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Consumers' well-being in livestreaming commerce: antecedents and consequences

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Livestreaming commerce represents an increasingly important form of digital retailing. This study examines relationships among informational and emotional support, streamer characteristics (expertise, trustworthiness and attractiveness), livestreaming environmental characteristics (interactivity, perceived crowdedness and social presence), consumers' perceived value, shopping well-being and continuance intention. Survey data from 301 livestreaming consumers in China were analysed using partial least squares structural equation modelling (PLS-SEM), necessary condition analysis (NCA) and combined importance-performance map analysis (cIPMA). Perceived value and shopping well-being were positively related to continuance intention, and perceived value was positively related to shopping well-being. Expertise, interactivity, perceived crowdedness and social presence showed significant positive relationships with perceived value. The direct relationships for informational support, emotional support, trustworthiness and attractiveness were non-significant. Integrating PLS-SEM with NCA and cIPMA differentiated important predictors from minimum conditions associated with higher perceived value. The findings extend understanding of shopping well-being as a quality-of-life evaluation in livestreaming commerce.

KEYWORDS
digital retailing, livestreaming commerce, perceived value, shopping, streamer, well-being

Introduction

Livestreaming commerce has transformed online shopping by integrating product demonstrations, real-time interactions and social participation into a single consumption experience. Compared with conventional e-commerce, consumers can interact directly with streamers, exchange information with other viewers and observe social activities while making purchasing decisions. These characteristics have attracted considerable research attention, particularly concerning consumers' purchase intentions, impulsive buying and continuance intention (Guo et al., 2022; Lo et al., 2022; Chong et al., 2023). Although existing research has advanced understanding of consumers' behavioral

responses to livestreaming commerce, questions remain about how consumers evaluate these experiences beyond their immediate transactional benefits and how such evaluations relate to their intention to continue using livestreaming commerce. Bai et al. (2024) similarly identified post-adoption behavior as a comparatively underexplored area of livestreaming research.

First, the role of shopping well-being in understanding continuance intention warrants further investigation. Previous research has established the relevance of perceived value to consumers' continued engagement with livestreaming commerce (Chong et al., 2023). Perceived value reflects consumers' evaluations of benefits relative to sacrifices, while shopping well-being addresses the contribution of shopping experiences to broader quality of life. Shopping well-being encompasses perceived contributions to consumption needs, social life, leisure life and community-related quality of life (El Hedhli et al., 2013). Although shopping well-being has been investigated in physical and online retailing contexts (Nghia et al., 2020, 2022), its relationship with continuance intention remains less clearly understood in livestreaming commerce. This issue is particularly relevant because livestreaming commerce combines transactions with real-time social participation, expanding the dimensions through which consumers evaluate their shopping experiences. An unresolved question therefore concerns whether shopping well-being is related to continuance intention alongside perceived value, and how perceived value is related to shopping well-being in this setting. Addressing this question extends livestreaming commerce research from transaction-oriented evaluations toward consumers' perceived quality-of-life benefits.

Second, greater theoretical integration is needed to understand the antecedents of perceived value in livestreaming commerce. Existing research has examined various influences on consumers' evaluations, including social support, streamer characteristics and livestreaming environmental cues (Guo et al., 2022; Qin et al., 2022; Chong et al., 2023). These characteristics represent different sources of value that may play different roles in shaping consumer evaluations. Informational and emotional support concern resources exchanged through social relationships, whereas streamer expertise, trustworthiness and attractiveness provide cues for assessing sellers and product information. Meanwhile, interactivity, perceived crowdedness and social presence reflect the social environment of livestreaming commerce. Certain environmental characteristics also invite competing interpretations. For example, perceived crowdedness can generate discomfort or psychological pressure in physical retail settings (Baker and Wakefield, 2012; Maeng et al., 2013), while visible audience participation in livestreaming commerce may signal popularity and social endorsement (Chong et al., 2023). The relative relationships of social support, streamer characteristics and livestreaming environmental cues with perceived value therefore require further clarification when these dimensions are examined together. Integrating signaling theory and social support theory provides a complementary perspective on the informational, interpersonal and environmental characteristics associated with consumers' value evaluations.

Third, understanding the antecedents of perceived value requires distinguishing positive predictors from necessary conditions. Structural modelling estimates the relative relationships of antecedents with perceived value, whereas necessary condition analysis (NCA) identifies minimum antecedent levels associated with attaining a specified outcome level (Dul, 2016). These approaches address different theoretical questions. For example, a characteristic may exhibit a weak direct relationship with perceived value while still representing a minimum requirement for attaining high perceived value. Combining structural modelling, NCA and importance-performance analysis enables an assessment of predictive importance, current performance and necessity within a common analytical framework (Hauff et al., 2024; Aw et al., 2026b). Applying this combined perspective to livestreaming commerce can deepen understanding of how social support, streamer characteristics and environmental cues relate to consumers' perceived value and the attainment of a desired value level.

To address these gaps, the present study develops an integrated framework (Figure 1) examining relationships among social support, streamer characteristics, livestreaming environmental characteristics, perceived value, shopping well-being and continuance intention. Drawing on signaling theory and social support theory, alongside consumer-value and well-being research, the study examines survey data from 301 livestreaming consumers in China using partial least squares structural equation modelling (PLS-SEM), NCA and combined importance-performance map analysis (cIPMA). The study makes three contributions. First, it extends research on livestreaming commerce continuance intention by incorporating shopping well-being as a quality-of-life evaluation alongside perceived value. Second, it integrates social, streamer-related and environmental antecedents of perceived value, allowing their relative relationships to be assessed within the same framework. Third, it distinguishes positive predictors from empirically identified necessary conditions, offering complementary insights into the characteristics associated with higher perceived value and the minimum requirements for attaining a high perceived-value level.

