

The Influence of the Algorithmic Recommendation Mechanism of Short-Video Platforms on Consumers' Purchasing Decisions

Zeyu Zhang*

New Oriental Jinan, Jinan, 250000, China

*Corresponding author: zzy070630@gmail.com

Abstract. Short-video platforms have become an important part of consumers' lives due to their unique content and rapid dissemination, and their user base continues to expand. Algorithmic recommendation enhances user stickiness and influences purchase decisions through personalized content delivery, such as "product recommendation" and live-streaming sales. The topic of this article is the influence of the algorithmic recommendation mechanism of short-video platforms on consumers' purchase decisions and brand loyalty, revealing how it affects purchase intentions and behaviors. The research method of this article is literature review. The results is that the algorithm enhances the purchase intention and decision-making efficiency through personalized recommendation, especially with significant effects in real-time interaction scenarios, but is affected by trust and the situation. The research conclusion of this paper is that the algorithm optimizes the purchase efficiency and experience, but the effect varies due to trust, context and transparency. It provides guidance for brand marketing and suggests focusing on real data and long-term effects.

Keywords: Algorithmic recommendation mechanism; brand loyalty; purchasing decisions.

1. Introduction

Short-video platforms, with their unique content formats and rapid dissemination, have become an indispensable part of global consumers' lives, and their user base continues to expand. The core driving force of short-video platforms is the algorithmic recommendation mechanism. By precisely pushing personalized content, it not only enhances user stickiness but also significantly influences consumers' purchasing decisions. For instance, the rise of the "Zhongcao" phenomenon and live-streaming sales demonstrates how algorithms drive the "see and buy" behavior. At the theoretical level, the significance of this study lies in deepening the understanding of consumer behavior in the digital age and enriching the relevant theoretical system. At the practical level, the results of this study can provide a basis for brands and merchants to optimize their short-video marketing strategies, and at the same time offer references for regulatory authorities to formulate policies and balance commercial interests with consumer rights and interests. The research focuses on "the influence of the algorithmic recommendation mechanism of short-video platforms on consumers' purchase decisions", aiming to reveal how algorithms shape purchase intentions and behaviors through personalized push. The research adopts the literature review method to explore the following issues: 1. How does the algorithm mechanism enhance the purchase intention and decision-making efficiency; 2. How can consumer loyalty be enhanced through algorithmic mechanisms? Through systematic analysis, this study aims to provide theoretical support and practical guidance for short-video marketing, and at the same time contribute insights to understanding the new characteristics of consumer behavior in the digital age. This research addresses academic interest in the impact of algorithms and offers a scientific foundation for practical business applications.

2. Introduction to the Core Concepts

2.1. Concept Introduction.

The algorithmic recommendation mechanism refers to that short video platforms, through user behavior data (such as browsing activities, likes, and comments) and content features, utilize technologies such as collaborative filtering and deep learning (such as Deep Neural Network and

Recurrent Neural Network). These technologies match user preferences and content tags in real time with automated decision-making systems. Its core objective is to enhance user stickiness and indirectly influence consumption decisions.

Purchase intention is the subjective purchase probability of consumers for specific goods or services, driven by factors such as information quality, emotional resonance and social recognition. In short video scenarios, algorithms stimulate users' immediate consumption impulses through precise push notifications (such as the "Zhongcao" effect).

Brand loyalty is a comprehensive manifestation of consumers' continuous choice and emotional dependence on a certain brand. In an algorithmic environment, brands enhance users' recognition and trust through repeated exposure and personalized content, thereby establishing long-term consumption bonds.

