Machine Participation in Financial News: Value Reshaping and Development Directions in the Cyborg Era (Postprint)

Authors: Yuan Qiuyu

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Abstract

The advent of the "Everything is Media" cyborg era has rendered machine participation in financial journalism increasingly commonplace. This paper aims to investigate the formal reshaping of typical elements of financial journalism in the cyborg era, and the consequent value reshaping and new development directions thereof. First, this paper empirically examines the correlations between typical elements of financial journalism—including data, investment recommendations, and information graphics—and communication effects. The findings reveal that the data volume in financial journalism exhibits a "smile curve" relationship with communication effects, while both investment recommendations and information graphics demonstrate positive correlations with communication effects. Second, it explores how the machine-participatory cyborg era reshapes the forms of these three typical elements of financial journalism, encompassing the disruptive value reshaping brought about by big data sources, scenario-based investment recommendations, and data-visualized information graphics. Finally, it synthesizes the new development directions confronting financial journalism in the cyborg era: enhanced cross-boundary collaboration in news production, increased trend-predictive reporting, intensified data-driven in-depth journalism, and the integration of fragmented information value.

Full Text

The Value Reshaping and Development Direction of Machine-Participated Financial News in the Cyborg Era

Abstract: The advent of the "Everything is Media" cyborg era has made machine participation in financial news production increasingly commonplace. This paper explores how the cyborg era reshapes the formal characteristics of typical

financial news elements and the consequent value reshaping and new development directions for financial journalism. First, this study empirically examines the correlation between typical financial news elements—including data, investment advice, and infographics—and dissemination effectiveness. The findings reveal that the volume of data in financial news exhibits a "smile curve" relationship with dissemination effectiveness, while both investment advice and infographics are positively correlated with dissemination effectiveness. Second, the paper investigates how machine participation in the cyborg era reshapes the formal characteristics of these three typical financial news elements, including the disruptive value reshaping brought about by big data sources, scenario-based investment advice, and data-visualized infographics. Finally, the paper concludes with new development directions for financial news in the cyborg era: enhanced cross-industry collaboration in news production, increased trend-predictive reporting, strengthened data-driven in-depth journalism, and the integration of fragmented information value.

Keywords: Cyborg; Financial News; Machine News Writing; Big Data; Everything is Media

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Author: Yuan Qiuyu

Analysis Results: Data Volume and Financial News Dissemination Effectiveness Exhibit a "Smile Curve" Correlation

Driven by artificial intelligence, big data, and IoT technologies, intelligent machines are gradually entering every aspect of financial news production, including information gathering, processing, distribution, and feedback. This not only redefines the meaning of media convergence but also revolutionizes the value of the financial news content industry.

The analysis demonstrates that data volume in financial news exhibits a "smile curve" correlation with dissemination effectiveness. Within the 0-12 data point range, financial news characterized by a small amount of data adapted for quick, light reading correlates with dissemination effectiveness. In the range above 34 data points, financial news demonstrates a strong correlation between its data-heavy professionalism and dissemination effectiveness.

1. "Everything is Media" Big Data Sources

Correlation Analysis Between Data Volume and Dissemination Effectiveness

Considering the conflict between the characteristics of quick, light reading and financial news' s emphasis on data to demonstrate professionalism, the threshold of data volume has become an important research subject for financial news in new media. This study examines the impact of different data volume thresholds on dissemination effectiveness in financial news. Given that viewing metrics vary significantly across different public accounts due to various factors, this study selected the representative financial news public account "Qianyan" for analysis. The relevant test results are shown in Table 1. This study extracted 69 samples, which were equally divided into three groups based on data volume: 0-12, 13-34, and above 34. Using Pearson correlation analysis, the correlation between the three sample groups and viewing volume was analyzed. Except for date numbers, all other data were included in the statistics, but duplicate data representing the same meaning were counted only once. Data volume was obtained through Python crawling based on established screening rules, with manual verification.

Traditional manual data collection often faces problems of precision errors, processing delays, and subjective bias. Machines' precision in data processing and emotional neutrality can ensure news credibility more effectively than human reporting in certain cases. In the "Everything is Media" cyborg era, machine writing can liberate journalists from tedious and time-consuming basic editorial work, representing an era of data liberation for news production through machine news writing.