Theoretical background

This study draws on signaling theory and social support theory as complementary perspectives for understanding consumers' perceived value in livestreaming commerce. Signaling theory explains how consumers interpret observable cues when product quality cannot be directly assessed (Spence, 1974; Rao et al., 1999). In livestreaming commerce, streamer expertise, trustworthiness and attractiveness provide cues about the information source, while audience activity and real-time interactions offer signals about the shopping environment. Social support theory focuses on informational and emotional resources exchanged among individuals (Liang et al., 2011; Tajvidi et al., 2021). These resources may contribute to consumers' evaluations by facilitating purchase decisions and fulfilling interpersonal needs. Interactivity and social presence connect the two perspectives because real-time exchanges simultaneously convey information and facilitate social connection. These theories explain how different streamer, interpersonal and environmental characteristics may relate to perceived value. Consumer-value and well-being research further informs the proposed relationships among perceived value, shopping well-being and continuance intention.

Shopping well-being and continuance intention

Shopping well-being refers to consumers' evaluation of how a shopping setting contributes to their quality of life (El Hedhli et al., 2013; Nghia et al., 2020). It captures perceived contributions to consumption needs, social life, leisure life and community-related quality of life. This life-domain evaluation differs conceptually from perceived value, which considers benefits relative to sacrifices (Gan and Wang, 2017); satisfaction, which involves evaluations against prior expectations (Oliver, 1980); and enjoyment, which reflects the pleasurable aspects of shopping (Childers et al., 2001). Shopping well-being is particularly pertinent to livestreaming commerce, where transactions occur alongside real-time social interaction and mediated participation. Previous work links shopping well-being with loyalty-related outcomes (Maggioni et al., 2019). We therefore propose a positive relationship between shopping well-being and continuance intention.

> H1: Shopping well-being positively relates to consumers' continuance intention.

Perceived value and continuance intention

Perceived value refers to consumers' overall evaluation of the benefits received relative to the sacrifices made in obtaining a product or service (Gan and Wang, 2017). In livestreaming commerce, these evaluations may reflect the convenience, information and experiential benefits of shopping. Previous research suggests that perceived value is related to consumers' behavioral intentions (Sheth et al., 1991; Chong et al., 2023). Accordingly, perceived value is expected to be positively related to continuance intention.

> H2: Perceived value positively relates to consumers' continuance intention.

Perceived value and shopping well-being

Perceived value reflects consumers' overall evaluation of the benefits received relative to the sacrifices made, while shopping well-being captures the perceived contribution of shopping experiences to broader quality-of-life domains (Gan and Wang, 2017; El Hedhli et al., 2013). Shopping experiences that provide favorable value may contribute to well-being by fulfilling consumption needs and enriching leisure and social experiences (Nghia et al., 2020; Paek et al., 2021). In livestreaming commerce, consumers may derive value from convenient product evaluation, useful information and enjoyable social interactions. These benefits can contribute to consumers' evaluations of how livestreaming shopping supports their consumption, leisure and social lives. Accordingly, perceived value is expected to be positively related to shopping well-being.

> H3: Perceived value positively relates to shopping well-being.

Social support and perceived value

Social support refers to resources provided through interpersonal relationships to address individuals' informational and psychological needs (Eastin and LaRose, 2005; Hu et al., 2022). Among its different forms, informational and emotional support are particularly relevant to livestreaming commerce because consumers can exchange product-related information and engage in social interactions with streamers and co-viewers (Liang et al., 2011; Qin et al., 2022). Informational support involves providing advice, knowledge and experience, whereas emotional support involves expressions of concern, understanding and encouragement. In a related social-commerce context, Aw et al. (2026a) found that informational and emotional support were positively associated with consumers' perceived benevolence and trust. These resources offer different pathways through which social interactions may contribute to consumers' perceived value.

Informational support facilitates consumers' access to relevant product knowledge and purchase-related advice. During livestreaming sessions, consumers can obtain information from streamers and co-viewers, clarify product-related concerns and learn from others' experiences (Liang et al., 2011; Hu et al., 2022). Such support may reduce information-search effort and uncertainty surrounding purchase decisions. By improving the informational benefits of the shopping experience while reducing the effort involved in evaluating alternatives, informational support may contribute to a more favorable perception of value. Accordingly, the following hypothesis is proposed:

> H4: Informational support positively relates to perceived value.

Emotional support addresses consumers' interpersonal and psychological needs through expressions of concern, encouragement and understanding (Liang et al., 2011; Hu et al., 2022). In livestreaming commerce, supportive communication from streamers and co-viewers may create feelings of reassurance, social connection and belongingness. These experiences can enhance the relational and experiential benefits associated with participation in livestreaming shopping. Consumers who perceive greater emotional support may consequently evaluate their shopping experiences more favorably. Therefore, the following hypothesis is proposed:

> H5: Emotional support positively relates to perceived value.

Streamer characteristics

Consumers in livestreaming commerce rely on streamers for product demonstrations and purchase-related information because they cannot physically examine products before purchasing. From a signaling perspective, streamer characteristics provide observable cues that consumers can use to evaluate the credibility and

attractiveness of product information (Lu and Chen, 2021; Guo et al., 2022; Aw and Agnihotri, 2024). This study focuses on three characteristics: expertise, trustworthiness and attractiveness. Each provides a different basis for evaluating the shopping experience and its potential benefits.

Expertise and perceived value

Expertise refers to the knowledge, competence and experience demonstrated by a streamer (Hu et al., 2022). Streamers with greater expertise can provide detailed product explanations, respond effectively to consumers' questions and assist in evaluating product alternatives. Their professional knowledge may also enhance the credibility and usefulness of the information provided (Chen et al., 2022). From a signaling perspective, expertise serves as a cue of information quality and competence, helping consumers evaluate products with greater confidence. By facilitating purchase decisions and reducing evaluation effort, streamer expertise may contribute positively to perceived value. Thus, the following hypothesis is proposed:

H6: Expertise positively relates to perceived value.

Trustworthiness and perceived value

Trustworthiness reflects consumers' perceptions of a streamer's honesty, integrity and reliability (Mayer et al., 1995; Hu et al., 2022). In livestreaming commerce, consumers depend on streamers' representations of products and their willingness to provide accurate information. Trustworthy streamers may strengthen consumers' confidence in product claims and reduce uncertainty surrounding online purchases. As a credibility signal, trustworthiness can support consumers' evaluations of the reliability of the shopping experience. These considerations suggest that greater perceived trustworthiness is associated with more favorable value evaluations. Accordingly, the following hypothesis is proposed:

> H7: Trustworthiness positively relates to perceived value.

