

# **A Review of the Research on the Communication Effect of Data Journalism in China in the Information Age**

**Zhao Yongji**

School of Management, Jilin University, Changchun, Jilin, China

**Keywords:** Data Journalism; Communication Effect; Semiotics; Uses and Gratifications Approach

**Abstract:** Under the background of information age, data journalism, a new way of news reporting, develops rapidly at home and abroad. This paper reviews and sorts out the research situation of data journalism in China and its communication effect, and makes a descriptive analysis from the perspective of literature quantity and keyword analysis. By combing through the literature, the author summarizes the main problems existing in domestic data journalism communication and the main angles from which domestic scholars study the communication effect of data journalism.

## **1. Introduction**

With the emergence and popularization of computers, the information amount, the speed of information transmission, the speed of information processing and the degree of information application in the whole society are all increasing in a geometric progression. The wave of big data in the information age has not only pushed the whole society forward, but also injected power into the innovation of journalism. As a new way of news report, data journalism has attracted extensive attention from domestic and foreign media. The basic theory of data journalism in China is still in the primary stage, and the localization process of data journalism practice is not mature enough. This paper will sort out the research on the communication effect of domestic data journalism, so as to provide reference basis for improving the theoretical system of data journalism in China.

## **2. Overview of the Definitions of Data Journalism in China**

There are different definitions of data journalism in China and abroad. As far as the domestic academic circle is concerned, the definition of data journalism by scholars is closely related to the three key words of "data", "narrative" and "visualization". Regarding "data", Lang Jingsong and Yang Hai believe that data journalism is "simply data-driven reporting" [1], while Fang Jie and Yan Dong believe that "the core of data journalism is data processing" [2]. Regarding "narration", Wang Qiang believes that "data journalism does not change the nature of news, and narration should become its important foothold" [3]. Xu Qiuli believes that "accurate data selection and rigorous logical narration are the keys to data journalism" [4]. Regarding "visualization", Fang Jie and Yan Dong believe that data journalism "presents news in an image and interactive visual way" [2], while Huang Zhimin believes that "visualization technology presents data as intuitive graphs to help understand and remember, and the application of visualization concept in the field of journalism is data journalism" [5].

Based on the opinions of domestic scholars, the author believes that data journalism is a new way of news report that complies with the trend of information age and is based on data capture, mining, statistics, analysis and visual presentation.

## **3. Overview of the Research on the Data Journalism and its Communication Effect in China**

### **3.1 Research status of the data journalism in China**

In the full-text database of Chinese periodicals of cnki, the author searched "data news" (as of May 10, 2019) and obtained 1,103 relevant research papers. Since 2013, domestic data journalism research has developed rapidly, and the number of relevant research papers has increased year by year (as

shown in figure 1). The author carries on the keyword analysis to the research paper which retrieves. According to the analysis, the key words most closely related to "data journalism" are "big data", "visualization", "big data era", "data visualization", etc. (as shown in figure 2). It can be seen that data mining and visual presentation of data journalism are hot fields in domestic data news research. Although domestic data journalism research is booming, the basic theoretical research on data journalism is still in the primary stage, and many scholars have introduced and used foreign theories and achievements in their research. In terms of practical application, domestic scholars, on the one hand, localize the representative media engaged in data journalism in China, and on the other hand, summarize the practical experience of data journalism in foreign media to find references for the development of data journalism in China [6].

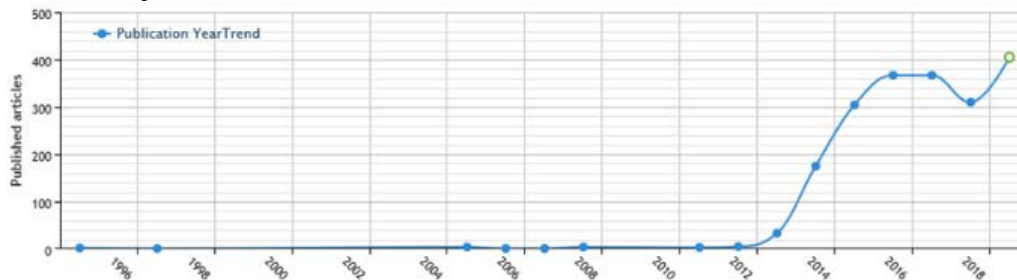


Fig.1 Trend chart of the number of published research papers related to "data journalism"

