Innovative Paths of Financial Data News Visualization in the AI Era: A Case Study of DT Finance

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Abstract： In the era of the Internet and artificial intelligence, where users are overwhelmed by massive amounts of information, data visualization has become essential—particularly in complex fields such as financial journalism. Visual storytelling not only simplifies information processing but also enhances audience engagement and reading experience. This study examines DT Finance's WeChat and Weibo platforms through content and literature analysis, focusing on visual news content published between 2020 and 2022. By analyzing the strengths and weaknesses of DT Finance's data visualization practices, this paper aims to identify key challenges in China's data journalism and propose innovative strategies for the development of visualized news in the AI-driven media landscape.

Introduction

With China's rapidly advancing market economy, high-end financial news has become increasingly accessible to the public (Wang, 2018). In today's era of information overload and personalized content, artificial intelligence—especially generative AI—is reshaping news production, distribution, and consumption. AI enhances data processing and visualization, enabling faster, more accurate communication of complex financial information.

Data journalism and news visualization have moved beyond manual charting, with AI-assisted data screening, pattern recognition, and automated chart generation becoming common. Yet, concerns about algorithmic bias, credibility, and transparency remain critical. It is vital to explore how data-driven methods can both improve and challenge journalistic standards.

DT Finance, founded in 2015 by Alibaba Group and First Financial, exemplifies innovation in data-driven financial media. Effective visualization helps break down complex information for wider audiences. Alongside outlets like First Financial and Caixin, DT Finance's data visualization efforts reflect broader shifts toward big data and visual storytelling in journalism. This study examines DT Finance's role in advancing news visualization, its commercial logic, challenges faced, and offers recommendations for future digital media development.
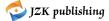
1 Methods

1.1 Topic Source and Data Source Analysis

Given the substantial volume of textual content produced by DT Finance, data crawling was conducted using the Scrapy tool to collect articles from DT Finance's Weibo account. A total of 3,380 articles published between April 2020 and April 2023 were selected as the research sample and subsequently categorized according to their thematic content.

While DT Finance consistently annotates data sources within each visualization, the extensive number of posts (6,913) coupled with multiple images per post hindered automated data extraction. Consequently, manual sampling was employed to analyze the data sources and visualization content.

In this regard, the application of artificial intelligence (AI) technologies—such as natural language processing and computer vision—offers considerable potential to enhance the efficiency and accuracy of both data collection and analysis. AI-driven methods can facilitate automated extraction and classification of data source information from vast multimedia

datasets, identify latent patterns, and mitigate the limitations inherent in manual processing. Integrating such approaches could substantially reduce labor intensity while improving scalability and precision in data journalism research. Due to technical constraints in image-based data extraction, manual sampling was ultimately adopted despite AI's theoretical potential.

For this study, 453 articles published from 2022 to 2023 were analyzed, and their data sources were classified as follows:

(a) Government: Official statistics from Chinese and foreign governmental bodies, including entities such as the U.S. Department of Commerce;

(b) Companies/Private Organizations: Financial reports and survey data from enterprises such as Taobao,, Didi and Meituan;

(c) Research Institutions/Individuals: Data originating from organizations including Alibaba Big Data, iiMedia Consulting, as well as independent researchers;

(d) Other Media: Financial media outlets such as Caijing Network, Google Finance, The Paper, and Business Week;

(e) Social Media: Information sourced from platforms including Dianping and Weibo, along with reports from prominent influencers;

(f) In-house Data: Proprietary data labeled as DT Research, DT Finance Research, or DT Data within visualized content.

1.2 Analysis of Visualization Presentation Paths

DT Finance primarily disseminates financial information through platforms such as short videos, Weibo, and WeChat, using static charts, dynamic visuals, and interactive graphics to communicate complex data (Zhang, 2022). Static infographics—particularly prevalent on WeChat due to platform constraints—are low-cost and easy to produce, often featuring line, bar, and pie charts.
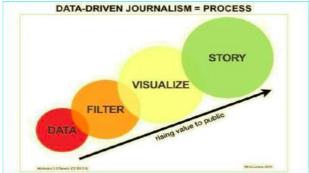
As mobile internet use has surged, smartphones have become the dominant medium for news consumption, prompting media to adapt to visual-first and mobile-friendly formats. On Weibo, content is rapidly shared via images and videos, aligning with users' demand for quick, engaging information. The @DT Finance account, active since 2015, has posted over 6,913 entries—largely reposts—but increasingly incorporates features like voting to boost interaction.