2.2. Classification and Characteristics

Algorithm mechanisms can be classified into three categories: The first category is the collaborative filtering type. Content is recommended based on user similarity, such as "You may like." The second category is content analysis type: it matches interests through video tags and semantic recognition, such as pushing kitchenware advertisements through food-related videos. The third category is the hybrid model: integrating user behavior with content features to enhance accuracy, such as Douyin's "traffic pool" hierarchical recommendation. The features include real-time performance, multimodal data processing (text, image, audio) and dynamic weight adjustment. Purchase intention can arise instantly, often stimulated by strong visual cues and time-limited promotions in short videos (such as live-streaming sales). Persistent willingness: Cultivating user needs through long-term algorithms (such as beauty tutorials associated with product reviews). Social-oriented willingness: Trust conversion based on sharing by KOLs or friends (such as Zhongcao notes on Xiaohongshu). The formation paths of brand loyalty include: algorithm-dependent type: Users develop brand habits due to the accuracy of recommendations (such as frequently pushing new products of the same brand). Emotional connection type: Evoke emotional resonance through storytelling content (such as enhancing identification through brand public welfare videos). Social interaction type: Enhance the sense of participation through interaction in the comment section or challenge competitions (such as the Heytea collaboration topic).

3. The Influence of Algorithmic Mechanisms on Individual Purchasing Decisions

The analysis of the first literature is based on the research of Zicheng Luo. This study focuses on a wide range of e-commerce consumers, who are users of short-video and live-streaming platforms such as TikTok and YouTube. When these consumers use these platforms, they are bound to interact with the algorithmic mechanisms such as content recommendation and personalized push of the platforms. The methods used in this study are literature review and qualitative analysis. It integrates and analyzes the existing research on the influence of short videos/live streaming on purchasing decisions. This design does not directly measure or manipulate specific algorithm variables. However, many of the phenomena it reviews, such as information transmission methods, content recommendations, and interaction forms, are driven or regulated by the background algorithm mechanisms. The research conclusion is that short videos and live streaming have significantly enhanced consumers' purchase intention, repurchase intention and impulse purchase behavior. Algorithm-driven personalized content recommendation enhances user engagement, brand recognition and satisfaction by providing more entertaining, immersive and relevant experiences, thereby influencing purchase decisions. Algorithms help present "appropriate" product information and scenarios to "suitable" consumers. The visibility and effectiveness of the real-time interaction and social functions provided by the platform may also be affected by algorithm ranking or algorithm recommendation. This influence helps to reduce consumers' perceived risk and psychological

distance and enhance their sense of trust. An environment for the creation and reinforcement of algorithmic mechanisms. For example, presenting visually impact-strong content, pushing time-limited promotional information, and creating a community atmosphere constitute the "Stimulus" in the stimulus-Biome-response Model, which can effectively stimulate consumers' inspiration and flow experience, thereby promoting impulse purchases. Regarding the research flaws and deficiencies, as it is a literature review, this study failed to directly separate and quantify the specific contribution of the algorithm mechanism itself to the purchase decision. Instead, it examined the overall impact of the media (short videos/live streaming) supported by the algorithm. The research clearly points out that the impact of emerging technologies needs to be explored in the future, among which personalized recommendation algorithms are included. It emphasizes the need to study how these algorithms can more accurately meet consumer needs and improve marketing efficiency. This point indicates the deficiency of the existing research in directly exploring the algorithm mechanism. Current research should conduct a more in-depth study on how the psychological mechanisms of consumers in the algorithmic recommendation environment (such as perceived value, emotional responses, cognitive biases) affect purchasing decisions, especially impulse buying behaviors. There is a lack of analysis on the differences in the effects of algorithm mechanisms under different cultural backgrounds [1].

The analysis of the second literature is based on the research of Hannah Metzler and David Garcia. The subjects analyzed in this research are a wide range of digital media users. These users often interact with algorithms that process data and recommend content when using services such as social media and news platforms. This study focuses on the impact of algorithms at both the individual and collective levels (such as social well-being, misinformation dissemination, and political polarization). This paper is a literature review and opinion piece, integrating and analyzing various digital media user groups involved in existing studies. The methods used are literature review and theoretical integration. It reviews and assesses the current empirical evidence on how algorithms affect well-being, misinformation and polarization. The article highlights a core methodological challenge in the study of this field: there is a feedback loop between the algorithmic mechanism and the existing "social drivers" (such as human cognitive biases, social norms, political tendencies, etc.), which makes it difficult to distinguish the independent role of the algorithm from the influence of social factors. the conclusion is that algorithmic mechanisms on digital media (such as content recommendation and information ranking) have become ubiquitous and have raised concerns about the well-being of individuals and society. The influence of algorithms is neither straightforward nor easily delineated. Their functions are complex and closely interact with users' behaviors, psychology and the broader social context. A key methodological limitation of this paper lies in the methodological difficulty: Due to the complex feedback loop between the algorithm and the social driving factors, it is very difficult to separate and quantify the independent causal effects of the algorithm. Relevant empirical research is often limited by the opacity of platform data and algorithm details, as commercial algorithms are usually proprietary. This makes it difficult for external researchers to precisely understand the operation mode of the algorithm and its impact. Establishing a clear causal relationship between the use of algorithms and a wide range of social outcomes is extremely challenging. It is essential to recognize that correlation does not imply causation. The influence of algorithms is highly context-dependent and depends on specific platforms, user groups, algorithm designs and social and cultural environments, which makes it difficult to generalize research results. The article points out that the algorithm is adopted rapidly and without sufficient supervision, which also indirectly increases the difficulty of studying and understanding its overall impact. In the existing research, there is a lack of large-scale empirical studies that can effectively control confounding factors and track long-term effects [2].