Attractiveness and perceived value

Streamer attractiveness reflects the appeal consumers perceive in the streamer's appearance and presentation. Attractive streamers may generate favorable impressions and encourage consumers to pay attention to product demonstrations and promotional messages (Harris et al., 2003; Park and Lin, 2020). From a signaling perspective, these favorable impressions may extend to consumers' evaluations of the products and shopping experience. Greater streamer attractiveness may therefore enhance the experiential appeal of livestreaming commerce and contribute positively to perceived value. Thus, the following hypothesis is proposed:

> H8: Attractiveness positively relates to perceived value.

Livestreaming commerce environmental factors

Livestreaming commerce provides an interactive social environment in which consumers can communicate with streamers, observe audience participation and experience the presence of other viewers. These characteristics provide informational and social cues that extend beyond those available in conventional online shopping. Aw et al. (2026a) similarly highlighted the relevance of media affordances, particularly interactivity and social presence, to the development of parasocial interactions and relationships with online influencers. Perceived interactivity facilitates exchanges of information, perceived crowdedness conveys cues about audience participation and popularity, and social presence reflects the experience of social connection within a mediated shopping environment. These characteristics may shape consumers' evaluations of the informational, social and experiential benefits of livestreaming commerce.

Perceived interactivity and perceived value

Interactivity describes consumers' ability to exchange information and respond to other participants within a social shopping environment (Tajvidi et al., 2021). Real-time communication in livestreaming commerce may allow consumers to ask questions, clarify product information and engage with streamers and co-viewers (Dong and Wang, 2018). Such exchanges can provide useful information and signal responsiveness; interactive signals may also reduce psychological distance between livestreaming participants (Xin et al., 2024). Similarly, Ma et al. (2024) found that influencer interactivity was positively associated with parasocial relationships in livestreaming commerce. These considerations suggest that perceived interactivity is positively related to perceived value.

> H9: Perceived interactivity positively relates to perceived value.

Perceived crowdedness and perceived value

Perceived crowdedness reflects consumers' perceptions of the density of participants within a shopping environment. Research in physical retail settings has associated crowding with stress and reduced shopping satisfaction (Baker and Wakefield, 2012; Maeng et al., 2013). In livestreaming commerce, visible audience participation may convey a different meaning. Large audiences and active viewer engagement can serve as signals of popularity and social endorsement, potentially strengthening consumers' confidence in the attractiveness of a livestreaming session (Chong et al., 2023). Such social cues may increase the perceived informational and experiential benefits of participating in livestreaming commerce. However, Lai et al. (2025) found

no significant relationship between perceived crowdedness and consumer empowerment, suggesting that its relevance may vary across psychological outcomes. Although excessive audience activity can also generate information overload or psychological pressure, the popularity-signaling mechanism provides a theoretical basis for expecting a positive relationship between perceived crowdedness and perceived value. Accordingly, the following hypothesis is proposed:

> H10: Perceived crowdedness positively relates to perceived value.

Social presence and perceived value

Social presence reflects the feeling of being with others in a mediated environment (Clement et al., 2020). Livestreaming communication can make streamers and co-viewers feel more immediately accessible than in conventional online shopping, potentially reducing psychological distance and supporting trust-related evaluations (Ming et al., 2021; Jiang et al., 2019). A stronger sense of social presence may consequently be positively related to perceived value.

> H11: Social presence positively relates to perceived value.

Methodology

Data collection and sample characteristics

Purposive sampling was used to recruit consumers in China through Credamo[1], a professional online research platform that provides survey administration and participant recruitment services. Credamo maintains a nationwide panel of approximately three million registered participants and offers facilities for targeted recruitment, eligibility screening and response-quality control. The platform has also been employed in previous livestreaming-commerce research (Lai et al., 2025). Data were collected between December 2024 and January 2025. Respondents were recruited from Credamo's registered participant panel and screened for membership of the millennial cohort and at least one livestreaming-commerce purchase during the preceding year. Millennials were operationally defined as individuals born between 1981 and 1996 (Dimock, 2019).

Response quality was assessed using two screening criteria, namely questionnaire completion time and instructed-response attention checks, following established recommendations for identifying careless survey responses (Meade and Craig, 2012; Leiner, 2019). First, 15 questionnaires were excluded because their completion times were below one-third of the median survey duration (i.e., less than 3 min, based on a median completion time of 9 min). Subsequently, 12 additional questionnaires were excluded because respondents failed both instructed-response attention-check items embedded in the survey. The screening procedures resulted in the exclusion of 27 questionnaires (8.2%), leaving 301 valid responses (91.8%) for the final analysis. Sample-size adequacy was evaluated using a power-analysis benchmark based on the model's most complex endogenous construct, perceived value, which has eight direct predictors. Following the G*Power framework for linear multiple regression (fixed model, R^2 deviation from zero), an assumed medium effect size ($f^2 = 0.15$), a significance level of 0.05 and statistical power of 80% yielded a minimum required sample of 109 respondents. The final sample of 301 respondents exceeded this benchmark.

The sample comprised 301 millennial livestream-commerce consumers in China. Female respondents accounted for 56.5% of the sample, while 43.5% were male. Regarding age, 44.5% were aged 30 years or below, followed by those aged 31–35 (29.6%), 36–40 (18.9%) and 41–44 (7.0%). In terms of educational attainment, 40.9% held a bachelor's degree, 31.2% possessed a vocational or associate diploma, and 14.6% had postgraduate qualifications. Most respondents were salaried employees (60.8%), followed by self-employed individuals or freelancers (16.9%). Regarding monthly personal income, the largest proportion (34.2%) earned RMB 5,000–7,999. Respondents were informed of the survey's purpose and the voluntary nature of participation and provided electronic informed consent before completing the questionnaire.

