

Model Construction and Strategies for Multi-Platform News Dissemination in Mainstream Media: A Case Study of People's Daily Online Accounts (Postprint)

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Abstract

Since their inception, short videos have experienced explosive growth. Amidst the ongoing convergence and interactive development between short-form video and journalism, short-form video news has demonstrated characteristics including rapid dissemination, prolonged hotspot persistence, and flexible formatting. Through multi-platform data monitoring, the platform dissemination process was simulated utilizing multi-platform data and linear propagation theory, yielding favorable results with coefficients of determination exceeding 0.98; the platform parameters conformed to reality and possessed theoretical significance. The dissemination potential of short-form video news was assessed through investigation, and a sixteen-character dissemination strategy guideline was proposed: concise publishing, frequent publishing, continuous publishing, and diverse publishing.

Full Text

Preamble

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Construction and Strategy of Multi-Platform News Communication Models for Mainstream Media: A Case Study of People's Daily Accounts

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Abstract: Since the emergence of short videos, they have experienced explosive growth. As short videos and journalism continue to integrate and develop interactively, short-form news has demonstrated characteristics such as rapid

dissemination speed, sustained hotspots, and flexible formats. Through multi-platform data monitoring and leveraging multi-platform data alongside linear propagation theory to simulate platform communication processes, this study achieved favorable results with determination coefficients exceeding 0.98. The platform parameters align with reality and hold theoretical significance. The study evaluated the communication potential of short-form news and proposed a sixteen-character communication strategy: concise publishing, frequent publishing, continuous publishing, and diverse publishing.

Keywords: news media; communication model; short video; communication strategy

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1.1 Research Questions

This study conducts statistical analysis of People's Daily accounts across various platforms as mainstream media entities, constructing a communication effectiveness model to inject new vitality into the news industry, effectively expanding communication breadth and enhancing timeliness. The research provides reference for domestic media to achieve new forms of communication and public opinion guidance by leveraging platforms like Douyin [1].

1.2 Case and Sample Sources

This study selected five short-form video platforms and comprehensive video platforms where People's Daily operates accounts: Douyin, Kuaishou, Bilibili, Tencent Video, and Toutiao. We conducted tracking monitoring of all video dynamics from October 1-15, 2020, over a five-day period with one-day intervals. A total of 190 videos were published across the five account entities.

1.3 Data Processing

This study employs a weighted communication effectiveness evaluation model that weights user behaviors to calculate individual video communication effectiveness C_i and then averages platform video communication effectiveness C . Here, C represents platform video communication effectiveness, C_i represents individual video communication effectiveness, X_1, X_2, \dots, X_n represent different types of user feedback patterns, and W_1, W_2, \dots, W_n represent weights for different user behaviors. The weight settings are shown in Table 1.

Table 1: Weight Settings for Communication Effectiveness Evaluation

2.1 Model Principle

During video communication processes across different platforms, various factors such as algorithms, video quality, and publishing time create differences in communication effectiveness. Simply comparing communication effectiveness across platforms makes it difficult to clarify the effect differences caused by varying algorithms and target audiences. By reverse-calculating platform communication processes through a linear communication model and conducting parametric analysis, variables can be effectively separated to evaluate each platform's effectiveness.

This study assumes the communication effectiveness of a platform's initial push as the initial communication effectiveness. Each video on each platform is independent and does not interact with others. Furthermore, each video undergoes only one round of communication, with communication intensity changing linearly over the time dimension.

2.2 Model Structure

Let the initial communication effectiveness be c_0 . Assuming the communication effectiveness increases by a factor of λ after time period t , the propagation coefficient is $(\lambda - 1)$. Simultaneously, the change in propagation coefficient K is temporarily defined as linearly decaying with coefficient n over time, i.e., $K = 1 - nt$. The value of n depends on the lifecycle; when t equals the video lifecycle, $K = 0$, meaning video communication stops and the simulation ends. The iterative differential expression is as follows:

The integral form can be expressed as:

Using daily communication effectiveness data for videos across platforms, we perform optimal fitting on the above formula to reverse-calculate parameter differences across different videos and platforms, thereby determining the communication effectiveness characteristics of each platform.

2.3 Model Evaluation

A smaller P -value indicates more significant results. Since the media communication type, user behavior, and development prospects of "mainstream media communication effectiveness on short video platforms" are measured through three distinct dimensions, to understand the correlations among these three dimensions, we integrate these variables into the same dimension for research and analysis, as shown in Table 3. The calculation method can be expressed as:

3. Model Data Calibration

In the survey on perceptions of mainstream media and short videos, the significance level p -values were all less than 0.01, indicating significant differences among the three factors, while tests revealed a positive correlation. Regarding communication advantages, accelerating news dissemination was identified as an important advantage, with 71 samples selecting this option. As Douyin, Kuaishou, and other short video platforms expand their scale, they play a significant role in mainstream media's dissemination of values.