The analysis of the third literature is based on the research of Gizem Yalcin, Sarah Lim, Stefano Puntoni, Stijn M.J. van Osselaer, etc. The study included MTurk workers, Prolific workers and managers of some companies. The topic of this research is consumers' responses to algorithms and individuals decisions. The research adopts an experimental design. The variables manipulated include

the type of decision-maker (algorithm vs. human) and the superiority of the decision outcome (beneficial vs. unfavorable). Dependent variables include attitudes towards the company, word-of-mouth intentions, and attribution measurements. The study uses statistical methods such as ANOVA, mediation analysis and moderation analysis to explore how algorithmic mechanisms affect individual decision-making responses. The scenarios are mostly hypothetical purchase or application decisions (such as loans or membership), focusing on consumers' perception of algorithmic decisions. Research has found that in purchasing decisions, consumers' positive responses to favorable decisions made by algorithms (such as accepting applications) are lower than those to human decisions, but for unfavorable decisions (such as rejection), this difference weakens. The reason lies in the attribution process: it is difficult for consumers to internalize the favorable decisions of the algorithm as their own value, while externalizing the unfavorable decisions is just as easy for algorithms and human decision-makers. Therefore, algorithmic mechanisms may weaken an individual's positive emotions towards purchasing decisions, especially when there are favorable outcomes. The limitations of the research include the main use of hypothetical scenarios and self-reported data, which may not fully reflect the real purchasing behavior. The research scenarios are diverse, but do not cover all decision-making situations. The long-term impact of algorithmic decision-making on individual purchasing decisions or actual purchasing outcomes has not been explored. Furthermore, the income level of the sample is not clear, which may affect the applicability of the results to different economic groups. It was suggested during the discussion that future research should focus on actual behaviors and long-term effects to gain a more comprehensive understanding of the impact of algorithmic mechanisms. This study indicates that the application of algorithms in purchasing decisions may affect individual responses due to the different advantages of the results. Especially when making favorable decisions, consumers' responses are relatively weak, which is caused by the difficulty of attribution. The research design is rigorous but limited by hypothetical scenarios. In the future, attention should be paid to real purchasing behaviors [3].

The analysis of the fourth paper is based on Donghee Shin's research, which provides a comprehensive perspective for this study to understand the interaction between users and algorithmic recommender systems. It not only reveals the importance of transparency and accuracy to trust, but also demonstrates the complex relationship between user psychology and behavior through the user experience model. For developers of recommender systems, research has shown that they must not only refine their algorithmic techniques but also pay attention to the subjective experience of the user in order to design a more humanized and effective recommender system [4].

The analysis of the fifth literature is based on the research of Shaofeng Wang, Jose Esperanca, and Qiao Wu. The conclusion of this article is: (1) Intelligent recommendation positively moderates the relationship between perceived value and live streaming participation on purchase intention, but intelligent recommendation negatively moderates the relationship between perceived cost and purchase intention. (2) Perceived usefulness and ease of use have a positive impact on perceived value. Free trials have a negative impact on perceived costs. Perceived usefulness, perceived ease of use and free trial indirectly affect the intention to purchase through two mediating variables [5].

