Exploration on Strategies for Enhancing Consumers' Perceived Value in the Online Shopping Environment

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Abstract. This paper discusses strategies for enhancing consumers' perceived value in the online shopping environment. Based on the connotation and dimensions of perceived value, it analyzes its influence mechanism on purchasing behavior, pointing out that the particularity of the online environment leads to problems such as information asymmetry and experience virtualization. The study finds that current bottlenecks in perceived value of online shopping include quality and commitment deviations, service chain breaks, and insufficient development of emotional value. To this end, a multi-dimensional strategy system for enhancing perceived value is proposed, including strengthening quality value, optimizing service value, and creating social value. The aim is to reconstruct the perceived value framework through technological means to improve consumer satisfaction and loyalty.

Keywords: Online shopping; consumers; perceived value.

1. Introduction

With the vigorous development of online shopping, consumers' perceived value has become a key factor influencing purchasing decisions. In the online environment, problems of information asymmetry and experience virtualization have become prominent, and there is a gap between consumers' expectations and actual perception of product quality, service experience, and emotional identification. Therefore, in-depth research on strategies to enhance consumers' perceived value in the online shopping environment is of great significance for optimizing the shopping experience, enhancing consumer trust, and promoting the sustainable development of e-commerce.

2. Theoretical Foundation of Consumers' Perceived Value

2.1. The Connotation and Dimensions of Perceived Value

Consumer perceived value is a utility evaluation system formed by customers based on a dynamic trade-off mechanism between "perceived gains" and "perceived sacrifices," essentially representing the output of a cognitive neural network model constructed by consumers through multimodal data. In the online shopping scenario, due to the information entropy increase effect and the characteristics of experience virtualization, this value system requires the reconstruction of an evaluation framework through technological means. Quality value focuses on the functional attributes of products, involving material detection technologies (such as spectral analysis), machine learning-driven quality control systems, and reliability verification algorithms. These technologies ensure the consistency between product parameters (such as clothing fiber density and performance of electronic product chips) and page descriptions through automated processes, reducing the risk of deviations between physical items and expectations[1].

The realization of social value relies on brand semantic network analysis technology, which extracts keywords of design concepts through natural language processing (NLP) and completes precise matching of user profiles with identity labels by integrating collaborative filtering algorithms. Technology-empowered personalized recommendation systems can strengthen consumers' cultural identification with brands; for example, a convolutional neural network (CNN)-based design style classification model can recognize users' aesthetic preferences. The technological support for service value is reflected in the path optimization algorithm of intelligent logistics scheduling systems, the intent recognition model of customer service robots based on deep learning, and the eye-tracking feedback mechanism for interface friendliness. Logistics networks achieve delivery time prediction through real-time traffic data fusion, while customer service systems enhance response accuracy by applying emotional analysis technologies.

2.2. The Influence Mechanism of Perceived Value on Purchasing Behavior

Zeithaml (1988) posits that perceived value is the overall evaluation of a product formed by perceived gains and perceived sacrifices. Fan Xiucheng and Luo Haicheng (2003) propose that perceived value is consumers' subjective judgment of the actual value of a product or service based on their own experiences. Bai Changhong (2001) argues that the core of customer perceived value lies in the trade-off between perceived benefits and perceived sacrifices. Although scholars have different specific definitions of perceived value, they all reflect that perceived value is consumers' subjective measurement of the costs incurred and benefits obtained. The influence mechanism of perceived value on purchasing behavior can be decomposed into a three-stage transmission path of "cognitive evaluation—emotional feedback—behavioral decision-making." Consumers form cognitive evaluations of product utility through multi-dimensional information integration, in which product quality parameters, brand semantic networks, and price dynamic models constitute the core evaluation framework. Driven by technology, machine learning algorithms optimize consumers' weight allocation between "perceived gains" and "perceived sacrifices" in real time by analyzing user behavior logs and interaction data. For example, collaborative filtering recommendation systems can accurately match user needs with product attributes, reducing information entropy in the decision-making process. This process triggers an emotional feedback mechanism: when perceived value exceeds the expected threshold, consumers generate positive emotional responses (such as satisfaction and trust), activating the reward circuit in neuroeconomics, which enhances dopamine secretion and purchasing motivation. Technologically, natural language processing (NLP) can monitor the emotional polarity of user reviews in real time and predict satisfaction fluctuation trends by integrating deep learning models, providing a basis for dynamic optimization by merchants. Ultimately, behavioral decisions are reflected in a positive reinforcement cycle of "satisfaction—loyalty." [2]