Model parameters were calibrated using the least squares method. The calibration results are shown in Table 2. Kuaishou's c_0 value is significantly higher; Toutiao and Bilibili have roughly equivalent c_0 values; Toutiao's λ value is 70%-80% higher than other platforms, while remaining platforms show similar λ values; Douyin's n value is the highest, while Bilibili shows a negative value. Additionally, because Kuaishou's decay rate exceeds the sampling frequency, although it decays extremely rapidly, its n value approaches zero. The r^2 values all exceed 0.98, indicating model rationality and good fit.

Table 2 : Platform Communication Effectiveness Parameter Calibration Table

4.1 Survey Basic Information

The survey questionnaire contained 40 questions investigating personal status, attitudes toward news acquisition, attitudes toward Douyin short videos, and news communication effectiveness on short video platforms. A total of 313 valid questionnaires were collected by the time of report writing.

The questionnaire consisted of four parts: personal information, news attitudes, short video platform perceptions, and short-form news attitudes.

4.2 Data Correlation Mining

A larger c_0 means stronger initial communication provided by the platform; a larger λ indicates stronger communication capacity of short videos under ideal circumstances; a larger n signifies faster decay of communication effectiveness during the propagation process. Under ideal conditions, better communication effectiveness is achieved when c_0 is larger, λ is larger, and n approaches zero.

5.1 Model Parameters and Their Significance

The model construction utilizes three parameters: c_0 , λ , and n , representing initial communication effectiveness, communication coefficient, and communication decay coefficient, respectively. A larger c_0 indicates stronger initial communication from the platform.

5.2 Model Feature Analysis and Conclusions

Table 4 : Platform Communication Feature Comparison Table

Correlation analysis aims to study the association and closeness between data. In most cases, the strength of correlation between variables is measured through P -values. The smaller the P -value, the more significant the results.

Based on Table 4 data, Kuaishou demonstrates advantages in communication base. Its bottom-up market occupation approach enables it to prioritize third- and fourth-tier user groups [2], and its “decentralized” communication characteristics [3] enable widespread user dissemination, with initial communication effectiveness superior to Douyin. Comprehensive video platforms rely primarily on user clicks with recommendation algorithms as a supplement, offering users greater selectivity and consequently lower initial communication effectiveness. User base serves as a primary influencing factor for initial communication effectiveness; as a first-tier comprehensive platform, Tencent Video’s large user base contributes to greater initial communication effectiveness. Douyin’s algorithm, based on comprehensive weighting of content traffic pool stacking recommendations [4], enables multi-round exposure, resulting in stronger communication effectiveness. Kuaishou’s user-tag-based recommendation mechanism lacks a user screening mechanism for superior videos, resulting in relatively weaker communication power. Toutiao, possessing both algorithmic recommendation and user click mechanisms, demonstrates stronger basic communication power. Douyin’s traffic pool algorithm causes videos to rapidly sink to the bottom of the pool, with new videos quickly occupying existing video ecological niches and causing rapid decay in communication power. Meanwhile, Kuaishou’s single-level exposure characteristic causes video exposure to complete rapidly within a short timeframe, with decay time significantly less than 24 hours, making daily-scale models inadequate for capturing Kuaishou video attenuation. Bilibili, leveraging its interactive entertainment features [5], maintains strong communication recognition, with increased user click rates producing a delayed growth effect that sustains relatively long-term stable platform video growth. Based on the above research, diversified and innovative multi-platform communication has become an important innovative audiovisual method and strategy for mainstream media. We propose a sixteen-character communication strategy for government accounts across different platforms.

1. **Concise Publishing:** Video production duration should not be too long. Research results indicate that publishing shorter short videos yields positive feedback on user stickiness [6]. Through user behavior responses, backend algorithmic recommendations enable multiple exposures that strengthen communication effectiveness. In the internet era, users’ fragmented information acquisition time patterns make short-form news communication align with the needs and logic of fragmented users.
2. **Frequent Publishing:** News events should be published with multiple videos on the same day whenever possible, with refined content. Frequent

and multi-faceted innovation on content themes enhances user stickiness. Due to the short lifecycle of short videos, timeliness of topics should be emphasized. Increasing video posting frequency can raise the weight coefficient of account entities [7], enhancing initial recommendations and improving video communication effectiveness.

3. **Continuous Publishing:** Publish related videos within a certain time-frame. Publishing related videos provides varying degrees of stimulation to the video's own communication, thereby increasing and expanding the video's information depth and breadth.
4. **Diverse Publishing:** Enhance internet-native discourse tone [8] to promote de-formalization. Mainstream media videos should attempt diversified communication, changing traditional communication methods and tones to become more grounded. Changing the inherent stereotypical impression of mainstream media requires keeping pace with development and adapting to trends, necessitating enhanced post-production capabilities and formats for videos themselves.

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

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