Digital Economy and Behavioral Bias: Psychological Traps in Online Shopping and Platform Selection

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Abstract: Since the digital economy has grown so quickly, e-commerce has emerged as a crucial element of contemporary trade, greatly influencing consumer choice. However, cognitive biases like anchoring effects, framing effects, and choice overload have become more prevalent due to the complexity of online information and the sheer number of options. Through a review of the literature and a case study, this paper investigates how these biases affect consumer behaviour and e-commerce platform strategy. The results show that framing effects change purchasing preferences, price anchoring affects value perception, and having too many options causes decision fatigue. While current research provides insightful information, gaps remain, especially in long-term behavioural patterns. Platforms could improve recommendation algorithms, increase pricing transparency, and inform users about decision-making biases in order to lessen these biases. Future studies should look more closely at how decision-support tools and personalised recommendation systems can encourage more sensible consumer behaviour in online buying settings.

1 INTRODUCTION

With the rapid development of the digital economy, e-commerce has become an important component of the modern economy, and consumers' shopping methods and decision-making processes are gradually shifting to online platforms. McKinsey and Company argued that the COVID-19 pandemic has accelerated the transformation of global shopping methods. During the pandemic, the frequency of online shopping by consumers increased by 2-3 times (McKinsey & Company, 2020). This rapidly expanding online shopping environment provides consumers with more choices and information, but also exacerbates the complexity they face in the decision-making process. In this context, behavioral biases in online shopping and platform selection processes, such as anchoring effects, framing effects, and choice overload, have gradually become key factors affecting consumer decision-making. In recent years, researchers have extensively explored the application of behavioral bias in the digital economy in behavioral economics. Liu et al. argue that the anchoring effect significantly affects the pricing decisions of online consumers, and companies need to consider consumers' anchoring psychology when formulating pricing strategies (Liu et al., 2020).

Hu and Li believe that by utilizing framework effects to optimize pricing and default option strategies, e-commerce platforms and customized services can effectively increase consumer purchase intention and spending (Hu & Li, 2019). Long et al. argue that when faced with too many choices, consumers are more likely to experience decision fatigue, which in turn affects their purchasing decisions (Long et al., 2025). Grewal and Roggeveen analyzed in detail the impact of the digital shopping environment on consumer behavior and argued that behavior biases such as anchoring effect and loss aversion are very common in e-commerce platforms (Grewal & Roggeveen, 2020). Although existing research provides ideas for understanding behavioral biases in the digital shopping environment, there are still gaps that need to be filled. Existing research has mostly focused on a wide range of consumer groups, neglecting the moderating effect of individual differences (such as age and cultural background) on behavioral biases. In addition, further research is needed on how to reduce decision fatigue and choice overload without sacrificing user experience. Research has shown that biases such as anchoring effect, framing effect, loss aversion, choice overload, and social identity effect significantly affect consumer decision-making and marketing strategies of e-commerce platforms. This article explores the impact of these biases on the

digital economy through literature review and case analysis, and provides optimization suggestions for platform design, laying the foundation for future related research.