Measures

Measures were adapted from previously validated instruments and recorded on seven-point response scales anchored from 1 (strongly disagree) to 7 (strongly agree) (Appendix Table 1). Informational and emotional support were adapted from Liang et al. (2011) and Hajli (2014); perceived value from Chen et al. (2018); shopping well-being from El Hedhli et al. (2013); perceived interactivity from Dong and Wang (2018); and perceived crowdedness, social presence and continuance intention from Chong et al. (2023). Perceived expertise, trustworthiness and attractiveness were measured using four items each, adapted from Ohanian (1990) to the context of livestreaming commerce.

Results

Common method bias (CMB) was assessed using Harman's single-factor test and a supplementary full-collinearity assessment (Kock, 2015). Harman's single-factor test indicated that the largest factor accounted for 39.5% of the total variance, below the conventional 50% threshold. The full-collinearity assessment, which included all latent constructs as predictors of an auxiliary random variable, yielded variance inflation factor (VIF) values ranging from 1.551 to 2.394, below the recommended threshold of 3.3. Both assessments produced values within the thresholds.

Partial least squares structural equation modelling (PLS-SEM) was selected because the study seeks to explain variance in perceived value, shopping well-being and continuance intention while extending proposed relationships to livestreaming

1 www.credamo.com

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TABLE 1 Construct reliability and convergent validity.

Latent variables	Items	Loadings	CR	AVE
Perceived attractiveness	PA1	0.837	0.936	0.786
	PA2	0.901		
	PA3	0.909		
	PA4	0.897		
Continuance intention	CI1	0.899	0.934	0.780
	CI2	0.830		
	CI3	0.898		
	CI4	0.905		
Perceived crowding	PC1	0.815	0.910	0.670
	PC2	0.809		
	PC3	0.865		
	PC4	0.791		
	PC5	0.810		
Emotional support	ES1	0.833	0.937	0.788
	ES2	0.911		
	ES3	0.866		
	ES4	0.890		
Informational support	PR1	0.917	0.933	0.823
	PR2	0.907		
	PR3	0.898		
Perceived interactivity	PI1	0.627	0.893	0.585
	PI2	0.674		
	PI3	0.827		
	PI4	0.817		
	PI5	0.778		
	PI6	0.840		
Perceived value	PV1	0.683	0.855	0.598
	PV2	0.815		
	PV3	0.710		
	PV4	0.870		
Shopping well-being	SW1	0.833	0.939	0.793
	SW2	0.913		
	SW3	0.906		
	SW4	0.908		
Social presence	SP1	0.817	0.922	0.748
	SP2	0.883		
	SP3	0.891		
	SP4	0.867		
Perceived expertise	PE1	0.881	0.941	0.798
	PE2	0.908		
	PE3	0.896		
	PE4	0.889		
Perceived trustworthiness	PT1	0.905	0.944	0.807
	PT2	0.917		
	PT3	0.884		
	PT4	0.887		

TABLE 2 Discriminant validity.

Variables	1	2	3	4	5	6	7	8	9
1. Perceived attractiveness									
2. Continuance intention	0.551								
3. Perceived crowding	0.638	0.568							
4. Emotional support	0.459	0.537	0.456						
5. Informational support	0.517	0.513	0.537	0.771					
6. Perceived interactivity	0.628	0.657	0.719	0.545	0.584				
7. Perceived value	0.597	0.741	0.710	0.533	0.575	0.803			
8. Shopping well-being	0.547	0.863	0.514	0.481	0.481	0.640	0.694		
9. Social presence	0.581	0.637	0.648	0.556	0.515	0.738	0.720	0.613	
10. Perceived expertise	0.620	0.593	0.562	0.541	0.539	0.633	0.684	0.563	0.569
11. Perceived trustworthiness	0.648	0.660	0.555	0.531	0.503	0.641	0.623	0.648	0.684

TABLE 3 Hypothesis testing.

Hypothesis	Relationship	Std. Beta	*T*-value	Decision
H1	Shopping well-being → continuance intention	0.629	14.881**	Supported
H2	Perceived value → continuance intention	0.260	5.717**	Supported
H3	Perceived value → shopping well-being	0.612	15.717**	Supported
H4	Informational support → perceived value	0.069	0.820$^{n.s.}$	Unsupported
H5	Emotional support → perceived value	0.008	0.098$^{n.s.}$	Unsupported
H6	Perceived expertise → perceived value	0.218	2.672**	Supported
H7	Perceived trustworthiness → perceived value	−0.021	0.254$^{n.s.}$	Unsupported
H8	Perceived attractiveness → perceived value	0.029	0.437$^{n.s.}$	Unsupported
H9	Perceived interactivity → perceived value	0.274	4.602**	Supported
H10	Perceived crowdedness → perceived value	0.158	2.698**	Supported
H11	Social presence → perceived value	0.191	3.005**	Supported

** < 0.01, * < 0.05, n.s., not significant.

TABLE 4 Performance values of latent variables (rescaled).

Construct	Performance value, average	Performance value, minimum	Performance value, maximum
Perceived attractiveness	49.637	0.000	100.000
Perceived crowding	55.703	0.000	100.000
Emotional support	48.029	0.000	100.000
Informational support	55.054	0.000	100.000
Perceived interactivity	51.884	0.000	100.000
Social presence	52.296	0.000	100.000
Perceived expertise	46.904	0.000	100.000
Perceived trustworthiness	44.391	0.000	100.000

commerce. The analysis also provides latent-variable scores for the complementary NCA and cIPMA procedures (Hair et al., 2019). All constructs were specified reflectively. Measurement assessment covered indicator reliability, Cronbach's alpha, composite reliability (rho_A and rho_C), average variance extracted (AVE), and discriminant validity using the heterotrait-monotrait ratio (HTMT). Across constructs, Cronbach's alpha ranged from 0.776 to 0.920, rho_A from 0.819 to 0.921, rho_C from 0.855 to 0.944, and AVE from 0.585 to 0.823 (Table 1). Three indicators had loadings below 0.708 (INT_1 = 0.627, INT_2 = 0.674 and PV_1 = 0.683); these were retained because construct-level reliability and AVE met recommended thresholds and their removal could narrow construct coverage (Hair et al., 2019). All HTMT values were below 0.90 (maximum = 0.863; Table 2).

