

Analysis of User Media Contact Behavior Under the Influence of Big Data

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ABSTRACT

This paper explores the impact of big data technology on users' media exposure behavior. Against the backdrop of the widespread adoption of the internet and mobile internet, it analyzes the development and characteristics of new media platforms such as social media, short-video platforms, and news clients. By examining user behavior frequency, paths, and outcomes, the study reveals users' exposure behaviors across different media platforms and how these behaviors influence the strategic decision-making of content creators and service providers.

KEYWORDS

Big data; User; Media exposure; Behavior; Impact

1 Introduction

With the rapid development of the internet and mobile internet, the media ecosystem has undergone fundamental changes. Traditional single-medium consumption has gradually been replaced by diverse new media, and user behavior has become increasingly complex and varied in this process. Big data technology has emerged as a key tool for understanding user behavior and optimizing content delivery. This paper analyzes user media exposure behavior under the influence of big data from three perspectives: the background of media development, the characteristics of media platforms, and user media exposure behavior.

2 Background of media development

In recent years, the pace of media development has been remarkable. Particularly, the popularization of the internet and mobile internet has completely transformed the media ecosystem. Since 2020, the global number of internet users has continued to grow. According to data from the International Telecommunication Union (ITU), global internet penetration reached 68% by 2024, up from 53% in 2019, meaning approximately 1.3 billion people gained internet access during this period. This trend is even more pronounced in China. According to the "54th Statistical Report on China's Internet Development" released by the China Internet Network Information Center (CNNIC), by June 2024, the number of Chinese internet users reached 1.09967 billion, an increase of 7.42 million compared to December 2023, with an internet penetration rate of 78.0%. The number of mobile internet users is also growing rapidly. Data from QuestMobile shows that China's mobile internet active user base reached 1.232 billion in March 2024. Smartphone penetration continues to rise, becoming the primary tool for users to access information and entertainment.

2.1 The Rise of the internet and mobile internet

The rise of the internet not only provided users with more convenient access to information but also offered new platforms for various content creators and service providers. The proliferation of mobile internet further accelerated this trend. The habit of accessing the network anytime and anywhere made content and service delivery more flexible and efficient. The emergence of new media such as social media, short-video platforms, and news clients provided content creators and service providers with diversified media choices, enabling more precise targeting of audiences.

2.2 Development of new media platforms

Social media platforms like WeChat, Weibo, and Douyin (TikTok) utilize big data technology to accurately identify user interests and behaviors. Through intelligent recommendations based on user historical data (likes, favorites, comments, shares, dwell time, etc.), they enhance user acceptance of platform content and have become crucial venues for information access and social interaction. Previously, during the 2021 "Double 11" shopping festival, Douyin launched a "live-streaming e-commerce" campaign. Algorithmic recommendations pushed users live content matching their interests, significantly boosting campaign participation. This phenomenon not only demonstrates the application of big data technology in content recommendation but also reflects users' strong demand for personalized content.

2.3 Diversity of user behavior

The diversity of user behavior is a crucial prerequisite for the application of big data technology. In the traditional media environment, user behavior was relatively singular, primarily focused on a few media like TV, newspapers, and radio. With the rapid development of the information society, user behavior has become increasingly diverse and complex. Studies indicate that the informatization of society has led to the diversification of statistical patterns in user behavior regarding online activities. Concurrently, the massive shift of user activities from offline to online has resulted in an exponential increase in user online behavioral data. Hidden within these billions of data points are significant patterns of human behavior. Effectively utilizing and mining user online behavioral data to analyze these patterns can intelligently improve the user's online experience and personalize the enhancement of their quality of life.

3 Analysis of media characteristics of media platforms

3.1 Social media platforms

WeChat is one of China's largest social media platforms, boasting a massive user base and extremely high activity levels. Its strong social attributes make it a primary tool for daily communication and social interaction. Users share and access information through Moments, WeChat groups, Channels, and Official Accounts, forming a tightly-knit social network.

Weibo is renowned for its rapid information dissemination capabilities. It hosts a vast user base where users can follow hot news and social trends in real-time. The "Hot Search" feature serves as a key platform for discussing current affairs. Furthermore, Weibo employs big data technology to deeply analyze user searches, interactions, and interest preferences, pushing relevant content to users most likely to be interested based on their behavioral data.