The analysis results show that between 0-12 data points, the Pearson correlation coefficient between data volume and viewing volume is 0.414, indicating a moderate positive correlation. Between 13-34 data points, the Pearson correlation coefficient is -0.195, showing a weak negative correlation. Above 34 data points, the Pearson coefficient is 0.616, indicating a strong positive correlation between data volume and viewing volume. All results passed significance tests ($p<0.05$).

First, "Everything is Media"will bring automation to data collection and processing, enriching data sources for financial news. With support from IoT and other technologies, machines can automatically collect information from monitored objects, providing broader data sources for reporting. This includes both natural and social environmental information, as well as dynamic human behavior data. Compared to traditional human-only information collection, machine-based collection can reach areas inaccessible to humans, extend to information dimensions beyond human sensory perception, and enable round-the-clock continuous monitoring. Moreover, machine-collected big data is more objective than traditional questionnaires. For example, analysis based on social media data relies on people' s spontaneous information and emotional disclosure. Although this information may not be 100% authentic, machine monitoring of social media data often better reflects audience states and intentions than situations where people passively accept surveys.

Second, the rich data sources of the cyborg era will provide financial journalists with topic inspiration and enhanced ability to predict future trends. On one

hand, rich data sources enable journalists to gain "precision-guided" capabilities from a data-driven perspective. Machines can present and analyze data structurally, providing journalists with entirely new perspectives on issues. Machines can excavate information that may seem insignificant individually but becomes meaningful when connected, undoubtedly offering a more macroscopic perspective that aligns with the Internet' s essence of "connection generates meaning." On the other hand, trend prediction represents the value of big data technology. Machine data analysis may reveal deep correlations between hidden human behaviors and social changes, providing new sources for news topic discovery, revelation of key news elements, and judgment of patterns and trends.

In the cyborg era, financial news will see greatly improved data sources, work efficiency, and future trend grasping capabilities. Enriching financial news content data sources at lower costs and empowering financial journalists to stand on the shoulders of data represent the value of financial news in the cyborg era.

2. Scenario-Based Investment Advice

Investment advice shows a positive correlation with dissemination effectiveness. Based on samples from the "Qianyan" public account, this study used a dichotomous grouping method (with/without investment advice) and conducted independent sample t-tests on reading volume and viewing volume data between the two groups. The results show that investment advice is significantly correlated with viewing volume. Levene' s test for equality of variances shows sig > 0.05, indicating homogeneity of variance, with $t = 2.053$ and correlation coefficient > 0.7, indicating high correlation, while sig $= 0.046$, passing the significance level test.

Currently, financial news faces contradictory circumstances regarding investment advice. While investment advice is significantly correlated with viewing volume, across three typical financial news public accounts, each piece of financial news uses an average of only 0.23 investment suggestions, accounting for just 23.3%. Behind this result, on one hand, due to uncertainty about audience information, investment advice can only be proposed for common needs and behavioral characteristics in generalized scenarios. Such investment advice lacks audience specificity and can only be briefly mentioned at the end of financial news, resulting in a very low adoption rate of investment advice-related content in financial news. Additionally, current media reports' investment advice mainly comes from individual expert analysis, whose limitations are obvious. If media can widely utilize big data technology for major trend prediction, its prediction accuracy may be effectively improved, and its social influence enhanced.

On the other hand, the high correlation between investment advice and viewing volume reveals strong audience demand for investment advice in financial news. In classic communication theory, Elihu Katz' s "Uses and Gratifications" theory posits that audiences actively select media based on specific information needs, and the gratification obtained influences their evaluative behavior and

subsequent media contact. Audiences subscribe to financial news ultimately for investment needs. Therefore, whether financial news can provide reasonable, feasible, and in-depth investment advice to meet audience expectations for investment decision-making through financial news public accounts will directly determine dissemination effectiveness.

The premise for financial news to provide reasonable, feasible, and in-depth investment advice is matching audience personal information, which is precisely the advantage provided by the cyborg era. In the cyborg era, LBS (Location-Based Services) technology application means resource aggregation in users' real-world scenarios. Financial news, based on scenario thinking, matches vast user scenarios to provide different personalized investment advice.