Structural-model evaluation indicated no problematic collinearity (maximum inner-model VIF = 2.780). The model explained 56.1% of the variance in perceived value (R^2 = 0.561), 37.5% in shopping well-being (R^2 = 0.375), and 66.4% in

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TABLE 5 NCA effect sizes (CR-FDH ceiling line).

Construct	Perceived value	
	Effect size d	*p*-value
Perceived attractiveness	0.055	0.134
Perceived crowding	0.173	0.000
Emotional support	0.112	0.000
Informational support	0.149	0.000
Perceived interactivity	0.134	0.000
Social presence	0.158	0.000
Perceived expertise	0.131	0.000
Perceived trustworthiness	0.094	0.000

continuance intention (R^2 = 0.664). Hypothesis tests were evaluated using 10,000 bootstrap resamples, two-tailed tests and percentile 95% confidence intervals. Table 3 reports the standardized path coefficients, t-statistics, exact *p*-values, confidence intervals and effect sizes (f^2). Positive blindfolding Q^2 values (> 0) were reported for all constructs, evidencing the in-sample predictive relevance.

The results indicated that shopping well-being was positively related to continuance intention (β = 0.629, $p < 0.001$), as was perceived value (β = 0.260, $p < 0.001$). Perceived value was positively related to shopping well-being (β = 0.612, $p < 0.001$), supporting H1-H3. Expertise (β = 0.218, $p = 0.009$), interactivity (β = 0.274, $p < 0.001$), perceived crowdedness (β = 0.158, $p = 0.007$) and social presence (β = 0.191, $p = 0.002$) were positively related to perceived value, supporting H6 and H9-H11. Informational support, emotional support, trustworthiness and attractiveness did not have statistically significant direct relationships with perceived value; H4, H5, H7 and H8 were therefore not supported.

To extend the PLS-SEM findings, importance-performance map analysis (IPMA) was combined with necessary condition analysis (NCA). IPMA assesses each antecedent's importance through its total effect on a target construct and its performance through a rescaled latent-variable score. NCA identifies the minimum antecedent levels associated with attainment of a specified outcome level. Combined importance-performance map analysis (cIPMA) integrates these dimensions to distinguish influential antecedents, their current performance and the extent to which minimum requirements are unmet (Hauff et al., 2024).

With perceived value as the target construct, the IPMA results showed the greatest positive importance for perceived interactivity (total effect = 0.274) and expertise (0.218), followed by social presence (0.191) and perceived crowdedness (0.158). Perceived crowdedness had the highest performance score (55.703), whereas trustworthiness had the lowest (44.391). Expertise also had below-average performance (47.024) relative to the eight-antecedent mean of 50.503 (Table 4). These importance and performance estimates form the axes of the cIPMA in Figure 2.

NCA was conducted using the ceiling regression-free disposal hull (CR-FDH) approach and rescaled latent-variable scores. NCA effect size (d) reflects the proportion of the possible observation space constrained by a condition (Dul, 2016). An antecedent was classified as empirically necessary when its permutation test was significant at $p < 0.05$ (5,000 permutations) and its effect size reached $d \geq 0.10$, the adopted practical-importance criterion

TABLE 6 Bottleneck table perceived value, actual values (based on the rescaled PLS-SEM latent variable scores from 0% to 100%).

Perceived value level (%)	Perceived attractiveness	Perceived crowding	Emotional support	Informational support	Perceived interactivity	Social presence	Perceived expertise	Perceived trustworthiness
0.00%	NN	NN	NN	NN	NN	NN	NN	NN
10.00%	NN	NN	NN	NN	NN	NN	NN	NN
20.00%	NN	NN	NN	NN	NN	NN	NN	NN
30.00%	NN	NN	NN	NN	NN	NN	NN	NN
40.00%	NN	NN	NN	NN	NN	NN	NN	NN
50.00%	NN	NN	NN	NN	NN	NN	NN	NN
60.00%	NN	2.517	NN	NN	NN	NN	NN	NN
70.00%	NN	22.818	NN	13.397	0.179	16.618	13.748	NN
80.00%	NN	43.119	16.263	36.775	29.778	39.280	32.633	17.672
90.00%	24.103	63.419	54.027	60.153	59.378	61.942	51.519	43.786
100.00%	74.425	83.720	91.791	83.531	88.977	84.605	70.404	69.899