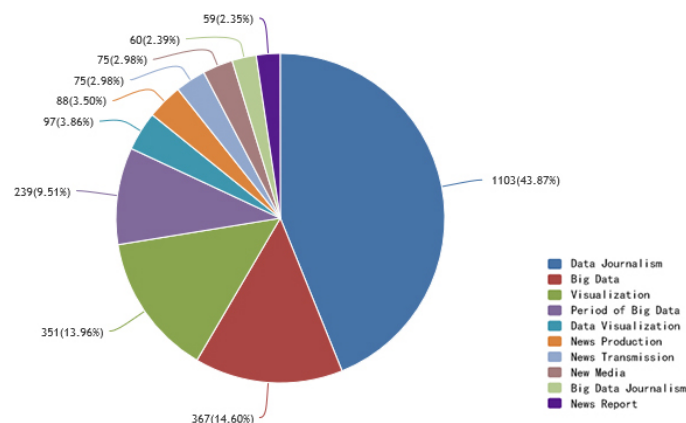


Fig.2. Keyword distribution map of research papers related to "data journalism"

### 3.2 Research status of the communication effect of data journalism in China

In the full-text database of Chinese periodicals of cnki, the author searched "data journalism (including communication)" (as of May 10, 2019), and a total of 231 related research papers were obtained. The author conducted a search on the topic of "data journalism (including communication effects)" (as of May 10, 2019), and only 15 relevant research papers were obtained. According to the retrieval results, the number of domestic papers with "data news communication" as the research topic is very small. In the above database, relevant papers were not retrieved before 2013 (as shown in figure 3). In contrast, the domestic "data journalism communication effect" as the research topic of the paper is even less. It can be seen that there are few domestic studies on data journalism communication and its effect. In these studies, many domestic scholars have summarized the current situation of China's data journalism development from a macro perspective and pointed out the problems, while few scholars have conducted in-depth studies on it at the micro level based on the mass communication effect theory. Therefore, domestic data journalism communication effect research needs to be improved in both breadth and depth.

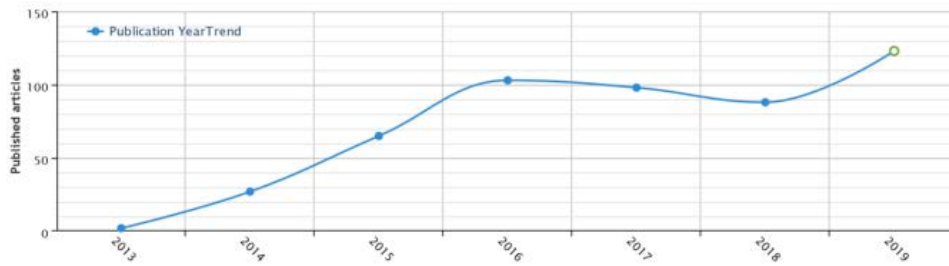


Fig.3. Trend chart of the number of published research papers related to "data journalism (including communication)"

#### 4. Existing Problems of the Communication of Data Journalism in China

The main body of communicators presents structural contradictions, and the overall communication ability needs to be improved [7]. In the communication of data journalism, the traditional media is seriously absent, has not played its role and the value. The participation of traditional media at the central level in the communication of data journalism is obviously higher than that at the provincial and municipal levels.

The awareness of data journalism communication is not strong, and the knowledge of data journalism communication is deficient [7]. In a traditional media practitioners at the provincial level data in the special investigation of news and media literacy, answer "I don't fully understand data journalism" up to 70% of the respondents above [7]. It can be seen that the awareness of data journalism communication of domestic data journalists needs to be improved.

The production mode of data journalism is backward, and the product quality needs to be improved[7]. According to the survey results of relevant scholars, many media practitioners, especially traditional media practitioners, are still used to produce news works with the inherent way of news production, which is a serious waste of data and news resources. This backward production mode of data journalism further affects the quality of data journalism products.

Data value "deep excavation" is insufficient, and relevant service products are in short supply [7]. Due to the lack of knowledge and technology, many data journalists are insufficient in data mining during the communication of data journalism, resulting in the lack of in-depth development and systematic utilization of the value of data resources.

#### 5. Main Research Angles of the Communication Effect of Data Journalism in China

Each specific propagation is spread by communicator, content, channels of information carrier, media and communication skills, communication object elements and links such as composition, every element or link important impact on the communication effect, communication effect is, in fact, as a result of these links and interaction of. In the field of communication, communication effect can be divided into three levels according to the logical order in which they occur. First, the cognitive level, refers to the external information on people's perception and memory system, causing people to increase the amount of knowledge and cognitive structure changes. Secondly, the psychological and attitude level refers to the change of emotion or emotion caused by the action on people's concept or value system. Third, in terms of actions, these changes are reflected in people's words and deeds.

