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## Basic Principles and Benefit Impact Analysis of Headlines: Postprint

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### Abstract

With the rapid development of the Internet, the media and channels for information dissemination have continuously proliferated. “Toutiao” has gradually entered the public consciousness and become a primary avenue for people to access information and current affairs news. This paper, based on an analysis of Toutiao’s fundamental principles, examines its beneficial impacts on society, information dissemination media, and new media, and proposes several original perspectives and insights for its future development from the dimensions of public opinion guidance, information dissemination, and governmental oversight.

### Full Text

## Fundamental Principles and Impact Analysis of Headline Platforms

### Abstract

With the rapid development of the internet, the channels and mediums of information dissemination have multiplied, bringing “headlines” into the public spotlight and establishing them as a primary means for people to access information and current affairs news. This paper analyzes the fundamental principles of headline platforms and examines their beneficial impacts on society, information dissemination mediums, and new media. It further offers original perspectives and insights on the future development of headlines from the perspectives of public opinion guidance, information dissemination, and government regulation.

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## 1. Research Background

The rapid expansion of the internet has diversified both the mediums and channels of information propagation, thrusting “headlines” into widespread public view and establishing them as a primary avenue for accessing information and current affairs. How headline platforms rapidly acquire information, efficiently cluster and analyze data, and swiftly disseminate content has become a subject of considerable public curiosity. To conduct an objective, authentic, and comprehensive investigation into the fundamental principles and beneficial impacts of headlines, this study examines platforms such as “Toutiao” and “Qutoutiao.” It analyzes their societal impacts, effects on information dissemination mediums, and influence on new media, while offering original perspectives on the future development of headlines from the dimensions of public opinion guidance, information dissemination, and government supervision.

### 2.1 The Basic Connotation of Headlines

Traditionally, “headlines” referred to the most important news items in print publications, typically positioned in the most prominent and significant layout locations to maximize audience attention. With the development of internet and new media platforms, this definition has evolved. While no authoritative definition exists for internet-based “headlines,” they can be understood as real-time news and information resources from various fields that most effectively capture public attention and exhibit extremely high popularity. In the new media era, the concept of headlines has gradually expanded, accompanied by the rapid growth and expansion of self-media platforms such as “Toutiao” and “Qutoutiao.”

### 2.2 Typical Recommendation Features

Headline platforms exhibit four primary recommendation characteristics. First, **relevance features** enable retrieval of information matching audience needs through keyword and subject term searches while facilitating the excavation of implicit information. Second, **environmental features** allow platforms to match information resources according to the varying needs of audiences in different geographical locations and time periods, enabling targeted information push. Content popularity information proves particularly effective in large recommendation systems, especially during user cold-start scenarios. Third, **collaborative features** emerge from the fundamental algorithms of headline platforms. As these algorithms become more scientific and open, they can perform cluster analysis on similar users while considering browsing history, enabling integrated collaborative management of audiences and improving information push efficiency.

## 2.3 Basic Algorithmic Principles

The implementation of recommendation system algorithms in headline platforms employs numerous methods, including traditional collaborative filtering models, supervised learning algorithms such as Logistic Regression, deep learning-based models, Factorization Machines, and GBDT. As illustrated in [Figure 1: see original paper], headline algorithms operate across three dimensions. The first dimension is **content**, which involves extracting features from different content types—including text news, video news, micro-headlines, and Q&A—for effective recommendation. The second dimension is **user characteristics**, which represents the most critical aspect of algorithm implementation. The third dimension is **environmental features**, which enable the migration and transformation of information retrieval and transmission to achieve personalization based on individual users, environments, and time periods—arguably the most challenging aspect of algorithmic application. **Popularity features**, commonly referred to as “riding the wave of popularity,” allow platforms to differentiate and respond to trends based on network-wide popularity, category-specific popularity, and thematic popularity. Fundamentally, the basic principles of headline algorithms derive from mathematical computation principles, leveraging the internet as an intelligent computational tool to successfully analyze and categorize content, user characteristics, and environmental features, thereby establishing a solid foundation for extensive information collection and rapid dissemination.

## 3.1 Enhanced Information Dissemination Speed

The most significant benefit of headline platforms is their ability to achieve high-speed information propagation, making real-time transmission across various domains possible—an apt and vivid manifestation of the “headline” concept. Using “Toutiao” as an example, users accessing its website or mobile application can not only quickly browse daily news but also watch live broadcasts of events as they unfold, representing a major breakthrough in information dissemination. This real-time capability constitutes one of the primary advantages of new media platforms like headlines over traditional media. Essentially, this enhanced speed stems from continuous advancements in internet technology; without network infrastructure as a foundational support, the rapid information propagation of headlines would be impossible to realize.

