

Analysis of the Impact of Algorithm Recommendation on Consumer Decision-Making of Social E-Commerce Users - Taking Rednote and Tiktok as Examples

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Abstract. Social e-commerce has become the core growth pole of the e-commerce industry, and algorithm recommendation, as a core technology driven by big data and artificial intelligence, has become the core means of accurately reaching users and improving conversion in social e-commerce. This article aims to investigate the impact of algorithmic recommendations on the consumption decisions of social e-commerce users. Research has shown that algorithmic recommendations mainly affect consumer decisions through four mechanisms: information push mechanisms to reduce search costs and shorten decision cycles; The social guidance mechanism relies on social trust to drive decision-making; Personalized adaptation mechanism accurately matches needs and strengthens consumer willingness; Creating a scene mechanism to create immersive experiences and stimulate instant consumption. However, these mechanisms also pose potential risks such as information cocoons, false seeding, and impulsive consumption. Based on this, this article proposes countermeasures and suggestions from three dimensions: platform technology optimization and transparency compliance, merchant content adaptation and fine operation, and regulatory legal improvement and ethical guidance, to guide rational consumption and promote the healthy development of the social e-commerce ecosystem.

Keywords: Social e-commerce, algorithm recommendation, consumer decision-making, Rednote, Tiktok

1. Introduction

With the comprehensive popularization of mobile Internet and the deep integration of social media, social e-commerce has risen rapidly, breaking through the bottleneck of traditional e-commerce traffic and becoming an important growth engine of e-commerce industry. Unlike traditional e-commerce's search-based shopping model that focuses on "goods", social e-commerce focuses on "people" and relies on social relationship chains and content dissemination to achieve product conversion. In this transformation process, algorithm recommendation, relying on big data and artificial intelligence technology, has become a key means for social platforms to accurately match user needs and improve business conversion efficiency [1]. Algorithmic recommendation not only completely changes the distribution logic of products, but also profoundly reshapes users'

consumption decision-making paths. Therefore, in-depth exploration of how algorithmic recommendations affect the consumption decisions of social e-commerce users has important theoretical value and practical significance for optimizing platform operations, safeguarding consumer rights, and promoting healthy and sustainable development of the industry.

In recent years, the academic community has extensively explored the relationship between algorithm recommendation and consumer behavior. Existing research suggests that personalized algorithm recommendations can significantly improve users' purchase intention and satisfaction, but they can also easily lead to information cocoons and consumption polarization phenomena. At the level of social trust, algorithms effectively reduce consumers' perceived risks and promote the achievement of purchasing decisions by integrating social relationship chains with expert recommended content. Meanwhile, recommendation systems driven by artificial intelligence have shown great potential in shortening the decision-making process in social commerce. In addition, the stimulating effect of scenario-based recommendations and live streaming mechanisms on impulse consumption has also attracted close attention from academia. However, research on algorithm transparency and user trust shows that current recommendation systems still have hidden dangers such as overfitting, privacy violations, and black box operations. The willingness of users to adopt personalized recommendation services is influenced by a combination of factors such as perceived usefulness and privacy concerns. Overall, previous research has mostly focused on a single mechanism for algorithmic recommendation, lacking a systematic analysis of the synergistic effects of multiple mechanisms in specific scenarios of social e-commerce. Based on this, this article will systematically explain the impact mechanism of algorithm recommendation on consumer decision-making through literature analysis and case comparison. The article first analyzes the current development status of social e-commerce and the characteristics of algorithm recommendation; Secondly, take Rednote and Tiktok as typical cases for in-depth analysis; Thirdly, reveal its impact mechanism and potential risks from four dimensions: information push, social guidance, personalized adaptation, and scene creation; Finally, optimization strategies and suggestions are proposed from three dimensions: platform, merchants, and regulators.