2 CORE CONCEPTS

Kahneman argued that consumer decisions are often influenced by cognitive biases, especially when faced with complex information or excessive choices, which can lead to irrational decisions (Kahneman, 2011). In the digital economy environment, behavioral biases are mainly manifested as anchoring effects, framing effects, loss aversion, choice overload and other psychological factors. Anchoring effect is a common cognitive bias where consumers overly rely on the initial value of information to make decisions. This effect is particularly important in the pricing strategy of e-commerce platforms, which often use high reference prices to enhance consumers' attractiveness to discounted products, thereby affecting their purchasing decisions. Liu et al. argued that in the digital economy, the anchoring effect changes consumers' purchase decisions by shaping consumers' value perception and price acceptance. Businesses can use the strategic price anchor to optimize pricing strategies to enhance market competitiveness and consumer conversion rate (Liu et al., 2020). The framing effect refers to how different ways of presenting information can affect consumers' judgments and choices. In e-commerce platforms, the language used in advertisements or product descriptions may be framed in different ways, thereby influencing consumers' psychological reactions. Hu and Li argued that on the online platform, the combination pricing can improve the purchase intention better than itemized pricing, and the degradation framework is easier to promote consumers' acceptance of higher total price and default options than the upgrading framework, which is of great significance to the pricing and service customization strategy of Internet marketing (Hu & Li, 2019). Choice overload refers to the anxiety or confusion that consumers feel when faced with too many choices, leading them to make avoidance decisions or choose simple solutions. Chernev et al. suggest that when consumers face choice overload, they are more inclined to choose default options or make suboptimal decisions. This is because too many choices can lead to decision fatigue, and consumers are more inclined to choose "safe options" or suboptimal options when feeling uncertain or fatigued (Chernev et al., 2015). In order to more

clearly show how behavior bias causes psychological traps and thus affects people's judgment in online shopping, this paper divides it into two parts for discussion: the first is the research on anchoring effect and framing effect, and the second is the research on choice overload and consumer decision-making. In the following analysis, the present study will explore the research content and the relationship between these two aspects.

3 THE DUAL INFLUENCE OF THE ANCHORING EFFECT AND FRAMING EFFECT ON DIGITAL SHOPPING DECISION

As for characteristics of the research object, in the research of anchoring effect and framing effect, many studies focus on analyzing how consumers make purchase decisions on e-commerce platforms. Liu et al. studied the impact of anchoring effect on the pricing of e-commerce products, and found that by adjusting the price to match different anchoring situations, consumers' value perception and product competitiveness could be improved, and the effectiveness of the strategy was verified by simulation (Liu et al., 2020). Similarly, Hu and Li studied the impact of framing effects, namely how product descriptions framed by savings rather than costs affect consumer choices (Hu & Li, 2019).

As for measurement methods, Liu et al. constructed an optimal pricing model based on price anchors using mathematical modeling, sensitivity analysis, and simulation experiments. The results showed that a higher price anchor would lead to a decrease in optimal pricing, and emphasized the importance of strategic price anchoring in e-commerce pricing (Liu et al., 2020). Hu and Li's research explored the impact of price display methods on consumer decision-making through two experiments: Experiment 1 found that combined pricing increased purchase intention, while segmented pricing made consumers more confused; Experiment 2 found that offering luxury packages as the default option would encourage consumers to spend more, reflecting the loss aversion effect. (Hu & Li, 2019).

As for data analysis methods, these studies used quantitative analysis methods such as regression analysis and experimental data analysis to verify the impact of different biases on consumer decision-making. Liu et al. used mathematical modeling and

optimization methods to analyze the impact of anchoring effects on optimal pricing strategies based on the MNL model and verified the stability of the model through sensitivity analysis and simulation experiments (Liu et al., 2020). Hu and Li used independent sample t-tests to compare whether there were significant differences in the mean values of variables such as purchase intention, customization frequency, and final price under different experimental conditions. (Hu & Li, 2019).

With respect to data analysis results, The significant impact of anchoring effect and framing effect on consumer e-commerce platform decision-making, especially in price evaluation and value perception. Liu et al.'s research shows that when the price is higher than the anchor point, the greater the degree of anchoring, the lower the optimal pricing. However, when the cost is high, increasing the degree of anchoring will reduce profits (Liu et al., 2020). The experimental results of Hu and Li show that merger pricing increases consumer purchase intention, and the purchase intention is significantly higher under merger pricing conditions than under split pricing. In another experiment, the default downgrade framework resulted in consumers spending more and having a lower frequency of customization, while the upgrade framework resulted in consumers spending less but having a higher frequency of customization, with a significant difference (Hu & Li, 2019).

