

# Research on Reconstruction of Enterprise News Publicity Digital System Based on Collaboration

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**Abstract.** With the development of emerging information technology, the digital era is coming quietly. Under the guidance of the new development concept, the enterprise's news publicity should also keep pace with the times to promote digital transformation and upgrading. Based on the concept of collaboration, this paper analyzes the concept, objectives and current problems of the digital system of enterprise news publicity, and discusses the realization path of the digital system of news publicity from the perspectives of building an integrated collaboration platform, optimizing the digital transformation process, carrying out bidirectional news publicity, building an omnimedia communication system, paying attention to users' needs, and strengthening the platform construction. All these provide references for reconstructing the digital system and improving the efficiency of enterprise news publicity.

**Keywords.** Collaboration, Enterprise News Publicity, Digital System

## 1. Introduction

An enterprise's news publicity work revolves around its business. According to the different objects of news publicity, it can be divided into two forms: internal publicity and external publicity. Internal publicity refers to the internal news publicity work of the enterprise, which can enhance employees' sense of belonging, strengthen the staff's stability, disseminate the enterprise culture, and further enhance the internal cohesion. External publicity is to carry out publicity from the production and operation of enterprises, which can enhance the public's understanding of enterprises, establish a high-quality image, broaden sales channels, and bring economic benefits.

On the other hand, with the advent of the digital age, enterprise news publicity work should also be transformed into digital. The carriers, methods and forms of news and propaganda have changed in the era of new media. How to reasonably use information technology to exert the advantages of digital transformation and improve the effect of

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news publicity is the issue that enterprises need to focus on. To this end, many enterprises set up a special news publicity information system. However, due to the lack of unified information system construction planning, the news publicity system used by enterprises is generally independent of other business systems, which leads to information barriers and data resources scattered among the systems.

Collaboration emphasizes the integration and collaboration of processes, systems and data, which can bring about a “1+1>2” effect of efficiency improvement. The introduction of the idea of collaboration in the construction of news publicity system can realize the re-engineering of the news publicity business process, simplify the functional structure of news publicity platform, break the information barriers between systems, integrate various scattered information resources, promote the cost reduction and efficiency of news publicity work, and further support the integrated development of news publicity and other business work.

## **2. Literature Review and Theoretical Basis**

The following are mainly elaborated from two aspects:

### *2.1. News Publicity and Digitalization*

Information technology has long been used in news publicity abroad. As early as the end of the last century, the United States had a precedent of using the Internet to provide news information and services for residents. Later, the Internet, a new form of media, gradually became the mainstream in news publicity[1]. Although the digitization of domestic news publicity started late, its development is nearly synchronized with the Internet and is becoming increasingly mature. Digitalization is the trend for enterprises to carry out news publicity work, and the use of news publicity information system to maintain and manage news has also become the mainstream [2][3]. The news publicity information system usually reviews the news which are newly added to the database in accordance with the established process, and then generates the final page of news publicity and display in accordance with the set template format, realizing the functions of news data release, maintenance and retrieval.

Due to the limitation of network bandwidth, computer interaction technology and other factors, the early news publicity websites are static pages. Compared with traditional media, although the website can solve the timeliness problem of news publicity to a certain extent, it also has shortcomings such as difficult maintenance and management of news and poor interactivity. With the progress of information technology, a dynamic news management system has emerged, which can not only achieve dynamic images but also meet certain interaction requirements. For example, Ajax asynchronous interaction technology enables users to access new data without refreshing or reloading[4].

At present, there are abundant research related to news publicity information system, which can be divided into three categories:

- Discussion on the Actual Requirements of News Publicity

This kind of research is carried out for a specific enterprise project. Based on the enterprise's news publicity business, the specific needs are sorted out for program design and development after sorting out the news publicity process. Ji Xiao designed a news collection and release system to integrate the process of news collection and release,

providing a platform for information sharing for Jibe Power Co., Ltd. [5]. Yang designed Jiangxi Electric Power Publishing System, which has complete basic functions of news publicity and has offered certain reference value for the construction of the news system [6].

- Analysis based on Different Systems and Development Frameworks

The domestic and foreign news publicity websites can be spread by relying on PC terminals, which have the advantages of diversified news forms and rich content; However, it also has some shortcomings, such as low security and difficult maintenance. With the emergence and popularization of intelligent mobile devices, news promotion clients based on Android, IOS and other systems emerge in endlessly [7][8]. Another type of research is based on the development frameworks such as SSM and SSH, focusing on the technical level [9].