While this study uses traditional statistical methods, AI and machine learning hold future promise for enhancing data journalism—such as pattern recognition, content automation, and sentiment analysis—advancing both the efficiency and depth of news visualization.

2 Measure

2.1 Visualization Process Analysis

Renowned journalist Milko Lorenz divides the data journalism production process into four steps: data collection, data analysis, data visualization, and news presentation. Data collection involves gathering and processing all relevant materials, such as documents, images, and videos, to improve the accuracy and depth of reporting. Data analysis uses mathematical models to extract valuable insights and transform raw data into useful information.

2.2 Analysis of Visualization Types

Visualization is a key form of expression in data journalism, crucial for presenting complex data intuitively (Yang & Li,

2019). Analyzing 453 DT Finance Weibo posts (as of April 19, 2023), the author identified over twenty types of visualizations. For clarity, these were grouped into categories: infographics (pie, line, bar, column, area charts), traditional text-and-image, maps (regional, national, global), timelines, customized charts (portraits, symbols, multi-dimensional data), scatter/bubble charts, relationship/Sankey diagrams, 3D dynamic/interactive charts, word clouds, and tree diagrams.

DT Finance often cross-combines multiple data sources to enhance storytelling. For example, in the April 12, 2023 article "From Coffee to Beijing Bean Juice: The Evolution of Coffee," data from a coffee festival's menu was visualized by linking product tags—such as brand, price, fruit content, and origin—creating a vivid, humanized presentation that engaged readers effectively.

DT Finance goes beyond simply combining images and text in its visual presentations. It creatively transforms otherwise dry textual descriptions into engaging focal points. For example, in the July 20, 2022 article "Peeking into Straight Men's Wardrobes," DT Finance used anime-style illustrations and colorful graphics to highlight diverse men's fashion aesthetics, helping audiences intuitively grasp contrasts and connections within the information.
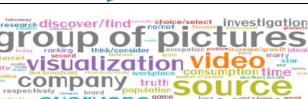

DT Finance's visualizations typically use a white background with no more than three colors per chart, resulting in a clean and simple style that allows audiences to quickly grasp the data. Data sources are clearly labeled at the bottom, reflecting strong copyright awareness. A DT Finance visualization designer stated, "Our goal is not only to present data but also to help readers discern patterns, understand connections, and focus on the meaning behind the numbers."

3 Results

Starting from 2020, the author conducted a keyword search on the titles of the 3,380 Weibo posts from DT Finance. The top 50 most frequently occurring words for each year were compiled into word clouds. The following analysis will discuss the topics of DT Finance's Weibo posts from 2020 to 2022 in detail.

This approach enables a thorough understanding of the focus areas and evolving trends in the content published by DT Finance on social media, helping to assess its alignment with broader financial news coverage and emerging interests in the public domain.

The image above shows the top 50 most frequently occurring keywords extracted from the article titles posted by DT Finance on Weibo in 2020. It is clear that terms like data, China, young people, video, visualization, pandemic, global, and finance rank highly. From this, we can infer several insights.

In 2020, the term data appeared 537 times, far surpassing other keywords, indicating that DT Finance made significant efforts in promoting data journalism during that year. Additionally, DT Finance's editorial direction became increasingly clear, as it focused on attracting the attention of a younger audience to financial news.

Regarding the presentation of data news, DT Finance also made considerable efforts. Words related to visualization design, such as video, visualization, and display, frequently appeared in the news titles. This suggests that DT Finance was not only dedicated to the production of data-driven content but was also focused on enhancing the visual and interactive experience to engage its audience more effectively.

Through this analysis, we can see that DT Finance's strategy in 2020 was geared toward leveraging data, appealing to younger generations, and adopting modern, visualized forms of content to make financial news more accessible and engaging.

Based on the data analysis from the crawled content, DT Finance published a total of 1,100 articles in 2021, which is quite similar to the 1,137 articles published in 2020, indicating that the overall publishing speed remained relatively stable. In 2021, the selection of topics by DT Finance became more balanced, with keywords like China, young people, video, finance, and data still ranking at the top. However, other keywords such as city, women, men, vaccines, Beijing, Shanghai, and funds started to appear more frequently.