With respect to research conclusion and comparison with other studies, Liu et al. argued that anchoring bias is an important determinant of perceived product value in digital environments, which is consistent with similar research by Tversky and Kahneman in traditional retail environments (Liu et al., 2020; Kahneman, 2011). Hu and Li believe that merger pricing is more effective in promoting consumer purchases than split pricing, while downgrade customization is easier to maintain a higher total price than upgrade customization. This is because segmented pricing increases consumers' sense of loss and reduces their willingness to purchase, while in downgraded customization, consumers are unwilling to give up their existing high spending options. Research has shown that consumer decision-making is influenced by framing effects, and e-commerce platforms and customized services can improve purchase rates and spending amounts by optimizing pricing and default option strategies (Hu & Li, 2019). Similarly, Chandran and Morwitz studied the framing effect of price information and argued that consumers are more likely to be attracted by discount information such as "saving 30%" rather

than the direct price display of "original price of 100 yuan, current price of 70 yuan". This study also indicates that subtle changes in the presentation of prices can significantly affect consumers' purchasing tendencies, further supporting the findings of Hu and Li. (Hu & Li, 2019; Chandran & Morwitz, 2006). These studies all indicate that subtle changes in the way information is presented can significantly alter consumer decision-making.

With respect to Research deficiencies and shortcomings, although these studies provide valuable insights, their limitations cannot be ignored. For example, Liu et al.'s article has some limitations, including assuming that consumers have homogeneous preferences, while in reality preferences may differ. Although the anchoring effect has been considered, other psychological factors such as brand loyalty and consumer emotions have not been fully taken into account; The lack of clear explanation of data sources and sample selection may affect the universality and reliability of research results (Liu et al., 2020). Similarly, Hu and Li also have some limitations. Firstly, Experiment 1 only used high school students, while Experiment 2 only used MBA students as research subjects. The representativeness of the samples may be insufficient, and future research can be expanded to a wider range of age groups and social groups. In addition, the research scenario is relatively single, only examining the purchase of electronic products and customized travel packages. In the future, other product categories such as luxury goods, daily necessities, and fitness memberships can be further explored. Finally, this study only measured consumers' purchasing responses in the short term and did not explore long-term shopping habits (Hu & Li, 2019). Future research can supplement this deficiency through long-term tracking.

4 THE IMPACT OF CHOOSING OVERLOAD ON DIGITAL SHOPPING DECISIONS

As for characteristics of the research object, the research on choice overload mainly focuses on the decision-making difficulties faced by consumers when faced with a large number of product choices, and this choice difficulty is particularly evident on e-commerce platforms. Long et al. argue that moderate recommended products are most beneficial for improving conversion rates, while excessive selection can lead consumers to give up purchasing, which is

consistent with Schwartz's study on choice overload in consumer psychology (Long et al., 2025; Schwartz, 2009). Simultaneously supporting the views of Jiang and Benbasat, it is believed that when consumers are faced with too many choices, they often feel decision fatigue and either avoid making decisions or choose default options (Jiang & Benbasat, 2007).

In regard to measurement methods, Long et al. conducted a large-scale randomized controlled trial on the Alibaba platform to investigate the impact of recommended product quantity on consumer decision-making. The experiment randomly divided consumers into four groups, displaying 1 to 4 recommended products and tracking their click and purchase behavior. The main measurement indicators include search probability, purchase probability, click through depth, and purchase conversion rate, analyzing the impact of recommended product quantity on consumer decision-making (Long et al., 2025).

As for data analysis methods, in the study of choice overload, quantitative statistical analysis and behavioral modeling are common analytical methods for understanding consumer decision-making behavior when faced with a large number of choices. Long et al. used various data analysis methods, including two sample ratio tests to compare the differences in click-through and purchase rates between different groups, linear regression analysis to control for fixed effects of merchants and dates, and exploring the impact of recommendation quantity on clicks and purchases; In addition, the causal forest method was used to identify under which circumstances the overload effect was strongest, and randomized tests were conducted to ensure the randomness of the experimental groups and avoid bias in consumer attributes (Long et al., 2025).