- Discussion based on News Content

The research carried out according to news content mainly focuses on the collection of news content and pays more attention to the recommendation of personalized news content. News content collection can be realized through web crawler technology to reduce the workload of website maintenance. Artificial intelligence writing and other technologies can realize real-time writing of time-sensitive hot news[10]. Personalized news content recommendation is to analyze the relevance of different news data, and combine the user's historical click data, user interest and other parameters to construct algorithm model features, so as to achieve personalized news recommendation service for user interest[11][12].

## 2.2. Collaboration Theory and Technology

The concept of collaboration was first proposed in 1971 by Hermann Haken, a German physicist, and then the theory of collaboration was systematically elaborated in his works[13]. Collaboration theory believes that all elements in the organizational system can achieve organic integration among elements through collaboration, rather than simply piling up and adding together, so that the overall effectiveness of the organizational system can be amplified. With the spread of collaboration theory, it has been gradually extended from natural science to social science and information science. And from different research perspectives, these disciplines have given the collaboration theory more extensive application value[14].

Collaboration technology, the product of the development of collaboration theory, refers to the technology that organically combines multiple interdependent collaboration objects in business to jointly complete a task. Collaboration technology provides technical support for the development of collaboration software. Besides, it defines the collaboration mode within and between multiple subsystems that constitute the overall system. It requires that the overall system not only include the functional modules of each subsystem but also be compatible with complementing and improving each subsystem. Collaboration technology enables multiple subsystems to organically combine and cooperate with each other, and finally achieves the effect of " $1+1>2$ " in the collaboration theory, so as to realize the efficient operation of the overall system.

Domestic research on collaboration started relatively late, focusing on the research of information collaboration system supported by collaboration technology, emphasizing the combination of collaboration with cloud computing, big data technology and other technologies, so as to promote the development of relevant theories and applications[15]. In other words, the essential core of collaboration technology and its application is the

concept of collaboration, which also enriches the connotation of the concept in practical application. And collaborative office system, which as the most extensive application of collaboration technology development, must be mentioned.

When collaborative technology is applied to news publicity, it is helpful to integrate multiple propaganda platforms of an enterprise and form a resultant force. Through cross-department and cross-system collaboration, news publicity can be adjusted and released in a more timely manner, which is conducive to improving the comprehensive benefits of enterprises. There are few literatures on the combination of collaboration technology and news publicity, Dong et al. summarized and elaborated the concept, theoretical basis and effect of multimedia collaboration, and pointed out that building a multimedia collaborative publicity platform is conducive to strengthening consumer trust, improving consumer brand awareness, and promoting the realization of the value of news publicity [16]. Li proposed that enterprises should strengthen the establishment of brand image, respond to the form of public opinion, integrate resources, etc., think deeply about improving the news publicity work, realize the collaboration of business, process, data resources, etc. with other systems, build an integrated news publicity platform, and promote the further play of the role of news publicity work [17].

### 3. The Existing Problems of Digitalization of Enterprise News Publicity

In the process of digital reform of enterprise news publicity business, limited by time, capital, technology and management level and other factors, the developed news publicity system still has some deficiencies (Figure 1). On the one hand, the system itself has problems such as lack of pertinence, weak information feedback ability, low degree of automation and poor data sharing. On the other hand, problems such as disconnection between content and user requirements and unsound communication system are common in the use of the system. These problems can be solved to some extent through collaboration technology.

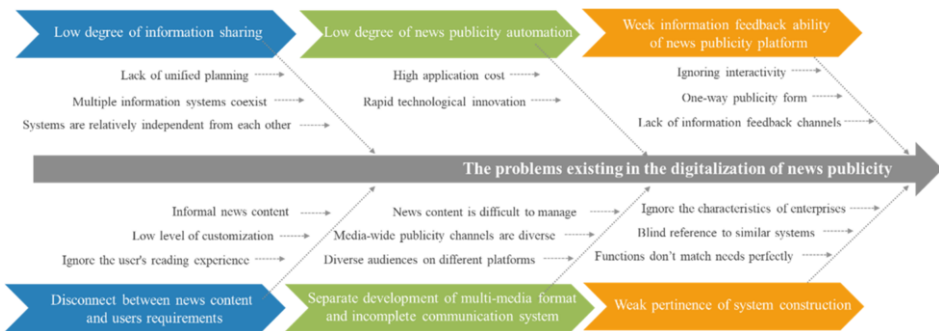


Figure 1. The problems existing in the digitalization of news publicity

#### 3.1. Low Degree of Information Sharing

In the process of enterprise informatization, developing different business systems according to different business needs will lack overall system construction planning. With the expansion of the business, it has gradually formed a situation that multiple business systems coexist. However, news and publicity activities of enterprises usually