In the cyborg era, financial news will match investment advice based on scenario thinking, using big data to expand financial news dissemination capabilities. Machines track and understand the personalized scenarios of vast numbers of users, then integrate structured big data, write targeted investment advice based on big data trend predictions, and finally match users' personalized scenarios, incorporating audience-individualized scenarios into financial news. For the same piece of financial news, producing differently styled investment advice versions to adapt to different audience needs. According to the "Long Tail Theory," satisfying audience demand for personalized investment advice will further enhance the content dissemination effectiveness of financial news.

3. Data Visualization Requirements for Infographics

Sampling analysis was conducted on a typical financial news public account ("Qianyan"). The number of infographics in 69 samples was primarily screened manually according to the following rules: images, tables, and videos presenting financial news text and data structure in the push were counted, while text boxes were not counted.

Infographics are correlated with dissemination effectiveness. Correlation analysis results show that the number of infographics and viewing volume have a Pearson coefficient of 0.21, showing positive correlation and passing significance tests ($p<0.05$).

On one hand, unlike traditional media's fixed terminals and "prime time,"mobile Internet has broken media inertia, causing fragmented behavior patterns and damaged concentration. For media, to adapt to dissemination in fragmented time, they must refine fragments and complete the "jigsaw puzzle" of fragments through structural means. Financial news not only needs to find more flexible dissemination rhythms but also explore presentation forms compatible with users' fragmented information consumption.

On the other hand, the cyborg era has rapidly made big data an important resource in news reporting, but this does not mean news reporting is a pile of data. The information explosion era requires clearer presentation, more accurate

analysis, and deeper interpretation of information.

The cyborg era requires media to enter a new "graphic era," that is, to better convey and interpret information through visual reprocessing of information, and even expand and deepen news through infographics.

In this context, infographics begin to play an increasingly important role. According to Keynes' expectation theory in the cyborg era, audience feedback and expectations will influence financial fluctuations in the financial field. Therefore, besides revealing facts that have occurred, financial news should also collect and reflect audience feedback. The "Everything is Media" era means the natural objectification of information terminals. People' s information reception no longer relies solely on specialized terminals like computers and mobile phones but can be achieved through different intelligent objects in different contexts. Even based on new technologies like projection, all object surfaces can become "screens." Deploying interactive infographics as data "collectors" through various "screens" to collect audience opinions in real-time and immediately transform them into part of news content becomes the foundation for news extension and deepening. Through interactive infographics in financial news, audiences can not only understand various information conditions through these charts but also interact and express positions through them. Audience feedback is instantly aggregated and statistically analyzed, allowing each audience member to better grasp the current financial ecology.

In the cyborg era, infographics are no longer just simple presentation forms; they also contain new angles and thinking for understanding the world and revealing reality. Presenting financial news data and text through multi-means infographics not only adapts to audiences' fragmented information consumption but also brings clearer presentation, more accurate analysis, and deeper interpretation.

4. New Directions for Financial News Dissemination in the Cyborg Era

Enhanced cross-industry collaboration in news production. The cyborg era means that for financial media organizations, to expand their information capabilities and data sources, they need to incorporate IT companies and IoT enterprises that control intelligent machines and sensor data as members of their news production systems.

Increased quantity of trend-predictive financial news reporting. Traditional financial news reporting focuses more on facts that are happening or have happened. If media can utilize big data technology to focus more attention on predicting future trends, it may overturn the limitation that investment advice in financial news reporting mainly comes from individual expert analysis. Its social influence will be enhanced, thereby achieving media value reshaping.

Development space for integrating fragmented information value. The cyborg era features information explosion, but this does not mean news reporting is a

pile of data. Using structural means to complete the "jigsaw puzzle"of fragments and channeling fragment value into in-depth reporting will be an important development space for financial news in the future.

The cyborg era, with "Everything is Media" and machine participation, means the natural objectification of information terminals. The development direction of financial news begins here but extends far beyond. The cyborg era signifies not only opportunities but also more challenges for development directions. Nevertheless, this is a new era that financial news must face.

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(Author' s affiliation: School of Literature, Nankai University)

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