Data analysis shows that recommending too many products can significantly reduce consumers' purchase and search probabilities. When recommending two products, the purchase probability is the highest, increasing by 67% compared to recommending one product; When recommending 3 or 4 products, the purchase probability decreases, and recommending 4 products is 16.4% lower than recommending 2 products. 64% of the decrease in purchase rate is due to not clicking on recommended products, reflecting the selection overload effect (Long et al., 2025).

With respect to research conclusion and comparison with other studies, Long et al. believe that moderate product recommendations are most beneficial for improving conversion rates, while excessive selection can lead to giving up on purchases,

which is consistent with Schwartz's research on choice overload (Long et al., 2025; Schwartz, 2009).

In regard to Research deficiencies and shortcomings, Although research suggests that selection overload can lead to negative outcomes, studies are deficient in the diversity of samples and contexts. Long et al. found that this study is limited to the Alibaba platform, and its universality can be verified on other e-commerce platforms in the future. The study did not consider the long-term behavior of consumers, nor did it analyze the negative emotions that may arise from excessive recommendations.The necessity of studying negative emotions can be explained from the following perspectives: choice overload often leads to negative emotions such as anxiety and helplessness, which may significantly affect consumers' decision-making behavior. For example, too many choices may lead to decision fatigue, leading consumers to avoid decisions or regret. The rise of these negative emotions not only affects the instant consumption experience, but also may reduce the long-term loyalty of consumers. Therefore, the study of negative emotions is helpful to deeply understand the negative impact of over recommendation on consumer behavior, and provide reference for improving the design of recommendation system. Future research can explore the impact of long-term consumption behavior on decision-making patterns, as well as the role of recommended product order in decision-making behavior (Long et al., 2025).

5 DISCUSSION AND SUGGESTION

This article provides a comprehensive literature review on the impact of cognitive biases on shopping decisions, particularly the effects of anchoring, framing, and choice overload on consumer behavior. Research has found that cognitive biases in the digital environment not only affect decision quality, but may also lead to irrational behavior, such as excessive reliance on price anchors, being misled by information frameworks, and decision fatigue when there are too many choices. Although the digital economy provides a convenient shopping experience, these biases often lead consumers to make partially rational decisions, affecting their actual interests. E-commerce platforms may exacerbate irrational consumer behavior by exploiting these biases. To this end, this article proposes several suggestions: platforms should adopt transparent pricing strategies

and avoid using conspicuous initial prices to influence consumers; When displaying prices and promotional information, it should be diversified to help consumers evaluate comprehensively; Simplify the shopping process and recommendation system to reduce decision fatigue caused by selection overload. In addition, platforms should educate consumers to identify and address psychological biases in shopping, ensuring transparency and fairness. For consumers, this article suggests comparing product information from multiple sources before shopping, setting clear purchasing goals, reducing impulse buying, and helping to make more rational decisions. Future research can explore behavioral differences under different cultural backgrounds, collect long-term data to analyze the impact of behavioral biases on shopping decisions and loyalty, and study cross platform consumer behavior differences.

6 CONCLUSION

This study analyzed the impact of behavioral biases, anchoring effects, framing effects, and choice overload on online shopping and platform selection in the digital economy. It was found that consumers are susceptible to cognitive biases when faced with complex information and choices, leading to irrational decision-making and ultimately affecting brand loyalty and consumption patterns. Based on this, it is recommended that e-commerce platforms adopt more reasonable and transparent design strategies to reduce consumers' cognitive burden and help them make more rational decisions. Future research should focus on the moderating effect of individual differences on cognitive bias, and explore how personalized recommendation systems or decision support tools can alleviate the impact of bias, enhance consumer experience, and purchase behavior.

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