need to be carried out in combination with other businesses, which means that cross-system data transmission needs to be realized in the process of using information systems. However, for the sake of security, business systems are relatively independent, and usually can not directly achieve cross-system database read and write and access. Cross-system data transmission can be realized through the data interface program, which needs to establish the corresponding relationship of the original data fields in other business systems in advance, and input the corresponding relationship into the data table of the news publicity system. Collaboration technology can be introduced to centrally schedule system resources to solve problems which interface management and maintenance are complicated due to the rich and diverse functional modules.

### *3.2. Low Degree of News Publicity Automation*

Although emerging technologies such as big data and cloud computing have been applied in some news and communication work, the automation and digitalization degree of enterprise news and publicity system still needs to be improved due to the rapid innovation speed of information technology and the high application cost of frontier technologies. Take a petrochemical enterprise as an example, the process of approval by department leaders and departments in charge of the news publicity needs to be carried out offline, and there is no corresponding process reflected in the news publicity system. The release and maintenance of news information are manually input and checked; Follow-up such as the need to archive, and query operation records are also more tedious; the Statistical analysis function is not rich enough to carry out multidimensional data analysis. The phenomenon of low informationization degree is more common in the enterprise news publicity system.

### *3.3. Weak Information Feedback Ability of News Publicity Platform*

The traditional news publicity platform adopts the form of unidirectional publicity and information indoctrination to carry out information dissemination, which lacks interaction between users and enterprises as well as between users and users. In the system design, the convenience of information feedback channels was not paid attention to, especially the collection and sorting of negative information. This is not only unfavorable for enterprises to grasp users' preferences for news information, nor can it reflect the quality of news editing work, but also restricts the further provision of high-quality news publicity services for users, is not conducive to timely adjustment and modification of news planning schemes, may reduce user satisfaction, and cannot achieve the expected effect of news publicity. In addition, it also increases the difficulty of staff performance assessment, and brings management plight.

### *3.4. Weak Pertinence of System Construction*

The core of the digital transformation of news publicity is to seize the needs of news publicity workers in use and improve them one by one. For example, in the construction of a digital platform of news publicity, making it open and reserve adjustable statistical indicators, weights, etc., so that enterprises can flexibly control according to different management goals in the future. However, in reality, enterprises failed to combine their own main business, management characteristics and other different characteristics in the construction of publicity information system. They blindly copy the mode and method

of other enterprises, or use existing functional modules for platform design and development. The platform developed in this way can not fully supply the requirements of enterprise publicity, can not reflect the characteristics of the enterprise. Even separated from the business process and management process of the enterprise, and can not achieve the original purpose of promoting the development of the enterprise through digital transformation.

### *3.5. Separate Development of Multi-media Format and Incomplete Communication System*

In order to expand the scope of publicity and improve the influence of news publicity, enterprises generally release news and information on multiple new media platforms such as WeChat public accounts, Weibo and portal websites and on traditional newspapers and magazines. For the maintenance and management of multiple platforms, enterprises may invest a lot of human resources. If the content released by multiple media platforms is different or not comprehensive enough, it is not conducive to the construction of an all-round value communication system. If the news content released by multiple media platforms is exactly the same, the diversified characteristics of audience groups on different platforms are ignored. In addition, different media platforms are relatively independent, and there is a clear distinction between paper media and emerging media, which makes the maintenance and management of news propaganda information more complicated.

### *3.6. Disconnect between News Content and Users Requirements*

The quality of news publicity is usually not only closely related to its own content value, but also inseparable from the carrier and mode of communication, and more inseparable from the requirements and concerns of users. If the content of news propaganda does not consider users' feelings, the content selection is more arbitrary, the value of publicity will not be realized. Take a well-known shipping company as an example. The content of its tweets in the WeChat public account is machine translated in foreign languages. The publicity copy is boring and hard to understand, which causes the unpleasant reading experience and the low level of customization for users. Similarly, some enterprises still have the problem of the lack of in-depth thinking about the news content, the summary of their own big events is not in place, unable to timely grasp the materials for publicity reports.