2. Development status and case analysis of social e-commerce and algorithm recommendation

2.1. Current development status of social e-commerce

In recent years, the social e-commerce industry has experienced explosive growth in scale, upgrading from the initial traffic monetization channel to a new infrastructure that connects users, content, and products. The core difference between social e-commerce and traditional e-commerce lies in the logical shift: Traditional e-commerce is a search logic of "people looking for goods", while social e-commerce is a recommendation logic of "goods looking for people", and the weight of social interaction in transaction decision-making is significantly increased. At present, the mainstream models of social e-commerce can be divided into two types: content grass planting and live broadcast e-commerce. Typical representatives are Rednote and Tiktok. In both modes, algorithm recommendation is at the core. It is not only a bridge connecting massive UGC content with dispersed user needs, but also a key hub determining traffic allocation and business conversion efficiency.

2.2. Main characteristics of algorithm recommendations in social e-commerce

The algorithm recommendation in social e-commerce presents distinct characteristics: firstly, it is data-driven, and the algorithm constructs dynamic user profiles based on users' browsing, liking, bookmarking, searching and other behaviors, achieving real-time capture of user needs. Secondly, there is content pre-positioning, where products are deeply bound to content such as graphics, text, and short videos, driving product conversion through content consumption and achieving "subtle and silent" marketing. Once again, social weighting is used, where users' social relationship chains, interaction popularity, and influencer influence are included in the calculation of recommendation weights, and trust becomes the catalyst for conversion. Finally, the scene is real-time, and the algorithm combines the user's spatiotemporal scene with real-time status to achieve precise matching of requirements and instant response.

2.3. Typical platform case analysis (Rednote, Tiktok)

The core logic of the Rednote algorithm is tag matching, content quality weighting, and progressive distribution of traffic pools. The system first performs dual labeling on users and notes, and performs initial screening based on matching degree. Subsequently, based on the CES (Comment, Like, Favorite, Share) rating model, the content quality is weighted, and high-quality content will be pushed into a larger traffic pool, achieving a tiered exposure. Tiktok adopts the logic of "interest recommendation + traffic horse racing mechanism+linkage between short video and live broadcast". Its recommendation engine heavily relies on real-time interest computing power, and through a traffic racing mechanism, it selects the best content from the same starting point to push traffic. The content with better data performance will receive a snowball like traffic tilt. At the same time, the algorithm has connected the link between short video traffic and live streaming room conversion, forming a commercial closed loop.

Rednote mainly focuses on text, images, and short video notes. The interface layout adopts a double row waterfall flow, which is refreshing and has high information density, emphasizing a rational grass planting orientation. The content mainly consists of experience sharing and in-depth evaluation, providing users with a sense of authenticity and reference value for sharing with friends. Tiktok is dominated by immersive vertical screen short video and live broadcast. Single column full screen sliding brings strong visual stimulation and high immersion. The rhythm is bright, the direction is instant conversion, and the emotional appeal is very strong.

On Rednote, users tend to actively search and deeply browse, with a long consumption decision-making cycle and a high dependence on real word-of-mouth and long tail reviews, belonging to the rational mode of "buying after thinking". In Tiktok, users are mostly passive browsing and instant interaction. The strong stimulation of short videos and live broadcast makes the decision-making cycle extremely short, and the characteristics of impulsive consumption are obvious, showing the perceptual mode of placing an order immediately after seeing it.

The two major platforms have also exposed many problems under algorithm driven development: firstly, severe content homogenization and proliferation of popular templates, leading to damage to the original ecosystem. The second is the information cocoon effect, where users' perspectives are narrowed by algorithms, and they receive a single piece of information for a long time [2]. Thirdly, excessive marketing and commercialization have led to a deterioration of community atmosphere and a decrease in user experience. The fourth issue is unstable traffic distribution, with obvious head effects, making it difficult for small and medium-sized businesses and creators to obtain stable exposure, and squeezing their living space.