This shift shows that DT Finance expanded its topic coverage to a broader commercial and "general finance" field, allowing it to attract a more diverse audience. The platform's inclusion of topics like urban life, gender issues, and vaccines suggests that it was adapting its content to appeal to different social groups and interests. Moreover, in terms of geographic focus, DT Finance paid more attention to the daily lives of residents in first-tier cities, highlighting issues related to their

living conditions, such as housing, food, and transportation.

This strategic extension of topics beyond purely financial matters demonstrates DT Finance's aim to broaden its readership by addressing a wider range of societal concerns, thereby fostering a stronger connection with its audience.

In 2022, DT Finance published 1,143 articles, a slight increase compared to the 1,100 articles in 2021, but overall, the publishing frequency remained stable. The selection of topics for DT Finance also evolved in 2022. Compared to the more balanced topic selection in 2021, there was a shift towards focusing more specifically on young people's workplace issues and consumer lifestyle, offering more targeted and high-quality content. Keywords such as workplace, graduates, income, growth, and life appeared frequently, indicating that DT Finance expanded its focus into a broader "general finance" field, particularly concentrating on business finance data, and intensively digging into aspects of daily life such as housing, food, transportation, and lifestyle, and presenting these findings in visual formats.

DT Finance also placed a strong emphasis on user experience. For example, in its interactive design, the platform considered user experience as one of its core principles, ensuring each user received attentive service. The interface design adopted a flat, minimalist style, while the presentation of information was based on visual and readable formats. DT Finance's content and stylistic choices consistently provide a refreshing experience, combining knowledge in economics with easily digestible content, making it suitable for users of various levels of understanding. Whether a user has little knowledge of finance or is already well-versed in the field, DT Finance offers a compelling platform to explore economics in a fun and engaging way.

4 Discussion

4.1 Practical Advantages of DT Finance's Data Journalism

Founded in 2015, DT Finance is recognized as China's first data-driven media outlet. Since its inception, it has steadily expanded its presence across mobile apps, short video platforms, and WeChat official accounts. By leveraging data journalism, it not only follows trending topics but also informs public opinion and engages readers with timely and relevant content. With a growing multi-platform readership of over 1.5 million—including more than 600,000 WeChat followers and 310,000 Weibo followers—DT Finance has established a significant presence among professionals, media workers, investors, and researchers.

At the core of DT Finance's strategy is a mobile-centered communication matrix that integrates various platforms to meet changing user habits. In particular, its WeChat official account plays a key role in building its follower base and redirecting traffic to its native app. As the dominance of traditional media weakens, social media platforms have increasingly become essential distribution channels. In parallel, DT Finance utilizes short video platforms to deliver fragmented and interactive content, thereby responding to audience demand for dynamic and visual storytelling. This cross-platform approach not only enhances information delivery but also ensures that content remains accessible and engaging.

Moreover, DT Finance's editorial strength lies in its shift from abstract financial reporting to storytelling rooted in

everyday life. It frequently addresses pressing social issues such as youth employment, rising living costs, and resource inequality. By adopting a human-centered narrative approach, it successfully connects economic topics with lived experiences. This empathetic perspective not only deepens audience engagement but also reflects a broader transformation in data journalism toward emotionally resonant and socially relevant reporting. Furthermore, by aligning its content with public concerns and national discourse, DT Finance effectively fulfills its role in guiding public opinion with both responsibility and credibility.

In support of its innovation efforts, DT Finance has also established a dedicated News Lab. Through collaboration with Alibaba, the lab integrates corporate data resources, thereby driving development in data integration, cross-sector collaboration, and market-oriented operations. It brings together experts from journalism, data science, and design to enhance content quality and visualization capabilities. Emphasizing original research, DT Finance offers insights that range from macroeconomic trends to micro-level consumer behavior. At the same time, it leverages First Financial Group's extensive network to distribute its content across platforms more effectively. Meanwhile, DT Finance has moved beyond traditional advertising by building a diversified revenue model—integrating app-based ads with product development, online forums, and financial exhibitions—which provides targeted services for various industries and strengthens its overall financial sustainability.

4.2 Deficiencies in the Data Journalism Practices of DT Finance

Although DT Finance demonstrates a rich and diverse approach to data visualization, its practical application still reveals notable limitations, particularly regarding interactivity. The platform's visualizations can generally be categorized into static, dynamic, and interactive formats. Among these, interactive charts are relatively scarce due to their longer production cycles and higher technical requirements—a common issue across data journalism platforms. However, the integration of AI technologies, such as natural language generation and intelligent interfaces, offers promising solutions to enhance interactivity and audience engagement.