## **4. Discussion on the Reconstruction of Digital System of Enterprise News Publicity based on Collaboration**

To solve the above problems, it is necessary to use collaboration technology and layered services to provide open and fast integrated service support, upgrade and transform the news publicity platform, further promote the digital transformation of news publicity and improve the usability of news publicity system. Under the support of integrated collaboration platform (Figure 2), comprehensive tracking and monitoring of integration tasks and data exchange are implemented to realize information resource sharing and cross-system linkage, forming a three-dimensional and integrated news and

publicity platform, expanding the influence of enterprise news and publicity work, lowering the integration threshold and implementation cost, and bringing greater economic benefits to enterprises.

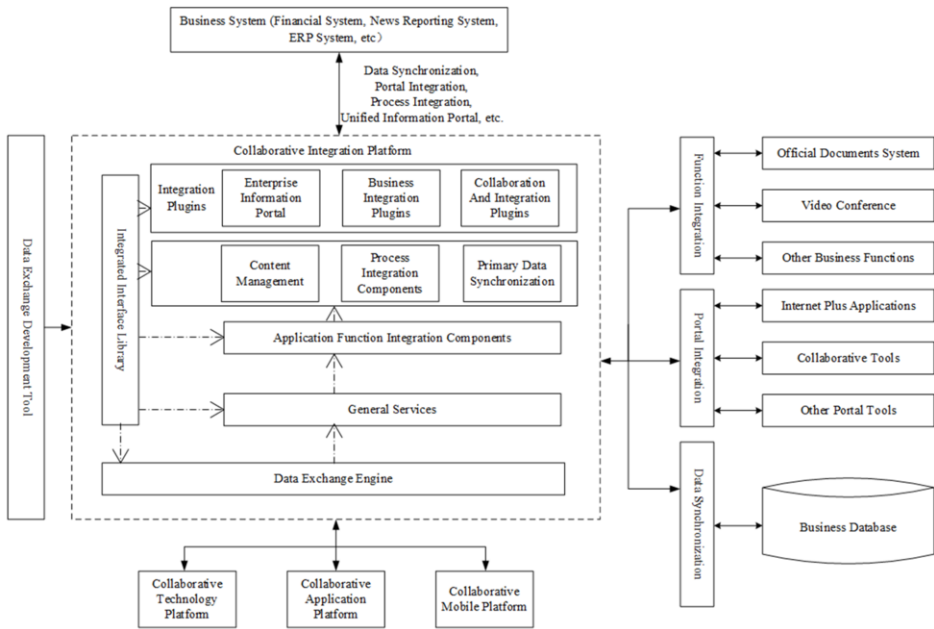


Figure 2. Integrated collaboration platform

#### 4.1. Build an Integrated Collaboration Platform for Connecting Office Work and News Publicity

On the basis of reasonable planning, various business systems such as news publicity are integrated into the collaborative office platform, and advantages such as process management, automatic data flow and progress monitoring are given full play to the collaborative office platform, so as to break through data barriers of various business systems and achieve cost reduction and efficiency increase of news publicity activities. The core idea of building an integrated collaboration platform is to establish data transmission channels between various business systems to realize cross-system data call and synchronization, in which the definition of field attributes of each database needs to correspond to each other to avoid data reading failure[16]. Due to the unified data interface, the interaction between data and information of each system is more frequent. In particular, it is necessary to pay attention to the problem of information leakage or hacker attack, so as to effectively protect the information security of enterprises.

#### 4.2. Innovate and Optimize the News Publicity Process

Optimize the news reporting and publishing process to reduce labor costs. For example, when editing manuscripts, implement one-click correction of the published content, automatic reminder of secret keywords, automatic archiving, etc. Increase the online review process of news submission, and realize the step-by-step review of news

submission; To enrich the original statistical functions, more classified data can be tabulated for display, statistics and analysis, etc. Under the visualization system, it is convenient for enterprise managers to monitor the situation of news reporting, timely adjust the task indicators of news reporting and release, and enrich the performance assessment dimension.

