

# Research on Scientific Research Communication Mode Analysis and System Design Based on New Media Big Data

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**Keywords:** New Media, Scientific Research, Information System, Big Data.

**Abstract:** The development of new media has made the dissemination of scientific research information more diverse and faster. At the same time, the application of big data technology also provides more accurate and comprehensive data support for scientific research dissemination. However, there are still some problems in the current scientific research dissemination system, such as inaccurate information dissemination and incomplete data analysis, which need to be further explored and solved. By analyzing the influence of new media big data on the dissemination mode of scientific research work in vocational colleges, this paper designs a scientific research work communication system of higher vocational colleges based on new media big data to improve the communication effect and quality of scientific research work. The system includes four modules: data collection, data analysis, data display and data application. The application effect of the system has been verified in practice and remarkable results have been achieved. In short, the analysis of scientific research communication mode and system design research based on new media big data are conducive to improving the dissemination effect and influence of scientific research results, and promoting the popularization of scientific knowledge and scientific and technological progress. In the future, we will continue to conduct in-depth research, constantly improve the system and model, and make greater contributions to the cause of scientific research and communication.

## 1 INTRODUCTION

In the information age of the 21st century, big data has become an important topic for all walks of life. With the rapid development of new media and the continuous advancement of big data technology, the mode of scientific research dissemination is also undergoing profound changes (Rivas, J. G., 2019). In this context, how to use new media big data to improve the dissemination effect of scientific research in vocational colleges and universities has become a problem worth studying.

The era of new media is characterized by the dominance of big data. The business world has witnessed significant transformations as a result of this era, and the media industry recognizes the tremendous impact of big data. Consequently, the media sector has been actively expanding resource utilization and bolstering data analysis capabilities through collaborative platform initiatives (O'Keefe, C. M.- Julpisit, A.). However, whether it is in print, television, online, or social media, the utilization of big data is still in its exploratory phase.

In the new media era, the feedback model represents a revolutionary shift in production. Everything revolves around data, which is extensively mined and analyzed to generate valuable information. Traditional methods such as interviews and writing alone can no longer meet the demands of news production. Therefore, proficiency in data technology has become an essential skill (Zhao, W. B., 2019). In this "era of big data," obtaining news leads requires enhanced professionalism. Media organizations leverage specialized technologies and tools to extract valuable leads from vast amounts of information. They establish their own data research centers or collaborate with database news teams to delve deeper into news stories. This enables them to acquire more valuable leads and expand the breadth of their news coverage. While the era of big data has provided us with an abundance of high-quality information, it has also presented the challenge of information overload (Xin, C. C., 2020). Balancing this overwhelming volume of information with personalized and customized user needs has become a crucial concern. Regardless of how good the content may be, its true value cannot be realized if it fails to

effectively connect with the specific requirements of users.

In the age of information intelligence, traditional media must prioritize the concept of "content is king" and emphasize the importance of service amidst information overload. Specifically, they need to focus on effectively matching information with users to meet their specific needs and preferences (Weller, K., 2015). Content is king, and personalized news customization is realized. The proliferation of online information and the limited attention span of audiences determine that users will only select useful content based on their habits and interests. This implies that personalized news has the potential to attract larger audiences and is crucial for the future survival of the media. Big data analysis plays a vital role in achieving intelligent information matching, thereby enhancing the realization of information value and facilitating intelligent production, dissemination, and matching of information. Utilizing vast amounts of user data, analyzing reading habits, establishing relevant connections, and offering personalized news customization is an emerging trend in media development. For instance, "big data" technology enables the digitization of elusive elements like public opinions, attitudes, and emotions, thereby improving the accuracy of online public opinion research (Liu, L.-Chen, C.). Moreover, with the extensive development of social connections on the internet, the study of public opinion can be examined from various dimensions, including social relations. This multi-dimensional approach holds significant value for enhancing public opinion research and services. In the "era of big data," it is imperative to establish the concept of "big public opinion."

With the rapid development of new media, the dissemination of scientific research information has undergone tremendous changes, and the application of big data technology has also provided new ideas and tools for scientific research communication.

## 2 ANALYSIS OF RESEARCH DISSEMINATION PATTERNS

Scientific research dissemination refers to the dissemination of scientific research results through various media to promote the popularization of scientific knowledge and scientific and technological progress. In the era of new media, the way of scientific research dissemination has undergone great changes, mainly reflected in the diversification of

communication channels, the enrichment of communication content, and the interaction of communication methods. In the field of scientific research, the effective dissemination and dissemination of scientific knowledge and results is essential (De Winter, J.- Levine, F. J.).