Dynamic charts, which play a crucial role in conveying the rhythm and progression of data, add vitality and narrative depth to the content. Nonetheless, they comprise only a small proportion of the platform's visual output, as their production remains more complex compared to static visuals. Interactive charts, which enable users to directly engage with data, are even less prevalent. Despite the technical challenges, incorporating basic interactive elements could significantly increase user participation and article appeal.

In terms of data accuracy, DT Finance generally maintains good practices by citing data sources for most of its charts, reflecting a commitment to transparency and intellectual property. However, a minority of visualizations still lack clear attribution. More than 60% of the platform's data originates from publicly accessible online sources such as the National Bureau of Statistics, Guojuqianhua, iiMedia Consulting, and Dazhong Dianping. While these sources are cost-effective and timely, their reliability can be inconsistent, which poses challenges for ensuring data validity. Additionally, nearly half of the data comes from third-party partners, particularly through DT Finance's "Data Hero Program," with a significant portion derived from Alibaba-affiliated platforms like Tmall and Taobao. Given the commercial nature of these platforms, the data may reflect certain business interests, raising questions about the objectivity of the reporting. As a joint venture between First Financial and Alibaba, DT Finance is especially vulnerable to public scrutiny concerning its neutrality.

Finally, DT Finance's content reveals clear signs of news consumerism—a phenomenon rooted in post-1940s Western societies, where media began catering more directly to market demands and material culture. The platform's use of simplified visual storytelling, often designed to cater to public taste, reflects this trend. When featuring popular consumer products, DT Finance tends to stimulate user engagement through click-through rates and social sharing, inadvertently reinforcing consumption-driven behavior. This aligns with China's broader economic and social context, where rising productivity and evolving consumption habits naturally foster such media tendencies. However, this shift also contributes to the proliferation of clickbait, reduced editorial rigor, and a gradual erosion of journalistic depth under the influence of entertainment and market forces.

4.3 Thoughts on the Development of Financial News Visualization

Despite DT Finance's progress in data visualization, challenges such as limited technical expertise, concerns over data objectivity, and the rise of consumerism continue to impact both the platform's credibility and broader societal values, underscoring the need for thoughtful solutions and future development strategies. Expanding data sources and strengthening talent training are crucial, as effective news visualization requires a combination of data journalists, application developers, and visualization experts who possess skills in journalism, data analysis, design, and technology (Qin & Pan, 2015). Journalists must evolve into versatile "all-rounder" professionals capable of uncovering insights beyond raw data, engaging with audiences and prosumers, and integrating new media tools, while also benefiting from improved incentives to enhance their enthusiasm and performance. Furthermore, fostering independent thinking and analytical capabilities is vital, as data only offers a partial view of reality and requires critical interpretation to reveal the true narratives behind financial events. Financial news visualization should not merely focus on attractive visuals but provide substantive analysis that clarifies economic implications in an accessible and engaging manner. Upholding journalistic professionalism and ethical integrity remains essential, especially as companies like Alibaba expand their media influence—exemplified by its partnership with Caixin to launch DT Finance. Given China's demographic and economic complexities, financial media must advocate rational consumption and responsibly guide public understanding to mitigate consumerism's negative effects. In this light, financial news dissemination serves as a subtle yet powerful communication tool, necessitating adherence to solid theoretical foundations and professional ethics to ensure mainstream media fulfill their roles as both a "stabilizing force" and "guiding star" in society.

5 Conclusion

In the big data era, traditional news production struggles to keep up with rapid technological and social changes. Leading financial media like Caixin and DT Finance have made notable progress in data visualization. DT Finance's practices in data analysis, visualization innovation, and reporting from 2020 to 2022 offer valuable insights into advancing news visualization in China. Its visualizations cover social hotspots, utilize diverse data sources, and feature strong design, serving as a pioneer in the "media + enterprise" cooperation model and providing a reference for other financial media transformations.

However, DT Finance faces challenges related to data quality, including credibility, accuracy, and a consumerism bias in content that need urgent attention. Given financial news's close connection to public life, upholding journalistic ethics is critical. Universities should train interdisciplinary journalism talent with both theory and practice, while journalists must maintain independent, critical thinking beyond data influence. Media organizations need to balance economic goals with their public service role, fostering a responsible and healthy consumer narrative.

This study highlights DT Finance's practical experience and suggests that, in the AI era, data journalism visualization can enhance credibility, deepen audience interaction, and guide positive public opinion.

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