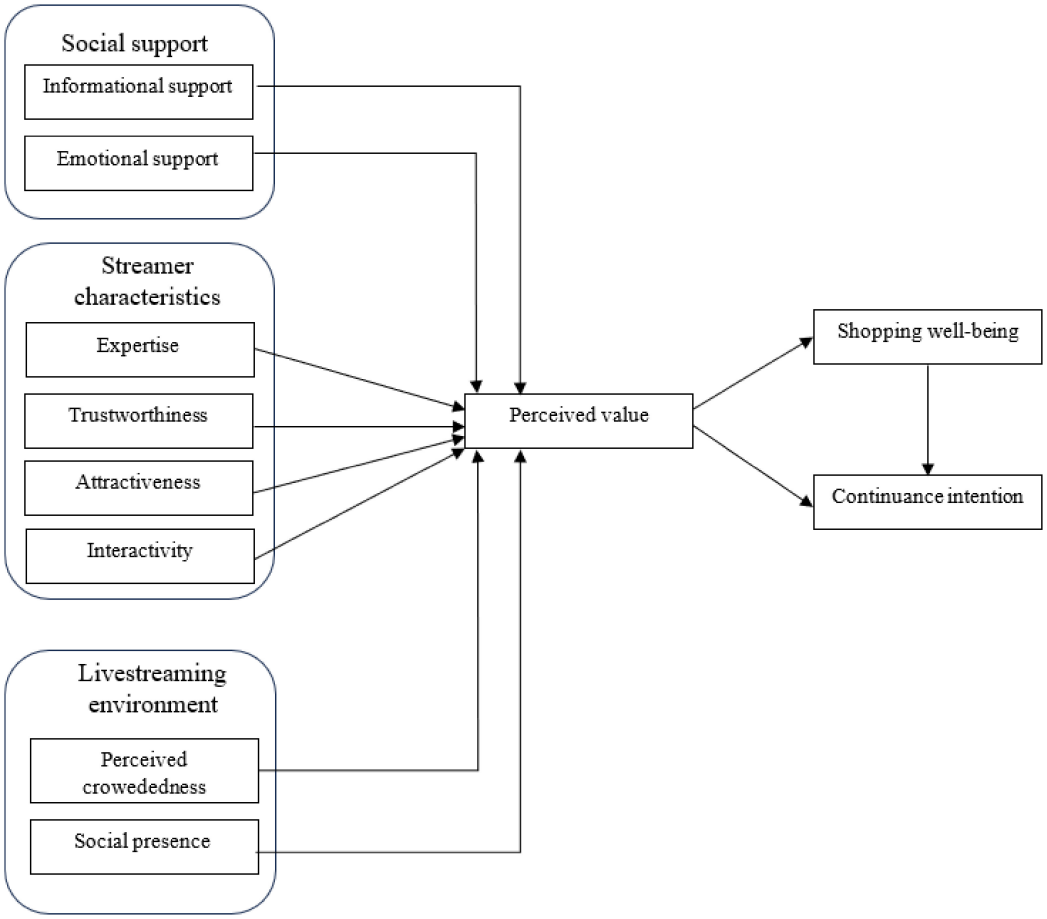


FIGURE 1
Conceptual model.

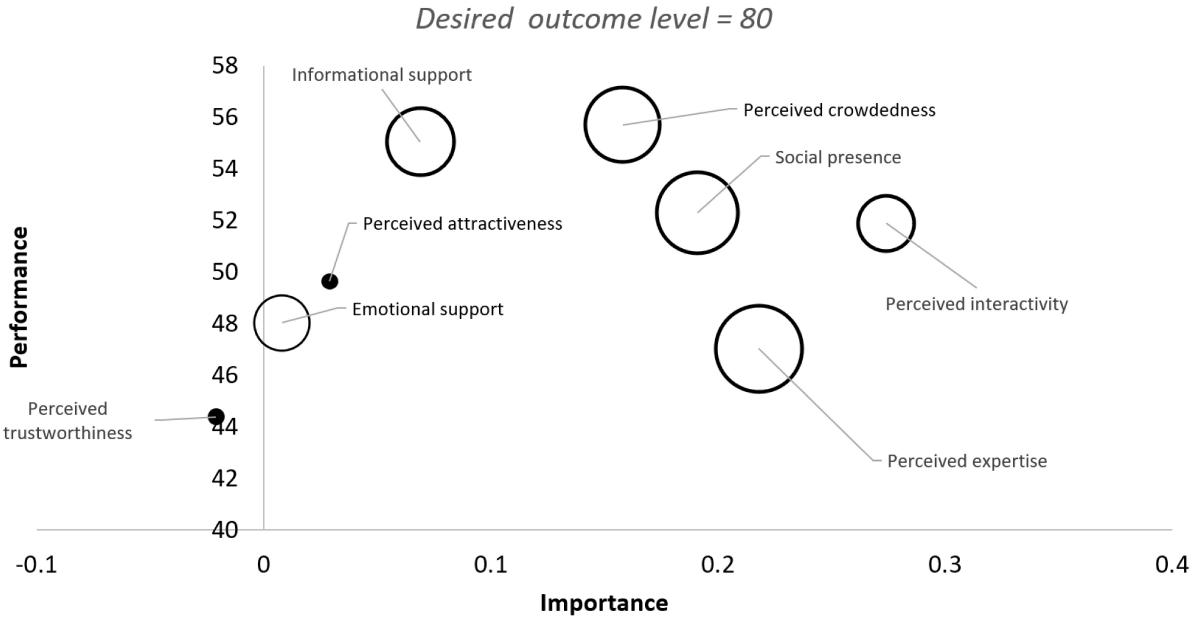


FIGURE 2
Combined importance-performance map of perceived value. For the desired level of the outcome: ● = construct is not necessary; ○ = construct is necessary. The bubble sizes represent the percentage of cases that have not achieved the required desired level outcome.

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TABLE 7 Bottleneck table perceived value: actual value for perceived value (based on the rescaled PLS-SEM latent variable scores from 0% to 100%) and the percentiles of antecedent constructs.

Perceived value level (%)	Perceived attractiveness	Perceived crowding	Emotional support	Informational support	Perceived interactivity	Social presence	Perceived expertise	Perceived trustworthiness
0.00%	NN	NN	NN	NN	NN	NN	NN	NN
10.00%	NN	NN	NN	NN	NN	NN	NN	NN
20.00%	NN	NN	NN	NN	NN	NN	NN	NN
30.00%	NN	NN	NN	NN	NN	NN	NN	NN
40.00%	NN	NN	NN	NN	NN	NN	NN	NN
50.00%	NN	NN	NN	NN	NN	NN	NN	NN
60.00%	NN	2.658	NN	NN	NN	NN	NN	NN
70.00%	NN	5.980	NN	6.977	2.99	5.980	8.306	NN
80.00%	NN	20.93	11.628	17.276	11.960	24.917	22.924	17.94
90.00%	11.628	65.781	54.817	51.495	65.781	63.455	58.14	42.193
100.00%	88.040	94.684	97.010	94.684	97.674	96.346	85.714	88.372

(Dul et al., 2020). The perceived-value level of 80/100 provides an high-outcome target for the bottleneck and cIPMA analyses (Tables 4–7).

Six antecedents satisfied the adopted necessity criteria: perceived crowdedness (d = 0.173), social presence (0.158), informational support (0.149), expertise (0.144), perceived interactivity (0.134) and emotional support (0.112). Trustworthiness had a statistically significant necessity effect below the adopted practical-importance threshold (d = 0.094, $p < 0.001$), while attractiveness satisfied neither criterion (d = 0.055, p = 0.134). At a perceived-value target of 80/100, the proportions of cases below the corresponding minimum antecedent levels were 28.2% for expertise, 24.9% for social presence, 20.9% for perceived crowdedness, 17.3% for informational support, 12.0% for perceived interactivity and 11.3% for emotional support (Tables 5–7).