3. The impact mechanism of algorithm recommendation on social e-commerce users' consumption decisions

3.1. Information push mechanism

The algorithm constructs portraits based on user browsing, liking, bookmarking, and other behaviors, and directly pushes matching products to users through filtering and recommendation, reducing the cost of user information filtering. The impact path of this mechanism on consumer decision-making is mainly reflected in three aspects: firstly, reducing information asymmetry. Users can quickly obtain core product information and genuine evaluations without spending a lot of time comparing and verifying, reducing information search costs. Secondly, shorten the decision-making chain. The traditional lengthy process of "demand generation active search filtering comparison purchase" has been simplified into "algorithm push user confirmation purchase", significantly shortening the decision-making cycle. Finally, improve decision-making efficiency. Especially for low engagement products such as daily necessities and beauty, algorithm recommendations directly trigger users' "quick decision-making" behavior, promoting quick transactions [3]. However, excessive reliance on algorithmic push carries potential risks: the scope of user information exposure is constantly narrowing, making it easy to fall into an information cocoon, reducing the willingness to explore other products, and thus affecting the diversity and comprehensiveness of long-term consumption choices [4].

3.2. Social guidance mechanism

The core feature of social e-commerce is "social+ e-commerce", and algorithms will combine users' social relationship chains, friend evaluations, and KOL recommended content for targeted push, using social trust endorsement to influence user decisions. The specific impact path includes firstly endorsement by friends and acquaintances. The algorithm pushes products shared and liked by friends, effectively reducing users' purchasing concerns and perceived risks through social trust among acquaintances. The second is the KOL/influencer demonstration effect. The algorithm prioritizes pushing evaluations and planting notes of bloggers that fans follow, leveraging the influence of influencers to form follow the trend purchases. This demonstration effect is particularly significant among young people [5]. The third is group pressure and conformity psychology. Creating a consumer atmosphere through tags such as "everyone is buying" and "popular recommendations" to strengthen users' herd decision-making. However, the potential risks of this mechanism cannot be ignored: issues such as false grass planting, water army comments, and fake advertising by influencers can lead users to make irrational consumption decisions based on misplaced social trust, and even purchase inferior products, overdrawing platform credit.

3.3. Personalized adaptation mechanism

The algorithm models user profiles based on their historical behavior data, achieving personalized recommendations for thousands of people and faces. The impact path is firstly, accurately matching potential demand. By predicting potential consumer demand through user profiles, pushing products that users may need but are not aware of, and successfully stimulating implicit demand [6]. The second is to enhance user satisfaction. The recommended content is highly aligned with user preferences, enhancing users' trust and stickiness towards the platform, and forming a sustained consumption habit [7]. The third is to strengthen consumption habits. Long term promotion of

products of the same category or style will continuously strengthen users' consumption preferences and form a fixed consumption path dependence.

3.4. Scene creation mechanism

The algorithm constructs an immersive consumption scenario by pushing live broadcasts, short videos, scenario-based grass planting notes, and other content, and uses scenario-based marketing to stimulate consumer demand. Specifically, it is manifested as the instant stimulation of live streaming scenes. The algorithm prioritizes the promotion of live streaming products, and the anchor's explanations, limited time discounts, and interactive atmosphere significantly stimulate users' impulse consumption [8]. The second is the scene substitution of short videos/notes. By using OOTD, home goods sharing, and other content, specific usage scenarios are constructed to create a strong sense of immersion for users, thereby stimulating their desire to purchase. The third is the creation of limited time/exclusive scenes. The algorithm pushes information such as limited time flash sales, exclusive discounts, and inventory shortages, creating a sense of urgency and driving users to place orders quickly [9]. The potential risk lies in the fact that immersive scenes can easily amplify users' impulsive consumption tendencies, leading to the purchase of non-essential goods, triggering irrational consumption, and even causing consumers to fall into the trap of consumerism.

