RESEARCH-ARTICLE

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Research on AI-enabled UGC Content Innovation in Mobile Social E-commerce

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Abstract

Abstract :Artificial intelligence (AI) technology is rapidly developing, with increasing application in mobile social e-commerce and playing a key role in user-generated content (UGC) innovation. This article, using the women's community platform "Little Red Book" as an example, explores how AI empowers innovation in the UGC content ecosystem. The study finds that AI has significantly improved content production efficiency and user experience by establishing a content generation mechanism driven by female users, optimizing the dissemination pathways for lifestyle-related UGC, and enabling personalized content distribution. The practice of Little Red Book demonstrates the significant role of AI in content creation, distribution, and commercialization, providing a valuable reference for the intelligent development of social e-commerce platforms. This research has both theoretical and practical significance for understanding the integration of AI and UGC and promoting the optimization of platform content ecosystems.

CCS Concepts

• **Applied computing** → Electronic commerce; Secure online transactions.

Keywords

AI, UGC, Mobile Social E-commerce, Little Red Book, Content Innovation

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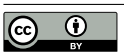

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1 Introduction

The rapid development of mobile internet and the widespread popularity of social media have laid a solid foundation for business model innovation through their deep integration. In this context, mobile social e-commerce has emerged as an emerging e-commerce model and has developed rapidly, building a user-centric consumption scenario that integrates online and offline.[1] Relevant data show that its market size and user participation are growing exponentially. In the field of social e-commerce, it is estimated that social commerce will account for 17.1% of China's online retail sales in 2025, higher than 14.3% in 2023. Little Red Book is a typical representative platform in this field and has a bright development trend. In 2025, the number of daily active users of Little Red Book increased by 30% year-on-year and the number of monthly active users increased by 25% year-on-year, which shows that the platform plays an important role in the social media field.

In the operational logic of mobile social e-commerce, the core value unit is user-generated content (UGC).[2] Traditional UGC content is difficult to maintain user participation due to the uneven user creation capabilities and homogeneous content, making it difficult to achieve commercial value conversion. The rapid development of artificial intelligence technology has brought new vitality to UGC innovation. AI technology uses algorithmic models such as natural language processing and computer vision to accurately identify user demand characteristics and dynamically generate personalized content, providing intelligent support for the entire process from content creation to dissemination.[3] As a result, the skill barriers of traditional UGC creation have been broken, and the content dissemination efficiency has been improved through intelligent recommendation and interactive design, making the content ecosystem of mobile social e-commerce more vibrant.

Little Red Book is the core force of the "She Economy". It is dominated by female users and has built a vibrant social e-commerce

platform based on its unique community atmosphere and high-quality UGC content.[4] After introducing AI technology to optimize content recommendations and user experience, its content and commercial value have both increased. This article uses Little Red Book as an example to deeply explore how AI empowers UGC content innovation, providing reference for other platforms and promoting the healthy and sustainable development of the mobile social e-commerce industry.

2 Current research status at home and abroad

Artificial intelligence is driving innovation in user-generated content (UGC), particularly in the mobile social e-commerce sector. Foreign countries have been early adopters of this technology, and their research emphasizes both technical and theoretical approaches. Researchers are leveraging natural language processing and deep learning techniques to automate the generation, optimization, and personalized recommendations of user-generated content, significantly improving user experience and content quality. In terms of UGC content management, blockchain, smart contracts, and other technologies are being leveraged to explore technical approaches for copyright protection and content review, ensuring originality and compliance.