Figure 2 positions the eight antecedents in four quadrants using average importance and performance as the reference points. Perceived interactivity, social presence and perceived crowdedness occupy the high-importance, high-performance quadrant. Their favorable average performance accompanies unmet minimum-condition requirements for 12.0%, 24.9% and 20.9% of cases, respectively. This combination points to performance maintenance together with focused attention to consumers below the minimum antecedent levels.

Expertise occupies the high-importance, low-performance quadrant. Its importance of 0.218, performance of 47.024 and 28.2% share of cases below the necessary minimum jointly identify the strongest improvement opportunity in the cIPMA. Expertise thus warrants greater attention than its importance coefficient alone would suggest.

Informational support falls in the low-importance, high-performance quadrant, where its existing performance coexists with a necessary minimum that remains unmet in 17.3% of cases. In the low-importance, low-performance quadrant, emotional support also meets the necessity criteria and shows an 11.3% shortfall. Trustworthiness and attractiveness occupy this quadrant without meeting the adopted necessity criteria. This distinction shows how necessity shifts the priorities suggested by importance and performance alone.

Discussion

Theoretical implications

First, this study advances research on post-adoption evaluations in livestreaming commerce by examining shopping well-being alongside perceived value as a correlate of continuance intention (Chong et al., 2023). Shopping well-being captures consumers' perceived contribution of shopping to consumption needs, social life, leisure life and community-related quality of life (El Hedhli et al., 2013). Its positive relationship with continuance intention alongside perceived value extends understanding of life-domain evaluations in digitally mediated consumption.

Second, the findings provide insights into how social support, streamer characteristics and livestreaming environmental cues relate to consumers' perceived value. Perceived interactivity exhibited the strongest positive relationship, followed by streamer

expertise, social presence and perceived crowdedness. The importance of interactivity suggests that opportunities for real-time communication and prompt responses may be particularly relevant to consumers' value evaluations. Similarly, streamer expertise may reduce product-related uncertainty by providing credible and useful information, while social presence may enhance the interpersonal experience of shopping in a digitally mediated environment. Perceived crowdedness may also serve as a cue of product popularity and collective consumer interest.

In contrast, informational support, emotional support, trustworthiness and attractiveness did not exhibit significant direct relationships with perceived value. One possible explanation is that consumers' value evaluations in livestreaming commerce are more closely tied to the practical benefits of real-time interaction and product expertise than to general interpersonal reassurance or favorable impressions of streamers. However, these findings do not imply that the non-significant factors are unimportant in other circumstances, particularly as their roles may depend on shopping contexts or operate through indirect relationships. For example, Ma et al. (2024) found that influencer trustworthiness, but not attractiveness, was significantly associated with parasocial relationships. In contrast, Shen et al. (2025) reported significant positive relationships between both characteristics and parasocial relationships. These findings suggest that the relevance of streamer characteristics may depend on the specific psychological outcomes and contexts examined.

Third, the combined PLS-SEM, NCA and cIPMA analyses deepen understanding of the antecedents of perceived value by distinguishing positive predictors from necessary conditions. Informational and emotional support satisfied the adopted necessity criteria despite their non-significant direct relationships in the structural model. Expertise emerged as the leading improvement priority because it combined high importance, below-average performance and the greatest share of cases below the minimum level needed for the selected perceived-value target. This pattern demonstrates how minimum-condition evidence refines interpretations based on positive relationships and average performance.

Livestreaming commerce provides a psychological setting in which product information, interpersonal support and social presence coexist within an interactive media environment. Signaling and social-support perspectives illuminate consumers' use of different informational, interpersonal and environmental cues. Consumer-value and quality-of-life scholarship further explains the relevance of perceived value and shopping well-being to continuance intention. Together, these perspectives connect the social experience of livestreaming commerce with consumers' broader shopping evaluations.

Practical implications

The positive relationships of perceived value and shopping well-being with continuance intention suggest that livestreaming retailers should consider consumers' broader shopping experiences alongside immediate sales outcomes. Providing useful product information, meaningful interaction, and a supportive shopping environment may enhance consumers' evaluations of the livestreaming experience. The cIPMA findings provide a basis for differentiating managerial priorities according to antecedents' importance, performance and necessary minimum levels.

First, streamer expertise emerges as the leading improvement priority. It occupies the high-importance, low-performance quadrant of the cIPMA, with importance of 0.218 and performance of 47.024. Expertise also has the greatest share of cases below the minimum antecedent level associated with the selected perceived-value target (28.2%). Retailers should therefore prioritize streamers' product knowledge, accurate explanations and ability to address consumers' questions. Product-specific training, clearer demonstrations and periodic assessments of streamer knowledge offer practical ways to strengthen this area.

Second, perceived interactivity, social presence and perceived crowdedness occupy the high-importance, high-performance quadrant. Retailers should maintain these relatively strong aspects of the livestreaming experience while addressing minimum-condition shortfalls for specific consumers. The respective shares of cases below the required levels are 12.0%, 24.9% and 20.9%. Meaningful two-way exchanges, prompt responses to questions and opportunities for genuine viewer participation may help reinforce interactivity and social presence. Managers should encourage genuine audience participation while managing excessive comment flows and social pressure that may diminish consumers' shopping experiences. Practices such as artificially inflated viewer counts, fabricated engagement and pressure-based sales tactics should be avoided, as they may undermine consumer trust, autonomy and shopping well-being. Given the observational nature of the findings, the potential benefits of specific engagement strategies should be evaluated.

