

## Research on the Path of Implementing Big Data Strategy in China's Printing Industry

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**Abstract.** Implementing the “big data strategy” can promote cross-border integration of printing and realize industrial transformation and upgrading and leap-forward development. This paper first introduces the background and main research contents of the implementation of the “big data strategy” in China's printing industry, then elaborates the ideas and basic methods of the implementation of the “big data strategy”, which provides theoretical basis and practical reference for the implementation of the “big data strategy” in China's printing industry from the two dimensions of government management and market operation.

### Introduction

The printing industry is one of the major service industries in China's news publishing industry, and it is also an important engineering and technical support for the cultural industry. China's printing industry is divided into newspaper printing, publishing printing, packaging printing and commercial printing. For a long time, the printing industry has made indelible contributions to China's news publishing, publicity, people's life improvement and even the long-term stability of the country. In recent years, thanks to the rigid demand of the national economy and cultural market and the integration and development of global integration, China's printing industry has made considerable progress. During 2011-2016, affected by the economic environment of China's economic restructuring, industrial transformation and upgrading, China's printing industry entered a “new normal” of deep adjustment and integration and innovation, and the growth rate of the printing industry's total output value slowed down. But in the market and policy, under the dual role, the new and old power of the printing industry is accelerating the transformation. New growth points, growth poles and growth belts are gradually formed. The industry scale of the whole industry continues to grow, and the total output value of the printing industry still maintains a steady growth trend [1]. By the end of 2016, China had a total of 101,000 printing enterprises, with a total output value of more than 1.15 trillion yuan, an increase of 2.7% over the previous year; total assets of 1.29 trillion yuan, an increase of 4.4% over the previous year. The number of enterprises above designated size in the printing industry reached 5,470, an increase of 264 over the previous year, and the main income was 787.9 billion yuan, up 4.5% year-on-year; the operating income of 10 printing companies listed on the main board of China was 29.8 billion yuan, compared with the previous year. During the same period, it increased by 10.7%, and its driving effect and demonstration effect were significantly enhanced. Particularly, the output value of digital printing reached 35.79 billion yuan, an increase of 109% over the previous year, maintaining a strong development momentum [2].

### The Background of China's Printing Industry to Implement the Big Data Strategy

In June 2011, the McKinsey Global Institute first proposed the “Big Data Era”. In the areas of business, economics, public health and urban management, the value of “Big Data” is beginning to emerge. In the context of the current structural contradiction in the printing industry, lack of

stamina for technological innovation, and weak economic growth, transformation and upgrading are inevitable choices, and through the “Internet +” to achieve network platform and big data integration in the printing industry, promote traditional production. The upgrade of a printing company to a marketing-type printing e-commerce will provide the public with front-end design, personalized printing customization, and efficient and convenient networked services. China’s printing industry’s “13th Five-Year Plan” puts forward the development strategy of “Innovation-Driven”, “Internet +” and “Big Data”, and strives to promote the development of printing in the direction of “Green, Digital, Intelligent and Integrated”. Taking the intelligent printing of publications as a breakthrough, speeding up the combination of printing and RFID and the Internet of Things, building a number of smart printing factory demonstration projects, based on cloud computing, implementing printing cross-border integration and emerging business development projects in the context of big data, realizing the industry transformation and upgrading and leapfrog development [3].

“Big Data” means massive data. The “Big Data Strategy” is to diversify, analyze and process massive amounts of information related to itself and customer resources to form a diversified sales terminal and service model, so that the traditional B2B business model can evolve into B2C or C2C e-commerce mode. “Big Data Strategy” is around us, whether it is Amazon, Dangdang’s recommendation for books that are of interest to readers, or personalized push of Baidu’s homepage news information, or e-commerce platform for individual birthday wishes and discount services, such as the “personal-oriented” advertisements of the Jingdong Mall, all reflect the precise service (directed marketing) and personalized value-added services under the “Big Data Strategy”. “Cloud printing” is a new product for printing companies to adapt to the “Big Data” era, strengthen the integration of printing and digital information, and explore new business models. The United States’ Vistaprint, Shutterfly, Taiwan’s Jianhao and Hong Kong’s Eprint, as well as Evergreen Jianhao, Phoenix Cloud, Shengtong, Tiger Color Printing, Heyin and Jinlun Yunyin in the mainland, all belong to “cloud printing” [4]. On the map, the territory was opened and gradually stepped out of the world. Relevant universities and research institutions, such as Beijing Institute of Printing, Wuhan University, Tianjin University of Science and Technology, and Guotai Junan, have carried out strategic research and theoretical exploration for China’s big data, cloud printing, etc., for the big data era of China’s printing industry. Market operations, services and regulation provide decision support.

### **The Main Content of the Implementation of the Big Data Strategy Research**

In the information society, with the acceleration of the application of new technologies such as big data, cloud computing and mobile Internet, it has a positive impact in the fields of printing industry development, industry supervision and services. Big data volume is large, the source is wide and the content is rich. It can completely restore the market from more dimensions, which allows the State Administration of Press, Publication, Radio, Film and Television to have a more accurate grasp of the market, and thus improve the level of supervision and service.