4. Suggestions for optimizing algorithm recommendations and guiding rational consumption decisions

4.1. Optimization suggestions for social e-commerce platforms

Firstly, in terms of technological optimization, the algorithm recommendation logic should be adjusted by incorporating diversity indicators into personalized recommendations and regularly pushing content across categories and new brands; Optimize the overfitting problem of recommendation algorithms, avoid user preference solidification, balance accuracy and diversity, and break through homogenization and information cocoons. Secondly, in terms of transparency and compliance, algorithm transparency and users' right to know should be enhanced, the core logic of recommended algorithms should be clearly communicated to users, personalized recommendation settings should be provided, and users should be given the right to independently turn off personalized recommendations [10].

At the same time, establish an algorithm review and self-inspection mechanism, regularly investigate false advertising content, and crack down on brushing orders and water armies. Again, in terms of safeguarding user rights and interests, it is necessary to improve the data management system, standardize the collection and use of user data, and protect privacy and security; Establish a product and content review mechanism, strictly control the promotion of inferior products and false seeding content. Finally, at the level of responsibility and ethics, the platform should fulfill its social responsibility by setting consumption reminders for teenagers and impulsive consumer groups, guiding rational consumption; Control the frequency of pushing impulse consumption inducing content and reduce excessive marketing that creates consumer anxiety.

4.2. Optimization suggestions for social e-commerce merchants

Firstly, merchants should adapt algorithm logic to optimize the presentation of product information and content. Combining platform algorithm recommendation rules, optimizing product titles,

keywords, and detail pages to improve their match with user profiles; Create authentic and valuable grass planting content, enhance trust through high-quality evaluation and scenario-based display, and avoid false advertising. Secondly, relying on algorithm data to carry out refined operations. Using the image data provided by algorithms to accurately locate target customer groups and optimize product pricing; Deeply analyze user feedback and comment data and adjust product and operational strategies based on recommendation effectiveness. Finally, strengthen social trust, build reputation and brand value. Value user feedback and social interaction, accumulate positive word-of-mouth through high-quality services, and use algorithms to amplify word-of-mouth effects; Collaborate with compliant KOLs/influencers, select bloggers with tone matching to carry out authentic and transparent promotion, and resolutely avoid false advertising and exaggerated promotion.

4.3. Suggestions for supervision and guidance of regulatory authorities

Firstly, improve laws and regulations and clarify regulatory standards. Special regulatory regulations should be introduced for algorithm recommendations in social e-commerce, clarifying the compliance boundaries of algorithm recommendations and regulating the platform's data usage and recommendation behavior. Secondly, strengthen regulatory enforcement and crack down on violations. Intensify efforts to investigate and punish behaviors such as algorithm abuse, privacy breaches, and false recommendations, impose severe penalties on violating platforms and merchants, and establish a long-term regulatory mechanism to maintain market order. Finally, guide industry self-discipline and promote the construction of algorithm ethics. Promote the establishment of algorithmic ethical standards in the social e-commerce industry and guide platforms to fulfill their social responsibilities; Widely carry out consumer education, enhance users' awareness of algorithm recommendations through science popularization, and strengthen their ability to distinguish between false recommendations and rational consumption.

5. Conclusion

This article uses literature analysis and case analysis methods to expound the current development status and characteristics of algorithm recommendation in social e-commerce and deeply analyzes the impact mechanism and optimization path of algorithm recommendation on user consumption decisions. Specifically manifested in four dimensions: the information push mechanism reduces search costs and decision-making cycles, the social guidance mechanism drives decision-making through trust endorsement, the personalized adaptation mechanism strengthens consumer willingness through precise matching, and the scene creation mechanism stimulates instant consumption through immersive experiences. The above mechanism not only improves transaction efficiency, but also brings risks such as information cocoons, false seeding, and impulsive consumption. Based on this, this article proposes systematic suggestions from three aspects: platform technology optimization and compliance transparency, merchant content adaptation and fine operation, and regulatory legal improvement and ethical guidance. Future research can further use quantitative methods to empirically test the interaction effects between various influencing mechanisms and continue to focus on the dynamic changes in consumer psychology and behavior under the evolution of algorithm technology, providing richer theoretical support for building a healthier and more sustainable social e-commerce ecosystem.

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