3.2 Short-video platforms

Douyin (TikTok), one of China's most popular short-video platforms, also exhibits high user activity. The platform utilizes algorithms to recommend short videos likely to interest users, significantly enhancing the user experience. Additionally, Douyin's live-streaming functionality has made it a crucial platform for e-commerce live-streaming, enabling users to purchase goods directly during streams, achieving a swift transition from viewing to buying. Like other platforms, Douyin offers various interactive features such as comments, likes, and shares, allowing real-time interaction between users and video creators. This not only enhances user engagement but also provides creators with valuable feedback.

Kuaishou is another major domestic short-video platform, characterized by a young user base and high activity levels. It fosters a strong community atmosphere with frequent user interaction. Kuaishou's content spans multiple domains, including entertainment, education, and lifestyle. Users can select content according to their interests, providing content creators with diverse opportunities for exposure.

3.3 News clients and information platforms

Jinri Toutiao (Today's Headlines) is one of China's largest news clients with high user activity. Leveraging big data technology, Jinri Toutiao pushes news content tailored to user interests, greatly improving the user experience. The platform also boasts relatively high content quality, leading to strong user reliance. This high quality not only increases user satisfaction but also provides a favorable environment for brand image dissemination. Jinri Toutiao employs diverse content formats like news articles, videos, and images. Using big data analysis, the platform selects the most suitable format based on the user's context to boost engagement.

Tencent News also commands a broad user base. The platform's content sources are authoritative, resulting in high user trust. This authority enhances user satisfaction and creates favorable conditions for promoting brand image. It aggregates rich resources from the Tencent Group, including news, videos, and audio. Through this multi-channel content integration, Tencent News offers content creators and service providers a broader platform to reach wider audiences. Using big data technology, it deeply analyzes user reading behaviors, sharing habits, and interest preferences to optimize content presentation strategies.

4 Analysis of user media exposure behavior

4.1 Purpose of media exposure

Users' media exposure behavior often aims to fulfill specific needs, which have social and individual psychological

origins. According to Maslow's hierarchy of needs, human needs can be categorized into physiological, safety, social, esteem, and self-actualization needs. In the modern media environment, user purposes for media exposure primarily focus on social, entertainment, and information needs.

(1) Social Needs. Platforms like WeChat, Weibo, and Douyin have become key venues for social interaction. Users communicate with friends and family by posting updates, commenting, and liking to fulfill their social needs. Data from CNNIC shows that by June 2023, China's short-video user base reached 1.026 billion, with a user penetration rate of 95.2%.

(2) Entertainment Needs. The rise of short-video platforms has significantly satisfied users' demand for entertainment content. Apps offer diverse content forms like short videos, live streams, and music, allowing users to choose audiovisual experiences based on their interests. QuestMobile data from September 2024 indicates that the proportion of users watching live streams on Douyin and Kuaishou reached 90.5% and 89.3% respectively, further increasing year-on-year. The monthly active user base for Douyin's mini-drama mini-programs approached 200 million, a 91.0% increase year-on-year.

(3) Information Needs. In the internet era, users have a more urgent need for information acquisition. Platforms like news clients and search engines provide users with rich information resources. For example, Baidu APP collaborated with nearly a hundred government agencies and media to create the "Baidu Authoritative Release" content platform. By continuously developing scenarios like search pages and channels, it provides massive users with professional, credible, and authoritative information, gradually becoming a vital window for the public to access reliable news.

4.2 Possibility of media exposure

The occurrence of user media exposure behavior is based on the possibility of media access. The widespread penetration of the internet and mobile internet has vastly expanded this possibility. Users can now access media through various channels; the diversity and convenience of these channels provide broader space for content presentation and services.

(1) Multi-Platform Choice. Users can simultaneously use multiple media platforms (social media, news clients, short-video platforms, etc.) to obtain desired information and entertainment content. A 2021 QuestMobile report showed that Chinese netizens use an average of 7.5 apps daily, with social media and short-video platforms having the highest usage frequency.

(2) Multi-Device Usage. Users can access media through various devices like smartphones, smart TVs, tablets, computers, and in-car systems. The prevalence of these devices makes media access more convenient. QuestMobile data from March 2024 showed continued high-speed growth in the monthly active user base for smart car apps: BYD Dynasty, SAIC Volkswagen, Geely Auto, and BYD Ocean reached 6.46 million, 6.15 million, 5.03 million, and 4.87 million respectively. By September 2024, the smart car app MAU grew 34.5% year-on-year to 94.53 million, indicating a growing trend of multi-device usage.