Domestic scholars have integrated the application research of AI technology in the innovation of user-generated content (UGC) in mobile social e-commerce into a systematic theoretical framework and attached importance to combining it with the practice of mobile social e-commerce, mainly involving technology empowerment and content governance mechanism, innovation of UGC and AI co-creation model, community interaction and scenario application, business model and ecological construction, etc.[5–7] Technically, AI technology can efficiently identify and apply massive amounts of UGC data with natural language processing and machine learning algorithms, solve the problem of content authenticity and improve matching accuracy, and turn UGC into structured data assets; in terms of model innovation, UGC and AI are combined to produce innovative models, and the content form breaks through the standardized framework, optimizes the dissemination path and highlights the commercial value; in terms of social marketing, AI deepens the interactive model to improve the efficiency of UGC, optimizes content push in real time to create an immersive shopping scene, and accurately recommends to effectively promote marketing promotion.[8–10] In terms of business models, we are actively exploring AI+UGC-driven business innovation models. The content-based shopping guide model relies on AI to select UGC to assist in decision-making. The ecological collaborative platform integrates resources to build a closed loop of content production. Based on user portraits and demand predictions, UGC participates in product development and iteration to form a virtuous cycle .[11, 12] In general, the research on pure technology application is gradually being abandoned. Current research is shifting towards the ecological development of "human-machine collaboration". The key research direction in the future will be the deep integration of AI and social relationship chains.

At present, the "her economy" plays an important role in promoting the development of e-commerce, and women's community e-commerce platforms, as an important carrier of the "her economy" form, have unique development characteristics and trends.[4] Most current research focuses on user behavior and platform feature analysis, technology drive and operation innovation, and the research reveals the profound changes in contemporary women's consumption behavior, that is, the focus of consumption has shifted from family needs to self-pleasing consumption, the consumption decision path has strong social attributes, the product demand circle characteristics are obvious, and consumption behavior is significantly driven by content. "Self-pleasing" products are increasingly becoming the first choice for consumption, and women pay more attention to the realization of self-worth when shopping.[13] The wave of consumption upgrading has led to the rise and prosperity of women's community e-commerce platforms such as Little Red Book, building a "discovery-planting-purchase" business closed loop and forming a unique UGC content-driven model. In the future, research on women's community e-commerce platforms should develop in the direction of OMO (online and offline integration) integration and innovation.

3 Introduction to the Little Red Book Platform

Little Red Book was founded in 2013. It is a social e-commerce platform mainly for female users. With its unique community culture and e-commerce model, it quickly gained a foothold in the market. Initially positioned as an "overseas shopping sharing community", this unique positioning quickly attracted the attention of many users, allowing users to share their overseas shopping experiences and usage experiences. As a result, a unique grass-planting culture gradually took shape, that is, users' real sharing will affect other users' purchasing decisions. With the increase in platform users and the enrichment of content, the influence of the Little Red Book community has continued to expand, and it has become an important shopping reference platform for consumers.

Driven by the growth of e-commerce, Little Red Book has gradually shifted its focus towards e-commerce in recent years. By introducing more brands and products and offering convenient purchasing services, Little Red Book has successfully transformed into a comprehensive conversion platform, creating a closed loop of users browsing, recommending products, and purchasing on Little Red Book. This has also created more business opportunities for brands. Little Red Book has become a platform centered around lifestyle and consumer decision-making, attracting a large number of young female users. It is not only a shopping platform, but also a lifestyle sharing platform, providing users with a wealth of shopping references and life inspiration.

4 The Transformative Impact of AI Technology on the UGC Content Ecosystem

In the mobile social e-commerce sector, user-generated content (UGC) has become a core driver of platform growth. The in-depth application of AI technology is reshaping the UGC content ecosystem, bringing significant changes in content creation, review, user demand discovery, content management, and many other aspects, as shown below:

4.1 Intelligent and efficient content creation

AI technology has significantly lowered the barrier to entry for creating user-generated content, improving productivity. Leveraging natural language processing and deep learning algorithms, AI assistants automatically generate high-quality text, realistic images, and video files based on user input regarding topics and styles. Test data indicates that AI-assisted content increases engagement rates by 40% and extends user retention by 2.3 times.