Enterprises are the mainstay of the market. Printing enterprises are the main force of technological innovation and application in the printing industry, providing basic services for China’s news publishing, cultural communication and national economy and people’s livelihood. Effectively explore and transform and upgrade into a printed big data provider supported by “cloud printing” technology, strengthen the effective allocation of enterprise resources in the market, strengthen the integration of internal data and interface with customer resources, and build a powerful data platform to achieve efficient, convenient, fast and accurate marketing and value-added services from product design, order tracking, material development, digital asset management, customer value-added services and logistics management [5].

### **The Basic Path to Implement the Big Data Strategy**

It can analyze deeply the implement of China’s printing big data strategy from the perspective of

general administrations, associations and enterprises.

### **1. General administration and association level**

Big data thinking and application play an important role in promoting government governance from extensive to refined, from passive response to active foresight, from personal experience judgment to data science decision-making, from executive-led government to people-oriented service-oriented government.

Using big data can effectively improve the quality and efficiency of public decision-making and conform the trend of “mass entrepreneurship and innovation” but also need to solve “the required, no source” data missing problem, “with data, no integration” data collection problem and “excavation, no results” data prediction problem.

The general administration and association should plan to construct a credit management system and information sharing exchange platform, product information traceability system, strengthen the general administration policy’s transparent construction and the supervision of electricity commerce market website, and improve the economic operation monitoring and forecasting and performance evaluation of government services. Guiding the development of the industry, regulating the operation of the market, and the demand of the service industry are the main functions of the government. The general administration and the association can establish a corporate legal identity identification system and a credible website certification service system based on the huge printing enterprise information database formed by daily supervision. Using the scientific data analysis model, through the comprehensive comparison, analysis and monitoring of market subject data, early judgment and discovery of abnormal market entities and phenomena, the construction of an information-based supervision mode that achieves precision strikes.

With the support of the general administration and the association, at the height of the manager, the strategic significance and implementation path of China’s printing industry big data era can be analyzed, and the establishment of data that helps to connect horizontally and vertically can be guided (connected to lower-level management institutions and connected to the industry). The resource management systems collect, classify, analyze and process large data to facilitate the introduction of relevant market research and management systems, as well as industrial development planning.

### **2. Enterprise level**

Industry enterprises develop technology development, production and sales of cloud printing projects and related products according to their own conditions and needs of transformation and development, and realize online editing, cloud storage, ordering, fast delivery, order inquiry of personalized products. Innovative business model of “manufacturing + service + internet” and achieving value-added profitability. Specifically, we must start from the following aspects.

### **3. Construct printing e-commerce platform, provide innovate services**

The printing e-commerce platform is different from the general commodity trading platform. It is more professional and requires not only simple product types, payment methods, return processing, user evaluation, customer management and logistics tracking, but also professional interaction. The features such as design, styling, and costing to personalize self-service orders and product tracking are also enhanced. The design of the platform is particularly critical, covering data requirements analysis, intelligent learning, intelligent task assignment, scripting and modification, cloud storage and encryption, and throughout the design service process [6]. It is necessary to accumulate information exchange with customers, establish a resource pool, analyze customer’s consumption propensity, recommend value-added services to customers, and bundle such innovative value-added services with products, reform marketing models, and increase profit growth points. In addition, data can be mined from large data interfaces opened by various channels such as search engines, government websites or social networks, and classified, analyzed and processed, and targeted promotional strategies can be launched to promote personalized printing.

#### **4. Achieve seamless connection between printed e-commerce platform and production plant**

The printed e-commerce platform self-built cloud printing data processing center, online editing customized printing documents and order confirmation, and then automatically transferred to the production company's cloud server, automatically converted into production orders and printed, and to provide customers with cloud storage services, guaranteed that they can download and print anywhere at any time.

#### **5. Well-treated offline services for printed e-commerce platforms**

The online printing e-commerce platform and the offline service store resources are integrated to give full play to their respective advantages. The offline service stores cover self-operated and cooperative franchise, strengthen the layout of the number of stores and the improvement of service quality and standards, and fully pay attention to the user's experience, so that online and offline services are not out of touch.

#### **6. Focus on printing e-commerce platform promotion and operation**

It is necessary to define the business model, customer base and product positioning as soon as possible, and formulate a strong marketing plan; it is necessary to increase the promotion of e-commerce, strengthen the operation and maintenance of the platform, and achieve clear functional division and smooth user experience [7].

From the perspective of industry, taking printing enterprises as the research object and large data as the background, the construction, operation and maintenance methods and measures of printing e-commerce platform can be deeply discussed and practiced based on "cloud printing". At the same time, the research on the development strategy of cloud printing companies around the theme of corporate brand image promotion, print quality and distribution guarantee, service extension, customer development, channel arrangement and feedback mechanism can be studied in depth.

### **Conclusion**

Big data is based on massive data in the cloud. It has the characteristics of huge volume, various types and low value density. Different groups will explore the available data that is beneficial to them. They should think from two dimensions: government management and market operation to study the strategic value and application of big data in China's printing industry. For the regulatory authorities such as the general administration and the association, it is necessary to use the applications or algorithms embedded in the big data management platform to find, calculate and integrate market data, and form an industry classification management method; for enterprises, it is necessary to resort to the "cloud printing" platform. Quickly and conveniently process online orders, including communication with customers, online design services, final confirmation and order issuance, etc., and effectively sort out and identify according to the diversified information of customers, and reconstruct data according to relevant laws, so as to adjust the future marketing direction and develop potential key customers.

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