The main communication channels include (Post, R.- Saeed-UI, H.): (1) Publication: Publish research results in authoritative academic journals to keep peers and academia abreast of the latest research progress. Ensure that the paper is of high quality, clear in content, and easy to understand. (2) Participate in academic conferences: actively participate in academic conferences at home and abroad, display research results through reports, posters and other forms, communicate with peers, and strive for more cooperation and support. (3) Establish cooperative relations: Establish cooperative relationships with other research teams, enterprises and institutions to jointly promote the application and transformation of scientific research results. (4) Social media promotion: use social media platforms (such as Twitter, LinkedIn, WeChat, Weibo, etc.) to share scientific research results and progress and expand influence. (5) Write popular science articles: present scientific research results to the public in an easy-to-understand way to improve scientific literacy. You can submit articles to popular science magazines, websites or personal blogs. (6) Cooperation with the media: cooperate with the news media and science and technology media to issue scientific research press releases to attract more attention. (7) Hold public lectures and seminars: Regularly hold public lectures, seminars and other activities, invite interested public, enterprise and government representatives to participate and share scientific research results. (8) Education popularization: Participate in science education activities, such as school lectures, science festivals, etc., introduce scientific research results to students and teachers, and stimulate their interest in science. (9) Production of video and audio: production of video and audio materials related to scientific research results, and posting them to online platforms (such as YouTube, Youku, Himalaya, etc.) to attract more audiences. (10) Apply for awards and honors: Actively apply for various scientific research awards and honors to improve the popularity and influence of scientific research achievements.

In short, effective dissemination and promotion of scientific research results requires the comprehensive use of multiple channels and means. In this process, establishing good cooperative relations, using new

media platforms and participating in social activities are all important means.

In terms of research methodology, this study uses a combination of questionnaire survey and case analysis. Through surveys and interviews, we learned about their needs and preferences for the mode of dissemination of scientific work. At the same time, we also analyze the application cases of new media big data in the dissemination of scientific research work, and summarize the impact of new media big data on the communication mode of scientific research work.

Through research and analysis, we find that the impact of new media big data on the dissemination mode of scientific research work in vocational colleges and universities is mainly reflected in the following aspects (Romano, R., 2016): first, new media big data can improve the speed and breadth of scientific research work, so that more people can understand scientific research results in time; Secondly, new media big data can provide richer and intuitive communication content, so that scientific research results can be displayed more vividly and vividly; Finally, new media big data can accurately target the audience and make the dissemination of scientific research work more targeted and effective.

Through the analysis of a large number of literature and actual research, we find that the main problem of the current scientific research communication system is that the communication channels are too scattered, which makes the dissemination effect of scientific research results less than ideal. Lack of intelligent and personalized services, lack of effective analysis and utilization of data; the uneven quality and unattractiveness of the content communicated (Shi, Y. K., 2022); communication methods are not interactive enough to enable real-time interaction with audiences. Therefore, we need to design a scientific research dissemination system based on new media big data to provide more intelligent and personalized services and improve the efficiency of data utilization.

In view of these problems, we propose a scientific research dissemination model based on new media big data. First, through big data analysis, accurately locate the audience group and choose the appropriate communication channel for scientific research results; Secondly, through data analysis, optimize the communication content and improve the attractiveness and quality of the content; Finally, through social media interaction, real-time interaction with the audience can be achieved to improve the communication effect.

### 3 SYSTEM DESIGN

In terms of system design, we propose the following schemes: first, establish a big data analysis platform to realize big data analysis of scientific research data and audience data; Secondly, design an intelligent content production system, and automatically generate high-quality scientific research content according to the data analysis results; Finally, establish a social media interaction platform to achieve real-time interaction and feedback with the audience.

The design of the system needs to start from the following aspects: first, establish a comprehensive database, including scientific researchers, scientific research institutions, scientific research projects and other information; Secondly, intelligent algorithms are designed to comprehensively analyze data and realize personalized recommendations and services; Finally, develop efficient data storage and processing technology to ensure the stability and reliability of the system.

Based on the above analysis, we design a scientific research work dissemination system for vocational colleges and universities based on new media big data. The system includes four modules: data collection, data analysis, data display and data application, as shown in Figure 1.



Figure 1. The system composition.