4.2 Significant improvement in content quality

AI technology has also played a significant role in improving the quality of user-generated content. AI algorithms analyze large amounts of user-generated content, identifying and optimizing its language, logical structure, and visual effects. AI image recognition technology optimizes image color, contrast, and composition, enhancing visual quality. AI video analysis tools automatically identify key frames in videos, optimizing the editing process and improving narrative coherence. This has significantly improved the overall quality of user-generated content.

4.3 Personalized recommendations and precise distribution

AI technology has significant advantages in the personalized recommendation and precise distribution of user-generated content. By analyzing user behavior data, interests, preferences, and social connections, AI algorithms can customize personalized recommendations for each user. AI recommendation systems leverage users' browsing history and likes to recommend relevant user-generated content. AI social analysis tools identify user interaction patterns within social networks and recommend content relevant to their social circles. Personalized recommendations increase the likelihood of users discovering content of interest, enhance interaction between users and the platform, and boost user engagement and platform activity.

4.4 Social interaction and emotional resonance

AI technology enhances the social interaction and emotional resonance of user-generated content. By analyzing user interactions on social platforms, AI algorithms can identify users' emotional tendencies and social connections, and then recommend content that better meets their emotional needs. AI social graph analysis tools can identify users' relationships on social networks and recommend content related to their social circles. This emotionally-driven recommendation not only enhances user interaction but also strengthens their sense of belonging and loyalty to the platform.

5 AI technology empowers innovation in the UGC content ecosystem of the Little Red Book platform

5.1 Community content generation mechanism dominated by female users

Little Red Book is a leading domestic female community platform. Its unique community atmosphere and large female user base make it an important representative in the era of "her economy". In addition, Little Red Book's community content generation mechanism is built around the needs, motivations and behaviors of female users, forming a female-centered UGC ecosystem.[14]

Little Red Book's community culture and atmosphere foster an open, inclusive, and emotionally resonant environment, satisfying the emotional needs of female users and enhancing their sense of engagement and belonging. Both intrinsic motivation and extrinsic incentives are crucial. Little Red Book has designed a diverse incentive mechanism, including collaborative feedback such as likes, comments, and favorites, as well as non-financial measures such as status levels and visual reputation, significantly boosting user enthusiasm and loyalty. Content generation has been greatly assisted by AI technology. The platform uses AI assistants, image generation, and video editing tools to lower the threshold for creation, and relies on personalized recommendation systems to accurately distribute content, effectively improving the exposure and dissemination efficiency of content. On this basis, the influence of content is further amplified by the community interaction mechanism, and user comments and sharing form secondary dissemination. The "planting grass" and "pulling grass" culture also has a strong consumer guidance effect.[15]

Little Red Book's community culture, user motivation, incentive mechanism, technical support and interactive communication work together to successfully build a content generation mechanism dominated by female users. This mechanism not only meets the user's expression and social needs, but also lays a solid foundation for the platform's commercial development.

5.2 Content Forms and Communication Paths of Lifestyle UGC

Little Red Book is a community platform dominated by female users. Lifestyle user-generated content (UGC) occupies an important position on the platform, and the content forms are diverse and the dissemination channels are unique. Its UGC content ecosystem has unique lifestyle-oriented characteristics, and a complete digital consumption closed loop is built by content forms and dissemination channels.

Little Red Book offers diverse content formats, focusing on vertical categories such as fashion, beauty, skincare, home furnishings, and travel. This content is delivered through multimedia formats such as illustrated notes, short videos, and livestreams, creating a diverse content ecosystem that significantly influences user consumption decisions. Data indicates that the platform's user-generated content interaction rate will reach 55.0% in 2025, a significant increase from 32.0% in 2023. This confirms the positive impact of diverse content formats on user engagement.