2.3. The Particularity of the Online Environment

Compared with offline shopping, the formation of consumers' perceived value in the online environment is constrained by the dual technical characteristics of "information asymmetry" and "experience virtualization." In the dimension of information transmission, the presentation of information in the online environment is "fragmented" and "one-way": product parameters are delivered through digital forms such as text descriptions, images, and videos, but consumers can only rely on limited information provided by platforms (such as product detail pages and user reviews) to make decisions, while merchants may manipulate consumers' cognition through SEO optimization strategies or selective information disclosure. Additionally, the limited semantic analysis capability of unstructured data (such as misjudgment of emotional tendencies in short-text reviews) exacerbates the risk of consumers misjudging the true attributes of products.

In the experiential dimension, the lack of physical touch prevents consumers from verifying product quality through "multisensory interaction," such as the tactile feel of clothing materials or the operational feedback of electronic products. To address this, technological tools must reconstruct a

"virtualized perception framework": Augmented Reality (AR) technology uses real-time tracking algorithms and 3D modeling to superimpose virtual products onto real-world scenes, enabling dynamic try-on or spatial adaptation effects; intelligent customer service systems integrate natural language processing (NLP) and emotional analysis algorithms to interpret users' consultation intentions and generate human-like responses, compensating for delays in manual service chain responses; blockchain traceability technology builds a decentralized product information verification network to ensure the transparency and tamper-proof nature of supply chain data, reducing information asymmetry risks[3].

3. Main Bottlenecks in Perceived Value of Current Online Shopping

3.1. Deviations Between Quality and Commitments

The deviation between product quality and descriptions in online shopping is primarily caused by defects in multimodal information fusion technologies. The digital presentation of product parameters relies on image recognition technologies and text semantic analysis models, but material detection remains limited by the sensitivity threshold of spectral analysis techniques. Color difference issues in clothing products stem from the discrepancy between the color gamut displayed on screens and the spectral reflection of physical items, while material differences are related to the accuracy of 3D modeling and the texture reduction degree of material textures. Merchants manipulate the weight of product descriptions through search engine optimization (SEO) strategies, exacerbating consumers' risk of semantic misjudgment of unstructured data. Additionally, the low coverage of blockchain traceability technology leads to low supply chain transparency, making it difficult to effectively control the risk of product information tampering.

Market regulation data shows that false advertising complaints account for 42%, with the core reason being that merchants use technical means to selectively disclose information—for example, enhancing product detail expression through image super-resolution technology without labeling the difference between algorithm-enhanced images and original items. Consumers lack the ability to judge the material simulation accuracy in augmented reality (AR) try-on technologies, further expanding the cognitive deviation between physical items and expectations.

3.2. Risks of Service Chain Disruption

The root cause of logistics delays lies in the insufficient dynamic optimization capability of intelligent scheduling systems. Although path planning algorithms can shorten delivery times, the low real-time traffic data fusion rate and the limited accuracy of weather prediction models lead to blind spots in end-to-end monitoring of logistics networks. While intelligent customer service systems have high intent recognition accuracy, their multi-turn dialogue processing capabilities are limited, with insufficient contextual relevance, and emotional polarity recognition models have a high misjudgment rate for complex semantics. The response lag of human customer service is related to the efficiency of work order allocation algorithms, resulting in long processing cycles for abnormal orders and significant priority ranking errors.

The technical bottlenecks in service chain disruption also manifest in the incomplete closure of data loops. A dynamic system from user behavior collection to strategy iteration has not achieved full-chain collaborative optimization. For example, the digital twin technology of logistics networks lacks real-time data fusion capabilities, and the reinforcement learning models of customer service systems have not reached stability thresholds in multi-scenario adaptability training. Additionally, the low coverage of eye-tracking feedback mechanisms for interface friendliness has led to user operation paths not being effectively incorporated into service optimization models.

3.3. Insufficient Development of Emotional Value

The lack of emotional value stems from the application gap in multimodal interaction technologies. Only 23% of merchants have deployed emotional marketing technologies, such as natural language

processing (NLP) emotional analysis models and personalized recommendation systems. The coverage of dynamic rendering technologies for festival-exclusive pages is insufficient, and there is a lack of biometric technology to support the mining of users' aesthetic preferences. The low participation rate (15%) in community interactions reveals defects in user-generated content (UGC) incentive algorithms: recommendation systems assign low distribution weights to long-tail content, and the semantic coverage of emotional resonance tags is insufficient. For example, the recognition accuracy of tags such as "sense of belonging" and "identity" has not reached the emotional connection threshold[4].