The data acquisition module is responsible for collecting scientific research information on various new media platforms and providing basic data for data analysis. The data analysis module analyzes the collected data and extracts useful information to provide support for data display and data application. The data display module displays the analyzed data in an intuitive and easy-to-understand way, which is convenient for users to understand the situation of scientific research. The data application module applies data to the dissemination of scientific research work according to the needs of users, so as to improve the communication effect and quality.

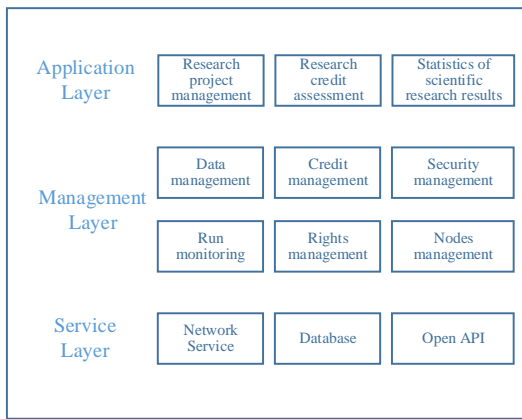


Figure 2. The overall system deployment structure diagram.

The overall architecture of the system is divided into three layers, which are the service layer, the management layer, and the application layer, as shown in Figure 2. The underlying service layer provides basic support for system operation, mainly including data layer, network layer, and open API.

**Database layer:** As the core module of the system, it encapsulates the underlying data block and related basic data encryption and timestamp and other basic data and basic algorithms, and has a scientific research related data input terminal, which stores the input scientific research results to the server, records and backs up the scientific research data, and facilitates retrieval and query. University research related data is usually large, complete data is stored in the database, the introduction of data analysis module, by obtaining data from the database and performing related data analysis.

**Network layer:** The network layer encompasses several components, including the P2P networking mechanism, data dissemination mechanism, and data verification mechanism. It also incorporates an automatic networking mechanism where nodes maintain communication by upholding a shared data structure.

**Open API:** Defines the structure, parameters, return values, description, and other information of the API, and can automatically generate API documents based on this information, so that developers and users can quickly understand the usage and limitations of the API. At the same time, Open API simplifies the API development and management process, and also improves the reusability and maintainability of APIs. Through this platform, developers can communicate with other departments and project teams more easily, reducing the time consumption caused by offline meetings and frequent verbal communication. Through the basic

information defined by the API, test cases can be automatically generated to help developers implement and test APIs more quickly. API version management makes API evolution and upgrade more flexible and controllable. Open API is very simple to use, its emergence promotes the development and use of APIs, breaks down data silos, allows enterprises to quickly achieve dataization, and also provides the foundation and support for the continuous evolution and upgrade of API.

The management layer includes various data service interfaces such as scientific research results metadata management, scientific research results identification management, scientific research credit retrieval services, scientific research results traceability, scientific research data collection, as well as core service functions such as contract management, security management, operation monitoring, node management, and authority control, providing services for upper-layer business applications and external systems.

The application layer builds scientific research credit management and service functions for colleges and universities, mainly including scientific research results declaration, scientific research achievement reporting, scientific research credit assessment, scientific research credit retrieval, scientific research achievement early warning, and scientific research information statistics.

When implementing the system, we need to pay attention to the following aspects: first, the security and privacy of the data need to be guaranteed. Secondly, it is necessary to avoid the problems of information overload and information pollution. Finally, it is necessary to continuously improve the intelligence and personalization level of the system to provide users with better services.

The application effect of the system has been verified in practice and remarkable results have been achieved. First of all, the system can monitor the dissemination of scientific research work in real time, and timely find and solve problems in communication. Secondly, the system can provide personalized communication services according to user feedback and data analysis results to meet the needs of different users. Finally, the application of the system improves the dissemination effect and quality of scientific research, and provides strong support for the development of scientific research in vocational colleges.

In short, the scientific research dissemination system based on new media big data is of great significance and value. We need to analyze the current problems, design intelligent algorithms,



develop efficient data storage and processing technologies, improve the security and privacy of the system, and provide better support for scientific research communication.

## 4 CONCLUSION

In summary, the analysis of the communication mode and system design of scientific research in vocational colleges and universities based on new media big data is a work of great significance. Through the research of this paper, we find that the impact of new media big data on the communication mode of scientific research work is mainly reflected in the communication speed, content richness and audience targeting. In view of these problems, we design a scientific research work dissemination system based on new media big data, and verify its effectiveness and feasibility through practice. In the future, we will continue to study the application of the system in other fields and make more contributions to promoting digital development.

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