Little Red Book's dissemination mechanism utilizes a dual-wheel drive model: a decentralized distribution strategy combined with a precise matching algorithm. The decentralized distribution strategy ensures content diversity and empowers users to make their own choices. The precise matching algorithm, based on user interest tags and behavioral data, pushes content to the most interested users, increasing click-through rates and engagement. This mechanism promotes widespread content dissemination and strengthens user engagement and loyalty. Table 1, which shows the correlation

Table 1: Correlation between Little Red Book's algorithm recommendation mechanism and operational effects

Algorithm mechanism	Specific strategies	Implementation Effect
Anti-funnel logic	Prioritize fans	63% of GMV comes from emerging brands
Decentralized distribution	Search for the top three commercial contents ≤ 1	Guaranteeing user decision-making autonomy
Exact Match	Recommendations based on user interest tags	Average order value: 500+ yuan/return rate: 12%
Commercial content control	12 standards for accepting orders from experts	DAU/MAU reaches 38%

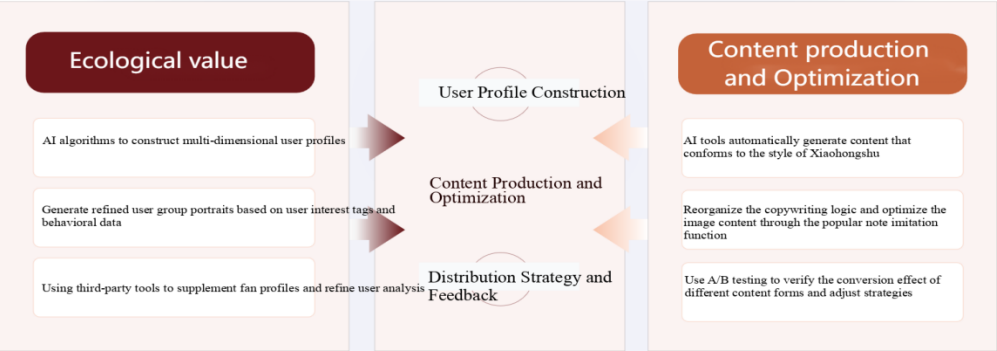

Figure 1: Little Red Book's personalized content distribution system driven by AI algorithms

between Little Red Book's algorithmic recommendation mechanism and operational performance, shows that its anti-funneling recommendation logic prioritizes content from key opinion leaders (KOCs) with fewer than 10,000 followers, representing 63% of the GMV of emerging brands. Consequently, the exposure of commercial content in search scenarios is strictly limited, with no more than one commercial item appearing in the first three pages of search results to ensure user decision-making autonomy. The personalized recommendation system, based on interest tags, drives high-value-to-customer conversions, maintaining a low return rate of 12% for products with a value exceeding 500 yuan.

5.3 Personalized Content Distribution System Driven by AI Algorithms

In the digital age, if social media platforms want to improve user experience and enhance user stickiness, a personalized content distribution system is crucial. Little Red Book, a community platform dominated by young women, has built a personalized content distribution system driven by advanced AI algorithms to efficiently match content with user needs. The key lies in the deep collaboration of AI algorithms with user portraits, behavioral data, and content features. This strategy has been very effective.[16] From 2023 to 2025, the number of monthly active users on the Little Red Book platform increased from 300 million to 400 million. The expansion of the user scale directly proves the effectiveness of its content distribution strategy.

Specifically, Little Red Book's personalized content distribution system is a comprehensive framework that integrates key elements, including multi-dimensional user profile building, content production optimization, dynamic distribution strategies, and feedback iteration, making it a highly efficient content ecosystem. At its core, it uses AI algorithms to deeply analyze user data and build precise user profiles to enable personalized content recommendations, precise matching, and efficient reach. Figure 1 illustrates Little Red Book's personalized content distribution system, driven by AI algorithms .

5.4 Multi-dimensional user portrait construction

Little Red Book uses multi-dimensional user profiling technology in its algorithm application, achieving accurate push notifications through data features such as location information, shopping history, and interactive behavior. The AI algorithm first generates a dynamically updated tag system based on user social interaction, search history, and consumption behavior data[16]. For example, for female users, vertical segmentation groups are divided based on interest tags, and fan profiles are supplemented with third-party data analysis tools to analyze age stratification and consumption capacity in more detail, laying a solid foundation for personalized recommendations.