The absence of tactile feedback in virtual experiences further weakens the strength of emotional connections. For instance, the insufficient accuracy of material touch simulation fails to enhance users' trust in product quality through tactile interaction. The high error rate of quantitative models in emotional computing engines limits the precision of matching brand cultural identity with user identity labels. Additionally, collaborative filtering algorithms have not achieved cross-platform data integration in community interaction scenarios, and the capability to conduct correlation analysis between user behavior logs and social network data is weak, making it difficult to build a sense-of-belonging ecosystem based on shared interests.

4. A Multi-Dimensional Strategy System for Enhancing Perceived Value

4.1. Strengthening Quality Value: From Commitment to Trust

Precision product description technologies digitally reconstruct product parameters through 3D modeling and virtual reality technologies to eliminate information asymmetry. For example, IKEA's virtual home display system uses 3D modeling to dynamically adapt furniture to users' living scenarios, allowing consumers to adjust product dimensions and material parameters in real time and verify the actual placement effect of products through AR spatial positioning algorithms. The quality assurance closed loop relies on a supplier grading system and dynamic evaluation system. JD.com constructs a supplier qualification certification network through blockchain traceability technology, implements L1-L4 dynamic management of suppliers by integrating user review anti-fraud algorithms (such as semantic similarity detection and false review cluster analysis), eliminates suppliers with scores below the threshold, and incorporates high-quality suppliers into the strategic cooperation pool. When developing co-branded products, the Palace Museum Cultural and Creative Products uses spectral analysis technology to calibrate the color reduction of cultural relics and establishes a material detection database to ensure the consistency between cultural and creative products and the craftsmanship of original works.

4.2. Optimizing Service Value: Full-Process Experience Upgrade

The intelligent logistics network achieves dynamic inventory optimization based on demand forecasting models and regional warehouse-distribution collaboration algorithms. JD Hardware City uses historical order data to train LSTM neural networks, predicting peak procurement cycles for regional tools and pre-deploying high-frequency items to municipal warehouses in advance, increasing the proportion of next-day delivery orders to 92%. Emotional customer service design relies on multimodal emotion recognition technologies. Tmall’s "Heartwarming Service" mechanism calculates real-time user emotion intensity values through voice emotional analysis (such as fundamental frequency fluctuation detection) and text keyword extraction (such as "complaint" and "urgent"). When the negative emotion score exceeds 0.78, it automatically transfers to human customer service and pushes customized compensation plans. SF Express has introduced a temperature fluctuation warning system in cold-chain logistics, optimizing delivery routes by integrating user receipt feedback data, which has reduced fresh product loss rates by 37%.

4.3. Creating Social Value: From Transactions to Relationships

Brand culture empowerment reshapes consumption meaning through IP cross-border collaboration and scenario-based storytelling. The Palace Museum has joined hands with beauty brands to launch the "Moonlight of the Forbidden City" series of cosmetics, which replicates the texture of cloisonné enamel through digital extraction technology of cultural relic patterns and displays the historical background of cultural relics via an AR interactive mini-program, achieving a product premium rate of 240%. Community value co-creation relies on UGC (user-generated content) communities and collaborative design platforms. Xiaomi's "Orange Friday" campaign opens the theme design interface for the MIUI system, allowing users to submit design proposals through online collaboration tools and participate in voting. The top 10% of works by vote count are directly pre-installed in system update packages, generating a cumulative 230,000 pieces of user-generated original content. The LEGO IDEAS platform enables users to upload 3D modeling proposals; after community voting and engineering feasibility assessment, designs with over 10,000 support votes enter mass production. In the past three years, 14 user works have become official best-selling sets.

5. Conclusion

Through the multi-dimensional strategy system of strengthening quality value, optimizing service value, and creating social value, consumers' perceived value in the online shopping environment can be effectively enhanced. The application of technological tools such as blockchain traceability, intelligent logistics scheduling, and emotional customer service design provides strong support for solving problems of information asymmetry and experience virtualization. In the future, e-commerce platforms should continue to optimize technological applications, deepen insights into consumer needs, further promote the transition of perceived value from functional satisfaction to emotional identification, and create a higher-quality shopping experience for consumers.

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