Third, informational support occupies the low-importance, high-performance quadrant, suggesting that retailers should maintain its overall performance while addressing unmet minimum requirements. Informational support met the necessity criteria, and 17.3% of cases were below its required level at the selected outcome target. Accessible product advice and relevant assistance from streamers and co-viewers may be especially useful in these situations. Emotional support occupies the low-importance, low-performance quadrant and also met the necessity criteria, with 11.3% of cases below its minimum level. Retailers can strengthen basic emotional support through respectful communication, responsive acknowledgement and a welcoming environment. Attractiveness and trustworthiness occupy the same low-importance, low-performance quadrant and represent lower priorities for value-focused improvements under the adopted cIPMA criteria. Maintaining transparent and trustworthy communication remains an essential retail practice.

Overall, the four-quadrant interpretation supports differentiated managerial action. Expertise warrants priority improvement, whereas perceived interactivity, social presence and perceived crowdedness call for performance maintenance and attention to specific necessity gaps. Informational and emotional support merit targeted attention where minimum levels are unmet. These priorities integrate the relative importance of each antecedent, its present performance and the minimum-condition evidence in Figure 2.

Limitations and suggestions for future research

Several limitations should be acknowledged. First, data were collected in China through a purposive, non-probability online panel, so self-selection and platform-specific recruitment may limit generalizability to other populations or national contexts. Future studies could use broader or probability-based samples and report more detailed millennial cohort characteristics. Second, the cross-sectional design cannot establish temporal precedence or causality among perceived value, shopping well-being and continuance intention. Continuance intention was measured rather than actual subsequent use or purchasing behavior; future longitudinal studies could evaluate whether intentions are followed by observed engagement, and experiments could examine the causal effects of specific livestreaming characteristics. Third, additional individual differences, measurement approaches and possible indirect pathways merit investigation.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The requirement of ethical approval was waived by School of Economics and Management, Shandong Huayu University of Technology. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

CZ: Data curation, Methodology, Investigation, Writing – original draft. QL: Writing – original draft, Formal analysis, Visualization, Conceptualization, Software. TZ: Writing – review & editing, Software, Resources, Validation. NY: Writing – review & editing, Project administration, Supervision.

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The author(s) declared that Generative AI was not used in the creation of this manuscript.

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Appendix

APPENDIX TABLE 1 Measurement items and sources.

Source	Variable	Measurement items
Dong and Wang (2018)	Perceived interactivity (INT)	INT_1 I have considerable control over my interactions during livestream shopping. INT_2 During livestream shopping, I can freely choose what I want to watch. INT_3 Streamers facilitate two-way communication with viewers during livestream shopping. INT_4 Streamers give me opportunities to respond and share my opinions during livestream shopping. INT_5 Streamers respond to my questions quickly during livestream shopping. INT_6 I can obtain information from streamers quickly during livestream shopping.
Chong et al. (2023)	Perceived crowdedness (PCR)	PCR_1 The livestream shopping sessions I watch receive many likes. PCR_2 Many viewers watch the livestream shopping sessions I participate in. PCR_3 Many viewers show interest in the products presented during livestream shopping. PCR_4 Many viewers share livestream shopping sessions with others. PCR_5 Many viewers appear to purchase products during livestream shopping sessions.
Chong et al. (2023)	Social presence (SP)	SP_1 I feel a sense of human contact during livestream shopping. SP_2 Livestream shopping gives me a sense of personal interaction with others. SP_3 I feel a sense of human warmth during livestream shopping. SP_4 Livestream shopping conveys a sense of human care and sensitivity.
Chong et al. (2023)	Continuance intention (CI)	CI_1 I intend to continue using livestream shopping in the future. CI_2 I intend to use livestream shopping as regularly as I do now. CI_3 I prefer to continue using livestream shopping rather than switch to other shopping channels. CI_4 I intend to increase my use of livestream shopping in the future.
El Hedhli et al. (2013)	Shopping well-being (SWB)	SWB_1 Livestream shopping helps me satisfy my overall shopping needs. SWB_2 Livestream shopping contributes positively to my social well-being. SWB_3 Livestream shopping contributes positively to my leisure well-being. SWB_4 Livestream shopping contributes to the quality of life in my community.
Chen et al. (2018)	Perceived value (PV)	PV_1 Shopping through livestreaming commerce takes a reasonable amount of time. PV_2 The prices of products offered through livestreaming commerce are reasonable. PV_3 Shopping through livestreaming commerce requires little effort. PV_4 Overall, shopping through livestreaming commerce is worthwhile.
Hajli (2014); Liang et al. (2011)	Emotional support (ES)	ES_1 When I experience difficulties during livestream shopping, other participants are supportive of me. ES_2 When I face difficulties during livestream shopping, other participants comfort and encourage me. ES_3 When I share my feelings about shopping-related problems, other participants listen to me. ES_4 During livestream shopping, other participants show concern for my well-being.
Hajli (2014); Liang et al. (2011)	Informational support (IS)	IS_1 When I need help during livestream shopping, streamers or other viewers offer useful suggestions. IS_2 When I encounter a problem during livestream shopping, streamers or other viewers provide useful information to help me resolve it. IS_3 When I face difficulties with a product or purchase during livestream shopping, streamers or other viewers help me identify the problem and suggest solutions.
Ohanian (1990)	Perceived expertise (EXP)	EXP_1 The streamers I encounter during livestream shopping are knowledgeable about the products they present. EXP_2 The streamers I encounter during livestream shopping are experienced with the products they recommend. EXP_3 The streamers I encounter during livestream shopping are skilled at explaining product features. EXP_4 The streamers I encounter during livestream shopping can answer product-related questions competently.
Ohanian (1990)	Perceived trustworthiness (TRU)	TRU_1 The streamers I encounter during livestream shopping provide honest product information. TRU_2 The streamers I encounter during livestream shopping are reliable sources of product information. TRU_3 The streamers I encounter during livestream shopping are sincere when recommending products. TRU_4 Overall, I consider the streamers I encounter during livestream shopping to be trustworthy.
Ohanian (1990)	Perceived attractiveness (ATT)	ATT_1 The streamers I encounter during livestream shopping are attractive. ATT_2 The streamers I encounter during livestream shopping are good-looking. ATT_3 The streamers I encounter during livestream shopping have a stylish appearance. ATT_4 The streamers I encounter during livestream shopping have an elegant appearance.