitative-only design identifies “what” predicts intention, but cannot fully investigate the mechanisms underlying the Uncanny Valley experience. Future research should integrate eye-tracking technology and qualitative interviews to identify precise thresholds of anthropomorphism. The differences in platform algorithms between Douyin and Taobao were not investigated; future studies should examine how specific algorithmic design features moderate the relationship between AI attributes and impulse buying.

Finally, the cross-sectional design cannot track long-term relationship commitment to AI streamers; longitudinal studies measuring loyalty evolution over multiple years are needed to assess whether the trust gaps identified in this study narrow as AI technology matures.

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