The analysis of the sixth literature is based on the research of Xicheng Yin a, Jing Li a, etc. This study shows that short-video apps, through their unique social and technological advantages, can embed advertisements in users' fragmented but focused areas, shorten the purchase decision-making process and stimulate potential demand. Meanwhile, the negative moderating effect of brand familiarity suggests that enterprises need to rethink their brand strategies in short video marketing to adapt to the characteristics of this emerging scenario [6].

The algorithm significantly enhances consumers' purchase intention and decision-making efficiency through personalized recommendation and content optimization. For example, on short-video and live-streaming e-commerce platforms, algorithms can precisely push content based on users' interests, thereby shortening the decision-making time and increasing the purchase conversion rate [1,5]. Studies show that this mechanism is particularly effective in scenarios with strong immediacy and high interactivity, such as stimulating impulsive consumption through real-time

recommendations [6]. In addition, the algorithm can also optimize the way information is presented, helping consumers to screen out products that meet their needs more quickly.

Although algorithms are technically efficient, their effectiveness varies depending on consumers' trust in the algorithms and specific circumstances. For example, when decisions involve personal values (such as moral choices) or the outcome is unfavorable to consumers, the suggestions of algorithms are often not as convincing as those of human decision-makers [3,4]. Furthermore, over-reliance on algorithms may lead to consumers' choice fatigue or suspicion of the recommended content, especially when the algorithms lack transparency, this negative reaction will be more obvious.

The limitations currently faced by research on the impact of algorithms: 1. Insufficient data transparency: Many studies rely on the data provided by the platform, but these data are often screened or optimized, lacking completeness and neutrality, which limits the objectivity of the research [2]. Determining causality between algorithms and consumer behavior remains difficult due to the complexity of their interaction. Most existing studies are correlation analyses, making it hard to clarify the causal direction. For instance, whether the changes in consumers' purchasing behavior are the result of algorithmic recommendations or the combined effect of other external factors (such as promotional activities) still requires further verification.

Overall, the algorithm is effective in improving purchase efficiency and optimizing the consumer experience, especially on digital platforms. However, its effectiveness is constrained by factors such as trust, context, and transparency. The methodological challenges in the research suggest that people need to interpret the existing conclusions with caution. In the future, by enhancing transparency and expanding the research dimensions, researchers can explore the dynamic relationship between algorithms and consumers more deeply.

4. The Influence of Algorithmic Mechanisms on Individual Brand Loyalty

The analysis of the first literature is based on the research of Wei He et al. The data in this article was collected by researchers using a self-compiled questionnaire from 353 randomly selected voluntary respondents. This study employed a random sampling survey to investigate the impact of short-video user loyalty on marketing in China and its influencing factors. This article indicates that interface design, enterprise design, service quality, product price and conversion cost - all have a significant impact on customer satisfaction, and customer satisfaction has a significant impact on customer loyalty in short video marketing. Researchers have concluded that short video marketing on the Douyin platform should improve interface design, enterprise design, service quality, product prices and conversion costs in order to maintain customer satisfaction and loyalty in the long term. The limitation lies in terms of sample size and the scope of the Chinese market. The research results may not provide inspiration for the marketing environment in other countries. However, the case study of Douyin can provide a reference for other short-video platforms to explore marketing variables. As researchers have emphasized, user loyalty is highly dynamic and deserves the high attention of all relevant parties or stakeholders. This study proves that the algorithmic mechanism can enhance user loyalty [7].

The analysis of the second literature is based on the research of Chinedu James Obiegbo and Gretchen Larsen. The research subjects of this study are people who use Spotify or Apple Music. The two methods adopted for data collection in this research are: interviews and online ethnography. In-depth interviews were conducted with 25 respondents who were initially recruited using the purposive sampling method. The conclusion drawn from this article is that based on the concept of "experiential brand loyalty", the "algorithmic personalization/depersonalization cycle" emphasizes that consumers develop brand loyalty through interaction with algorithm-supported brands. Being seen and understood by algorithms will trigger an iterative two-way learning relationship, ultimately enhancing the consumer experience, stimulating positive emotions, deepening the bond with the brand, and thereby cultivating brand loyalty. However, if the algorithm fails to successfully personalize the service experience, a "depersonalization" process may occur, thereby weakening brand loyalty and

causing consumers to choose other brands. The research flaw of this article is that it does not delve deeply into the subtle differences in how responses vary due to products, brands, service types, consumer groups, or time. This makes it impossible to determine how long positive personalized responses will last and how long consumers will persist in training the algorithm before entering a non-personalized state. However, the foundation of the continuous development of underlying technologies may play a role in this process. As noted by the researchers, this study provides empirical evidence for the personalized operation mechanism supported by artificial intelligence and offers inspiration for theoretical research [8].