The operational data of the platform's top merchants fully demonstrates the commercial value of this precise push mechanism. As shown in Table 2, top merchants in the luggage and leather goods category on Little Red Book accounted for 52.6% of monthly GMV, demonstrating the algorithm's clear advantage in identifying high-value user groups. Furthermore, leading brand QIU ZHEN achieved

Table 2: Operational data of top merchants on Little Red Book platform

Merchant Type	Representative Brands	Monthly GMV	Sales volume of popular products
Socks and clothing matching	ALMOND ROCKS	1 million+	1000+
Bags and leather goods	QIU ZHE	10 million+	1 million+
New Chinese style women's clothing	LINHUANYING	3 million+	2000+
Women's clothing	OVERYOD	5 million+	3000+

over 10 million in monthly GMV thanks to algorithmic recommendations, with sales of its best-selling product exceeding 1 million units, demonstrating the powerful impact of personalized delivery on business conversion. The differentiated design of algorithmic delivery strategies also improves conversion efficiency. By leveraging user profiles to achieve precise recommendations, hosiery and apparel brands like ALMONDROCKS achieved over 1 million in monthly GMV. Interest-based content matching enabled LINHUANYING to achieve sales of over 2,000 best-selling new Chinese-style women's clothing items. Behavior prediction models enabled the women's clothing brand OVERYOD to achieve over 5 million in monthly GMV. These data demonstrate the effectiveness of the algorithm in improving merchant operational efficiency and strongly support the continued development of the platform's social e-commerce ecosystem.

5.5 Content production and optimization mechanism

To adapt its recommendation logic, Little Red Book platform uses AI tools to mass-produce Little Red Book-style content using natural language generation (NLG). The AI algorithm analyzes the structure of popular notes, using a copycat feature to restructure the copy-writing logic and optimize the accompanying images to maximize content fission. This performance optimization mechanism is based on big data monitoring, and the platform uses A/B testing to continuously iterate its recommendation algorithm.

5.6 Dynamic Distribution and Feedback Iteration

Little Red Book's recommendation system tends to repeatedly push content that has been verified to be highly popular, and AI will monitor the weight of interactive data such as likes, collections, and comments in real time and include them, and adjust the distribution strategy based on algorithmic formulas such as "keyword exploration ability + layout ability" for repeated iterations.

5.7 Ecological Closed Loop and Long-term Value

The ultimate goal of this system is to create a positive cycle of 'content-user-commerce'. AI can improve distribution efficiency and feed back into content innovation through data analysis. Data training, supporting the entire process from language understanding to social scenario decision-making, has been achieved, further enhancing the personalized experience.

6 Conclusion

After an in-depth analysis of the Little Red Book platform, this study reveals the key role of AI technology in enabling user-generated content innovation in mobile social e-commerce. The study found that AI not only optimizes the content generation and distribution process, but also greatly enhances user experience and the platform's commercial value. In the community content generation mechanism dominated by female users, AI technology has effectively promoted user participation and diversified content with its accurate user profiles and personalized recommendations. Moreover, the personalized content distribution system driven by AI algorithms has built an efficient content ecosystem for Little Red Book, enhancing user stickiness.

As AI technology continues to advance, its application in UGC will become broader and deeper, playing a greater role in the content creation frontline. This will lower the barrier to entry and stimulate user creativity. It will also likely provide greater support in areas such as content review and copyright protection to ensure the healthy and sustainable development of the content ecosystem. Strengthened interdisciplinary research will provide new theoretical perspectives and methodologies for AI-enabled UGC content innovation, further promoting the development of mobile social e-commerce. Future research will further explore the deep integration of AI technology and social media platforms, and the impact of this integration on user behavior and market dynamics.

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