

Consumer online shopping decisions based on prospect theory

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Abstract. This paper focuses on consumers' online shopping decision-making, adopting a behavioral economics perspective and analyzing it based on three mechanisms of prospect theory. Building upon a review of relevant literature, the core tenets of prospect theory are summarized, followed by an exploration of how these theoretical perspectives influence consumers' behavioral decisions across various stages, including information gathering, product evaluation, purchase intention, and post-purchase evaluation. The research findings are synthesized to highlight the significance of understanding consumer online shopping decisions through the lens of prospect theory, offering insights for academic innovation, business practices, policy formulation, and societal benefit enhancement.

Keywords: prospect theory, consumers, online shopping decision-making, behavioral economics

1. Introduction

In the era of the digital economy, online shopping has become the dominant form of modern consumption. According to the 56th Statistical Report on China's Internet Development released by the China Internet Network Information Center (CNNIC), as of June 2025, the number of internet users in China reached 1.123 billion, with an internet penetration rate of 79.7%. Among them, the number of online shoppers reached 976 million, an increase of 1.09 million compared to December 2024, accounting for 86.9% of all internet users [1].

The rapid development of internet technology has expanded consumption scenarios from offline to online, and consumption categories from physical goods to digital products and content services. This has fostered the growth of new consumption patterns, stimulated new consumer demand, and nurtured emerging consumer groups, making digital consumption an essential driver of domestic demand and high-quality economic development. The popularity of new consumption modes makes online shopping an important window for studying contemporary consumer behavior.

At the same time, price competition among e-commerce platforms (such as JD.com's "Hundred-Billion-Yuan Subsidies" and Pinduoduo's "Group-Buy Discounts") and increasingly sophisticated promotional strategies (such as Double 11 presales and 618 flash sales) have complicated the consumer decision-making process. Shoppers now face multiple challenges: choosing reference points, avoiding potential losses, and evaluating risks.

Although existing studies have begun to examine the role of behavioral economics in consumer decision-making, in-depth analyses specifically focusing on online shopping remain insufficient. Much of the prior research has centered on offline consumption contexts and has failed to explain several distinctive phenomena: Why are consumers extremely sensitive to "lowest historical price" labels? Why can the "7-day no-questions-asked return" policy significantly enhance purchase intentions? Why do negative reviews exert a disproportionately strong influence compared to their actual probability? These phenomena underscore the explanatory power of Prospect Theory.

Prospect Theory posits that individuals rely on reference points, exhibit loss aversion, and apply nonlinear probability weighting when making decisions under risk. However, existing studies still display several gaps: (1) insufficient systematic research on the formation mechanisms of reference points in e-commerce contexts; (2) lack of in-depth analysis on how platforms design strategies based on consumers' loss aversion; and (3) inadequate exploration of risk perception characteristics in emerging online shopping scenarios, such as livestream e-commerce.

To address these gaps, this paper systematically analyzes consumers' dynamic reference points, loss aversion, and nonlinear probability weighting in online shopping contexts, examining how these mechanisms influence consumer sensitivity to factors such as promotional pricing, negative reviews, and after-sales policies. Ultimately, these mechanisms shape consumers' risk preferences and determine their final purchase behaviors.

This research contributes in multiple dimensions: Theoretically, it extends the application boundaries of Prospect Theory in the digital economy and deepens the study of behavioral mechanisms in consumer online shopping decisions, offering a fresh perspective for behavioral economics. Practically, it provides guidance for enterprises to optimize pricing strategies, scientifically set reference prices, design dynamic pricing mechanisms, and improve promotional accuracy and after-sales service. From the perspective of current policies, this research can provide a basis for improving digital consumer regulation, helping to standardize pricing practices on existing platforms, upholding the rules of the consumer market, and effectively addressing issues such as fraudulent pricing. From a social development perspective, this research can help improve consumers' discernment of marketing tactics, foster a rational and positive consumer consciousness, and contribute to the healthy development of the existing consumer market. This research has significant implications for market development, market policy, and social welfare.

2. literature review

Prospect theory is a basic theory in behavioral economics, proposed by American scholars Daniel Kahneman and Amos Tversky in 1979. This theory goes beyond the neoclassical assumption of "rational economic man" and reveals some phenomena that challenge the traditional expected utility model. As an innovative descriptive method of economics, prospect theory uses empirical research to analyze psychological characteristics and behavioral patterns. By examining multi-dimensional reference points, prospect theory mainly analyzes how irrational psychological factors affect risk attitudes and choice behaviors. Prospect theory is recognized by the academic community as the cornerstone of behavioral economics and is one of the important theories in this academic field [2].