Data journalism is a new way of news report based on data capture, mining, statistics, analysis and visualization. Compared with traditional journalism, one of the biggest differences between the two is the information carrier. Traditional journalism is mostly based on text, while the information carrier of data journalism after visual processing is diversified. In addition to text, graphics, pictures, images and other carriers can also be used for news transmission. However, the difference of information carrier also determines the difference of communication mode and communication channel to some extent. The traditional research on the effect of mass communication has been relatively mature. Therefore, the research on the effect of data journalism communication can be carried out on the basis of the research on the effect of mass communication and from the differences between the two.

The author analyzes the domestic papers with the research topic of "data journalism communication effect". Although the number of domestic related papers is not much, but there are some very valuable research results. The two representative research perspectives in these studies are "the application of semiotics theory in the study of data journalism communication effect" and "the application of uses and gratifications approach in the study of data journalism communication effect". The author expatiates it as follows now.

First, the application of semiotics theory in the study of data journalism communication effect.

In the communication activities of human society, information is the unity of symbol and meaning, symbol is the external form or material carrier of information, while meaning is the spiritual content of information. Thus, the transmission of information is inseparable from symbols. There are three basic functions of symbols: expression and understanding, communication and thinking. The information contained in data journalism also needs to be spread with the help of diversified symbols. Compared with the text symbols used in traditional news, the diversified symbols used in data news can play a more comprehensive function and better convey and express news.

Roland·Bart is a pioneer who applied semiotics theory to the field of visual communication. In his *Rhetoric of Images*, he showed that in visual communication, image symbols were more deeply rooted in people's hearts than text symbols [8]. Compared with text symbols, the features of image symbols are closer to daily objects, and the way readers read image symbols is similar to the way they perceive the real world in daily life. Therefore, the main reason why image symbols are more acceptable to readers than text symbols is its directness in representation. In contrast, the communication effect of film and television images is better than that of static images[9].

Liu Yi, a domestic scholar, studied sports data journalism and found that the integration and application of visual elements can avoid reading fatigue of the audience and satisfy the visual and psychological balance of the audience. At the same time, visual visualization has significantly improved the explanatory power and interactive experience of sports news [10]. Another scholar, Zhao Xinning, believes that the intuitive presentation of data journalism is easier for readers to accept and interpret[11].

Second, the application of uses and gratifications approach in the research on the effect of data journalism communication.

In the field of communication, the theory of "uses and gratifications approach" is a common theory of audience behavior. In this theory, audience members are regarded as individuals with specific needs, and their media contact activities are regarded as the process of using media based on specific needs motivations, so as to meet these needs. The theory of "uses and gratifications approach" takes whether the audience's needs can be satisfied as the basic standard to measure the communication effect.

There are two main motivations for readers to consume news: one is content satisfaction, and the other is process satisfaction[12]. Content satisfaction comes from the cognitive level of communication effect. Obtaining information in news increases or reduces readers' uncertainty about personal environment and social environment. The satisfaction of the process comes from the psychological and attitude level of communication effect, involving emotion or emotion. It can be seen that data journalism, on the one hand, should provide readers with information to eliminate the uncertainty of the environment, and on the other hand, it should meet their emotional or emotional needs. And emotion or emotion needs to be achieved mainly through the truly moving narrative in the data journalism. As mentioned above, data journalism does not change the nature of news, and narrative should become its important foothold. Data journalists cannot afford to lose sight of their journalistic efforts just because they have data authority.

## 6. Conclusion

In the information age, the development of data journalism has become an inevitable trend of the domestic and foreign press. China's data journalism is booming, but also exposed a series of problems, such as: communication ability to be improved, lack of inter-disciplinary professionals. All the systems and mechanisms of data journalism are closely related to these problems. The research on the

communication effect of data journalism is conducive to the in-depth analysis of the causes of the problems, the improvement of the communication effect, the innovation of the system and mechanism of the domestic data journalism dissemination and the construction of the data journalism dissemination system. At present, there are not many studies on the effect of data journalism communication in China, and the research angle of domestic scholars also has great limitations. The author believes that with the continuous development of the research on the effect of data journalism communication, China's data journalism communication system will be increasingly improved.

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