#### *4.3. Carry Out Bidirectional News Publicity and Timely Adjust the Direction and Content of News Publicity*

In the design of the news publicity platform, the interactive features should be enhanced to provide technical support for the communication between users and between enterprises and users by adding such functions as "like", "dislike", "comment" and "complaint". Enterprises can timely adjust the direction and content of news publicity according to the feedback from users, thus improving the effect of news publicity and the influence of the publicity platform. Collect and analyze the browsing time and click rate of users, analyze and judge the preferences of users, and realize personalized recommendation; At the same time, it provides a reference and basis for enterprises to improve the quality of news editing and reduce the management cost of enterprises. Through real-time monitoring and data crawling of the news publicity work of other enterprises, keywords and emotional tendencies of related news articles can be analyzed, and visual display can be made to form reference materials and further guide the news publicity work of enterprises.

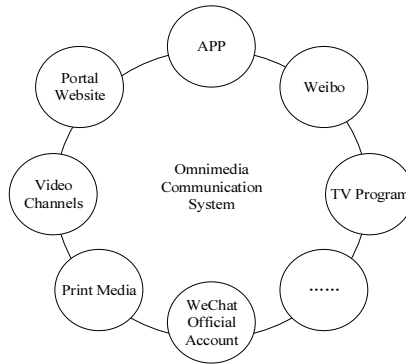
#### *4.4. Strengthen the Pertinence of the Construction of Digital Platform for Enterprise News Publicity*

Combined with the characteristics of the enterprises' own business and the characteristics of the news publicity, sorted out the various business links involved in the news publicity. To promote the information construction of news publicity, which through the evaluation of the enterprises' own situation, determine the positioning, scope and depth of the enterprises' news publicity work, formulate a reasonable news publicity plan, and fully consider the functional boundaries of other business systems and so on.

#### *4.5. Construct an Omnimedia Communication System to Achieve Multi-platform and Cross-system Efficient Management*

According to the direction of integrated development, promoted the coordinated development of multimedia, integrated paper media such as newspapers and books with emerging media such as WeChat official accounts, Weibo and video playback software to build an omnimedia news publicity ecosystem (Figure 3).





**Figure 3.** Omnimedia Communication System Graph

It is necessary to transform the independent fighting of various media in their respective fields into positive interaction with each other. And to build an integrated communication system with distinctive characteristics, assisting enterprise marketing and establishing a good enterprise social image[18]. At the technical level, it uses technologies such as collaboration and single sign-on to assist omnimedia to achieve cross-system and multi-platform integrated management. In the process of news publicity, only by integrating the communication advantages of different media and relying on the omnimedia communication chain for resource integration, can multi-platform and cross-system efficient management be achieved.

#### *4.6. Attach importance to the closeness and satisfaction of users' needs to improve the empathy of news publicity work*

In the era of the digital economy, setting up "user mental" is an important measure for enterprises to adapt to the "Internet Plus" era. With the help of Big Data, Artificial Intelligence, Cloud Computing and other information technology means, users' needs can be comprehensively and systematically analyzed[19]. The enterprise news publicity should pay full attention to the users' expectations and demands for the enterprise news publicity. By subdividing user groups, corresponding column categories can be designed for different groups of users. More attention should be paid to topic selection innovation, keep up with current affairs, fine planning, content is king, and constantly improve the quality of news manuscripts; Data cleaning, text similarity analysis, collaborative filtering and other technical means can also be used to achieve personalized news recommendation. We should always put the needs of users in the first place, pay attention to improving the user experience, and serve the needs of users. The more targeted, precise and professional the content and delivery of news publicity are, the more loyal and stickier the users will be[20], so as to maximize and optimize the publicity effect.

## **5. Conclusion and Revelations**

Digitalization is becoming an important driving force for the transformation and upgrading of the traditional economy, as well as the commanding heights of the new round of global industrial competition. Enterprise news publicity needs to keep pace with The Times and duly respond to the requirements of digital transformation. In the process

of digital transformation, when constructing the enterprise news publicity system, we should first analyze the problems existing in the news publicity system. And from the perspective of the overall interests of the enterprise, we should focus on collaboration and information sharing among business processes, and pay attention to the efficiency and information feedback. At the same time, we need to take the digital and integrated news publicity system as the guide, to promote the in-depth development of omnimedia integration, to accelerate the collaborative integration of news publicity and other business systems of the enterprise. Finally, we will achieve the goal of high-quality and stable development.

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