Even now, prospect theory can still be used in many fields. In the financial field, it is mainly used to analyze irrational investor behavior, such as the disposition effect; in the consumer market economy, it can be used to analyze consumer purchasing behavior under different marketing activities; in the healthcare field, it can be used to predict and analyze patients' choices of multiple treatment options. Regarding risk decision-making, the application of prospect theory has further proved that people do not actually make final decisions based on maximizing expected utility. There are actually very obvious differences in people's perception of gains and losses. This is mainly because the psychological gap brought about by equivalent losses is greater than the happiness brought by equivalent gains. Additionally, people exhibit risk aversion when facing benefits, manifested as loss aversion, while showing increased risk-seeking tendencies during losses. These decision preferences are also influenced by reference points, which vary depending on individuals and contexts. In terms of decision weighting, prospective theory demonstrates that peoples subjective probability judgments dont fully align with objective probabilities. Individuals tend to overestimate the likelihood of low-probability events while underestimating high-probability ones. This bias in probability weighting further impacts decision outcomes.

In prospect theory, the behavior of decision makers revolves around reference points. First, managers choose behavioral reference points [3] In an ideal scenario, capability managers could predict decision-making behaviors based on reference points (shareholder return expectations). However, in reality, their decision-making inevitably gets influenced by various subjective and objective factors. First, managers calculate decision weights according to the probability of outcome occurrence. Second, their risk attitude shapes the value function of decision-making: they tend to avoid risks when meeting return expectations and pursue risk-taking when deviating from them [4]. The prospect theory reveals the caution of bounded rational subjects when facing potential gains and the risk preference of bounded rational subjects when facing potential losses, which provides a more accurate explanation for decision-making in uncertain situations [5].

Analysis on consumers online shopping decisions

Online consumption refers to the process where organizations or individuals purchase and use products or services from businesses through digital platforms, achieving integration between consumption and production. Businesses now offer customized services tailored to consumer needs while leveraging higher efficiency than traditional retail models. This digital approach provides consumers with diverse options, allowing them to easily obtain desired goods without leaving home. Current research on online shopping behavior predominantly adopts the perspective of rational behavioral theory [6]. Technology acceptance model [7] Theory of planned behavior [8] The research methods include structural equation modeling and SPSS mathematical statistical analysis. The study found that consumers focus on product price and personalization in the pre-purchase stage, prioritize logistics and delivery in the mid-purchase stage, and pay attention to after-sales service in the post-purchase stage [9].

The online purchasing decision of consumers refers to the entire process of using internet information technology to search for and analyze information that meets individual user needs. When multiple homogeneous products are available and can satisfy their requirements simultaneously, this involves deciding whether to purchase or which product to buy, along with post-purchase

evaluations [10]. The primary factors influencing consumers online purchasing decisions include individual characteristics (user background, purchase motivations), product attributes (searched products, experiential products, trusted products), transaction interface features, and risk perception. These elements collectively form the basis for establishing reference points that further shape purchasing decisions. The virtual nature of online transactions makes perceived trust a critical factor in consumer e-commerce choices, while social media networks serve as vital channels for businesses to strengthen trust with customers [11].

In summary, while existing literature has explored the relationship between reference points and online shopping, there remains a lack of dynamic tracking of price comparisons between online and offline channels as reference points. This paper will focus on prospect theory to further elucidate the connections between reference points, loss aversion, risk perception, and consumer decision-making in online shopping.

3. Discussion

This study applies behavioral economics to examine online shopping decisions through the lens of prospect theory. Consumer choices are shaped not only by price but also by dynamic reference points, loss aversion, and risk perception. Accordingly, the analysis focuses on these three elements to illuminate the behavioral characteristics of online shopping.

3.1. Reference points and online shopping

Prospect theory emphasizes that judgments and choices are made relative to reference points. In online shopping, such points include historical prices, promotional prices, peer reviews, comparisons across similar products, and online–offline price differentials. Historical prices serve as temporal anchors: consumers track fluctuations and compare current prices with past averages to assess whether a purchase constitutes a “bargain.” During competitive price adjustments on platforms such as JD.com and Meituan, the lowest observed transaction price often becomes the benchmark. In large-scale sales events (e.g., “618” or “Double 11”), prices falling below this point markedly increase purchase intentions, while prices above it—even if still below the market average—may discourage purchases.