The analysis of the third literature is based on the research of Ebba Skillius and Amanda Jacobsson. This study finds that AI-driven personalized advertising can enhance customer loyalty and brand engagement, but privacy issues and different levels of AI literacy can have adverse effects on brand loyalty. Transparency and ethical norms are crucial for building trust. In addition to the influence of personalized advertising, high-quality products and excellent customer service remain the keys to customer loyalty [9].

The analysis of the fourth literature is based on the research of Wu Yitao and Wang Daqin. The conclusion drawn from this study is that virtual influencer endorsements have a positive impact on attitude loyalty and behavioral loyalty. There is a mediating effect in the process of consumers' immersion in the influence of virtual influencer endorsements on brand loyalty. Because the endorsement of virtual avatars often involves algorithmic mechanisms, it is highly relevant to this study. Based on this, this study indicates that policy support for the research, development and application of virtual digital human technology should be strengthened to guide the high-quality development of the virtual digital human industry. Relevant enterprises need to explore emerging brand operation and marketing models such as virtual influencer endorsements, innovate and iterate virtual digital human technologies, and enhance consumer engagement levels to further increase brand loyalty [10].

These four literatures respectively explore from different perspectives how to construct and enhance brand loyalty through algorithmic mechanisms. The research found that factors such as interface design, corporate image, and service quality significantly affect customer satisfaction and loyalty. It was proposed that short video marketing needs to continuously optimize these details to maintain user loyalty [7]. In contrast, Study two reveals the personalized cycle in the interaction between brand algorithms and consumers, emphasizing that algorithms meeting personalized needs can promote brand loyalty, but the failure to sustain personalized experiences may lead to a decline in loyalty [8]. The third literature emphasizes the positive role of AI-driven personalized advertising in enhancing customer loyalty and brand engagement. However, during the process of using the technology, it may encounter challenges such as privacy protection issues and consumers' uneven perception of the technology. This indicates that even if the technology can create personalized experiences, High-quality products and excellent services remain indispensable basic conditions [9]. The fourth literature focuses on virtual influencer endorsements. Through research, it is found that virtual digital human technology can not only positively influence consumers' attitudinal loyalty and behavioral loyalty, but also play a mediating role in this process, especially promoting brand loyalty by enhancing consumers' immersive experience. However, since the research mainly focuses on this new marketing model, its universality and applicability in other brand operation strategies still need to be further verified.

Overall, although these studies approached from different perspectives and adopted research methods ranging from quantitative surveys to qualitative interviews and mixed approaches, they all jointly pointed out that enhancing the consumer experience, whether through technology, design or innovative marketing methods, is always the key to promoting loyalty, that is, improving algorithmic mechanisms has a positive impact on brand loyalty. Meanwhile, each study has certain limitations in sample selection, research scope and measurement of sustained effects, which provides directions for thinking and improvement for larger-scale, more cross-market and multi-dimensional empirical studies in the future.

5. Conclusion

This paper conducts research on the influence of the algorithmic recommendation mechanism of short-video platforms on consumers' purchasing decisions. The results show that precise personalized recommendations can effectively stimulate consumers' interest, shorten the decision-making time and enhance the purchase intention. For practical applications, it is suggested that the platform, while optimizing the accuracy of the algorithm, strengthen the protection of user privacy and improve the user experience. In terms of scientific research, the moderating effect of different consumer characteristics on the recommendation effect can be further explored. This study enriches the cross-disciplinary field of consumer behavior and intelligent recommendation mechanisms, providing reference value for the marketing strategies and platform designs of related enterprises.

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