## 3.2 Massive Information Collection

Compared to traditional media, headline platforms offer more powerful functionality and more comprehensive data acquisition, enabling the retrieval, collection, and organization of vast information resources. While print publications have limited space and television stations have restricted advertising time, headline platforms face no such constraints. Audiences can access not only news but also diverse resources spanning government, enterprise, education, and count-

less other industries. Information acquisition becomes more convenient and comprehensive for users. Indeed, on resource-rich headline platforms, the only limitation is one's imagination—virtually any information can be found.

Moreover, in terms of geographic scope, traditional media struggles to transcend regional limitations, particularly print publications that typically circulate within specific areas. Headline platforms, by contrast, enable nearly 2 billion internet users across nearly 200 countries to access various types of information through their computers. Extremely broad propagation scope, numerous application fields, and strong coverage represent the most significant advantages of contemporary headline platforms.

### 3.3 Building a Harmonious Online Environment

Although the Chinese government has intensified efforts to purify the online environment with noticeable improvements, the anonymity of the internet still enables some low-quality self-media creators to disseminate violent and pornographic content. The growing development of headline platforms plays a crucial role in resisting such harmful information and fostering a harmonious online environment for two primary reasons. First, as headline technology advances and coverage expands, audience numbers have increased substantially. For instance, “Toutiao’s” mobile app users grew from merely 230,000 in 2016 to 790,000 in 2017. This enhanced audience attraction directly weakens the influence of malicious websites and self-media propagators. Second, headlines are committed to disseminating positive, constructive, and healthy news and information, which helps cultivate positive emotional guidance among audiences, thereby promoting the improvement of user literacy and encouraging voluntary acceptance of positive messages while resisting negative ones.

### 4.1 Cultivating Opinion Leaders for Positive Public Opinion Guidance

The term “opinion leader” first emerged in the 1940s, referring to individuals with frequent exposure to media such as newspapers and radio who possessed comprehensive understanding of relevant issues and could assist others in decision-making processes—a function that headline platforms now fulfill. To effectively cultivate opinion leaders who can positively guide public opinion, platforms must enable them to properly analyze new information and, most importantly, exert positive energy guidance. In this regard, the self-media platform “Qutoutiao” has become an important benchmark and model for cultivating opinion leaders. Its core philosophy of “discovering new perspectives and creating new topics” transforms news from mere information into a vehicle for uncovering additional valuable content—a practice that serves the purpose of nurturing opinion leaders. Recently, “Qutoutiao” launched a “earn money by reading news” campaign, which attracts more potential users to follow the platform and its content. Among these users, some inevitably possess the ca-

capacity and insight to become “leaders”—potential opinion leaders cultivated by the platform. Only by increasing the number of opinion leaders can headline platforms better exert positive influence on public opinion guidance while simultaneously promoting information dissemination and purifying the online environment.

## 4.2 Improving Information Quality and Accelerating Dissemination

As previously mentioned, one of headline platforms’ most significant advantages is achieving real-time information dissemination, with high-speed transmission being a primary factor in attracting audiences. Therefore, to secure broader development space in the future, headlines must leverage network technology development to enhance information quality, expand collection scope, and increase dissemination speed. Through practical application of various algorithmic principles, platforms should conduct market segmentation and cluster analysis on audiences during accelerated information propagation to achieve more precise information push, thereby securing competitive advantages in the intense new media landscape.

## 4.3 Strengthening Government Supervision and Maintaining Online Discipline

The orderly, healthy, and harmonious development of headline platforms inevitably requires government guidance and supervision. Only by combining macro-level government regulation with micro-level market mechanisms can headlines better fulfill their important function of purifying the online environment. This involves two key aspects: first, strengthening legal constraints by establishing and improving laws, regulations, and institutional rules to guide and govern headline platform operations; second, enhancing Party and government supervision mechanisms, with relevant government departments conducting regular investigations and research into the operation of various headline platforms to promptly halt the spread of harmful speech and information. Under such macro-level institutional guidance, the positive role of headlines can be effectively realized.

## Conclusion

Against the backdrop of emerging new media communication methods such as WeChat and Weibo, and the accelerating integration of new and traditional media, headline platforms face both opportunities and challenges. Through their unique algorithmic and recommendation principles, headlines have achieved large-scale information collection, high-speed dissemination, and precise push, winning the welcome and appreciation of certain audiences.

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*Note: Figure translations are in progress. See original paper for figures.*

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