Group-buying models like Pin Hao Fan reinforce dynamic reference points by displaying price differentials, group size, and real-time sales volumes, thereby stimulating transactions. According to Meituan’s 2024 semi-annual report, Pin Hao Fan reached over 8 million daily orders [12]. By July 2025, its daily orders exceeded 35 million, and the number of participating branded stores had increased by 64% year-on-year [13]. Evidence shows that 90% of merchants reported sales growth above 30%, while improvements in preparation efficiency reduced costs by more than 20% [14]. Peer evaluations further function as trust anchors, with positive reviews constructing a “virtual experience” that reduces uncertainty. Cross-channel comparisons—such as offline trials followed by online price checks—highlight the multiplicity of reference points, underscoring prospect theory’s view that value judgments depend on subjective anchoring.

3.2. Loss aversion in online shopping

Loss aversion implies that losses weigh more heavily on consumers than equivalent gains. In online shopping, this takes the form of avoiding both financial loss and experiential loss. Flash-sale promotions, for example, frame discounts as “benefits at risk of disappearing,” thereby intensifying loss avoidance. Yet consumers may hesitate due to concerns about quality or after-sales service.

Illustratively, in Longhai District (Zhangzhou, Fujian Province), a food manufacturer reported that the egg content of small cakes had dropped from 30% to below 10% to maintain low prices. Consumers appeared to obtain cheaper goods but in fact bore hidden quality costs [15]. The fear of “overpaying” further drives the use of price-tracking tools, prolonging decision-making cycles during promotional periods. Platforms can mitigate such concerns by offering price guarantees, extending return policies, and ensuring product quality. Similarly, return policies—such as the widely adopted “seven-day unconditional return”—transform anticipated loss into willingness to purchase. Thus, loss aversion does not simply suppress transactions; when offset by institutional safeguards, it may convert risk avoidance into limited risk-taking, extending the applicability of the theory.

3.3. Risk perception, probability weighting, and online shopping

Risk perception in online shopping can be analyzed primarily from several perspectives: product quality issues, price reductions, and delivery issues. These issues can lead to negative reviews from merchants, price guarantees, and delivery complaints. Negative reviews can lead consumers to develop a negative attitude toward the product, making them believe that purchasing it is of little value. Long delivery times can also lead to negative product evaluations, ultimately leading consumers to abandon their purchase or return the product.

These phenomena reflect the probability weighting problem in prospect theory. Consumers are more easily influenced by negative factors during the purchase process, such as long delivery times. Conversely, positive emotions during the purchase process have less of an impact. Therefore, consumer purchasing psychology and decision-making are primarily influenced by subjective feelings rather than objective factors. When faced with the possibility of hidden losses, most consumers will automatically avoid such losses. Only when the potential benefits become more apparent do consumers exhibit risk-taking behavior, such as when participating in Taobao's Singles' Day (Singles' Day) shopping event. Misleading information in fake reviews can further enhance risk perceptions and complicate decision-making.

In short, prospect theory can help us better analyze online shopping behavior. Reference points, loss aversion, and risk perception together constitute the psychological mechanisms that influence consumer decision-making. Meituan, JD.com, and Ele.me's food delivery marketing strategies currently leverage these mechanisms, deeply analyzing consumer purchasing psychology.

4. Conclusion

Consumer decision-making psychology can be gleaned from the core elements of prospect theory. This article analyzes online consumer shopping decisions and applies prospect theory from behavioral economics. It finds that consumers' ultimate purchasing behavior, whether in product selection, price judgment, or promotional participation, is consistent with prospect theory's predictions.

First, regarding reference point dependence, this study primarily analyzes historical prices, pricing for similar products, and online and offline price comparisons as the final criteria for decision-making. Second, from the perspective of loss aversion, consumer protections such as freight insurance and price protection can effectively alleviate consumer hesitation. Finally, from the perspective of risk perception, consumers are highly aware of consumer risk. They can understand the risks of a product from reviews, such as negative reviews of quality issues or delivery problems. These phenomena demonstrate that prospect theory addresses areas where traditional rational decision-making models fall short, helping us better understand and analyze consumer purchasing behavior.

However, this study has certain limitations. Key variables such as "cultural differences" (e.g., reference point selection preferences in collectivist versus individualist cultures) and "generational disparities" (including risk perception gaps between Generation Z and the silver generation) were not included. Furthermore, while focusing on traditional online shopping models, the research did not thoroughly examine decision-making mechanisms in emerging platforms like live-streaming e-commerce and social commerce.

Future research could further expand the application of prospect theory across diverse consumer groups, cultural contexts, and emerging consumption scenarios (such as live-streaming shopping and virtual commerce), while conducting cross-cultural and intergenerational comparative studies. By exploring its intersections with other behavioral theories, this approach aims to comprehensively explain complex and dynamic consumer decision-making behaviors. Such advancements would provide targeted theoretical support for platforms to implement precision marketing strategies and enable businesses to optimize their service delivery systems.

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