(3) Multi-Time Usage. Media exposure is no longer confined to fixed time slots but occurs all day. Whether commuting in the morning, during lunch breaks, or relaxing in the evening, users can access media anytime, anywhere. For example, data from CSM Media Research shows the average daily mobile phone usage time is 290 minutes, with significant variation among users.

4.3 Media perception

Media perception refers to a user's cognition and evaluation of a specific medium, directly influencing their media choice behavior. Big data technology can analyze user behavior to form an understanding of media perception, helping content creators and service providers better understand user behavioral preferences.

(1) Formation of Positive Media Perception. Positive user perception of a media platform often stems from high content quality, ease of interaction, and an active user community. For instance, Bilibili (B 站) is highly favored by young users due to its high-quality anime-related content (ACG) and vibrant user community. Official Bilibili data shows a relatively balanced gender ratio among users, with no significant gender bias in content. Nearly 80% of users are under 24, primarily located in developed coastal Tier 1 and Tier 2 cities.

(2) Formation of Negative Media Perception. Negative perception is often triggered by frequent interruptions, low-quality content, and poor user experience. For example, in 2022, the Douban App was widely criticized for frequent intrusive content and content moderation issues, leading to a noticeable decline in user activity. Official Douban data also showed a 10% quarter-on-quarter drop in active users in Q2 2022.

(3) Adjustment of Media Perception. Users' media perception is not fixed but adjusts based on the outcomes of their actual exposure experiences. Whether needs are met or unmet, users recalibrate their perception. For instance, when WeChat launched its "Channels" (视频号) feature in 2021, initial user satisfaction with content quality was low. However, as content was continuously optimized and enriched, user perception gradually improved, and the user base for Channels

grew. According to official WeChat data, daily active users of Channels exceeded 100 million by Q4 2022.

4.4 Actual media exposure behavior

Users' actual exposure behavior is the final outcome of media selection and has a significant impact on content presentation and service strategies. By analyzing actual exposure behavior, content creators and service providers can more accurately understand user media usage habits and preferences, thereby optimizing presentation strategies.

(1) Behavior Frequency. The frequency of user media exposure is a key indicator for assessing their dependence on media. Users who frequently engage with media often show higher acceptance of platform-pushed content due to established usage habits. Douyin's "2021 Douyin Data Report" revealed that daily video searches on Douyin exceeded 400 million, a 47% year-on-year increase.

(2) Behavior Paths. Users' media exposure paths reveal their flow patterns across different media. Analyzing these paths allows content creators and service providers to more precisely target and present their content. In 2022, Alibaba Group used big data to analyze users' cross-platform behavioral paths, discovering high flow frequency between platforms like Taobao, Tmall, and Alipay. Consequently, implementing cross-platform content campaigns significantly increased user engagement.

(3) Behavior Outcomes. The outcomes of user media exposure (e.g., click-through rates, conversion rates, retention rates) are crucial for evaluating content effectiveness. Analyzing these metrics allows creators and providers to understand the actual impact of content. For example, in 2021, JD.com conducted a comprehensive analysis of content presentation effectiveness using big data. Finding that live-streaming content had significantly higher conversion rates than traditional formats, JD increased its focus on live-streaming, leading to notable performance improvements.

5 Conclusion

Driven by the rapid development of the internet and mobile internet, the media ecosystem has undergone profound transformations, and user behavior has become increasingly diverse and complex. The introduction of big data technology provides a key tool for precisely understanding and analyzing users' intricate media exposure behaviors. Research indicates that effectively leveraging big data is not only a core pathway to enhancing the precision of content delivery and optimizing user experience but also crucial for media platforms to build influence and for content creators to achieve efficient dissemination and service implementation. In the future, finding a better balance between data empowerment and user privacy, and between algorithmic efficiency and content value, will be a vital direction for deepening research into user media exposure behavior.

About the Author

Zicong Chen, male, born in April 2002, is of Han ethnicity and from Maoming, Guangdong Province. He holds a bachelor's degree and his research focus is on film and television advertising.

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