



Digital printing helps printers to transform and develop - a study of 8 printers around Beijing, Tianjin, and Hebei

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Abstract. In the context of the increasingly widespread application of the Internet, the pressure faced by the traditional newspaper printing industry has reached an unprecedented height, this paper through online questionnaires and offline surveys, to Beijing-Tianjin-Hebei neighborhood of the eight printers as an example, to find the current problems of the printing plant and its transformation to explore new directions.

Keywords: industrial transformation; printing industry; digital printing

1 Introduction

The sudden outbreak of the New Crown Pneumonia epidemic at the start of the New Year in 2020 brought challenges such as stagnant production, slowing demand, tight logistics and labor difficulties to businesses worldwide, and the publishing and printing industry was severely affected by the multiple pressures. However, in December 2022, as the epidemic was liberalized and economies around the world continued to recover, the recovery of express delivery also allowed the printing industry to recover.

In the short term, the physical isolation caused by the outbreak of the new crown brought a two-way blow to printers from both the supply and demand sides. The suspension of raw materials required for printing in the run-up to the epidemic for prevention and control reasons triggered a supply-side shock, and as the epidemic continued to spread, market demand was significantly reduced, resulting in a sudden drop in orders from manufacturers.

In the long term, the deep adjustment of the global industry chain, the development of the digital economy and the impact of powerlessness on the printing industry have made the development of printers complex and severe.

With the digital economy as the background, this paper takes eight printing factories around Beijing, Tianjin, and Hebei as the research object, and through the

distribution of questionnaires and field visits and in-depth interviews, it examines the current situation facing the printing industry, the impact of the new crown epidemic on the printing industry, the effectiveness of the digital printing industry as well as the current problems and causes of the printing industry. The study will summarize experiences, analyze problems, and provide further outlook on the future development of the printing industry as well as policy recommendations.

2 Status of the printing industry

2.1 Single industrial structure

The publishing houses cooperated with are all responsible for the printing work of several publishers, and although there is a wide variety of paper, the service is single and the resources are limited, for example, the color printing technology of Beijing Printers' Color Printing Co Ltd is better; the plastic sealing technology of Beijing Tiangong Printing Co Ltd is better, and it mostly undertakes national-level printing, such as stamps, etc. As can be seen, the single industrial structure has limited the development of the printing industry.

2.2 Shrinking printing market

As the traditional paper media market continues to decline, the circulation and advertising of publications has fallen off a cliff. The significant drop in the print run of publications has caused a serious shortage of work for printers, and the lack of paper supply due to factors such as courier stoppages and epidemic prevention and control has caused the printing costs of publications to continue to climb, making printers a burden on publishers.^[9] At the same time, the continued development of paper lessness has led to a greater preference for paperless reading, which has led to a serious shrinkage of the printing market. The traditional printing market has been shrinking year on year, making it necessary for printers to explore a path of transformation and development.

2.3 High staffing costs and lack of talent

Due to the precipitous decline in printing volume, the printing workload is seriously unsaturated and staffing costs have become the biggest constraint on the development of the company. ^[3] In order to control staff costs, printers must implement the "only out, not in" staff management model, although the short-term control of staff costs, but the printing plant lack of innovative talent, a serious shortage of backup.

3 Impact of the New Crown Outbreak on the Printing Industry

In terms of the main difficulties currently faced by the printing industry as a result of the epidemic, the main difficulties faced by the sample printers as a result of the

epidemic were the need to pay liquidated damages due to their inability to fulfil their trading contracts on time, accounting for 37.5% of the total sample, as well as difficulties in remitting accounts receivable (12.5%), reduced market orders (12.5%), and other difficulties such as increased financing difficulties for individual printers.(see Fig.1)

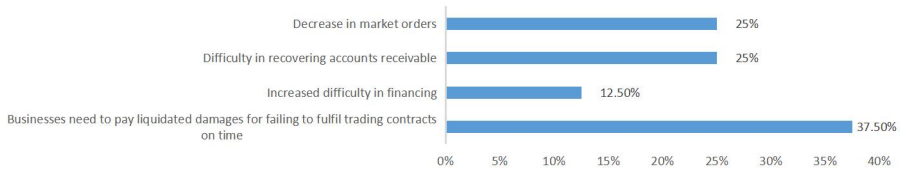


Fig. 1. Major difficulties currently facing the printing industry because of the epidemic.

As a member of the manufacturing industry, the printing industry is facing greater pressure under the epidemic, again, than the national economy. According to relevant statistics, in Shanghai, which was more affected by the epidemic in 2022, enterprises above the scale of the printing industry achieved revenue of RMB 5.681 billion in the first five months, down 33.4% year-on-year; total profit -0.07 billion yuan, with an industry-wide loss. Beijing printing industry enterprises above the scale in the first five months to achieve revenue of 4.518 billion yuan, down 28.2% year-on-year, total profits of 179 million yuan, down 62.9%. In the case of printers, for example, 21% had difficulties communicating with publishers during the epidemic, 36% were unable to supply raw materials on time and 43% were unable to complete orders on time.(see Fig.2)

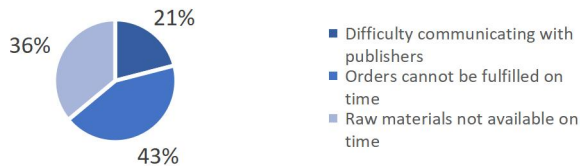


Fig. 2. Impact of the outbreak on the printing industry

As an important global printing market, the North American, Latin American, and European printing industries have been affected to some extent by the Newcastle pneumonia epidemic, but the overall trend is positive. Europe has become an important fulcrum for technological innovation in the global printing industry. The European printing industry is in a mixed state of development in terms of its various segments.^[1] According to the report, *The Future of European Printing to 2027*, from 2017 to 2022, the size of the European printing and packaging market is expected to decline from US\$182.3 billion to US\$167.8 billion. However, the European printing market will recover in the future and is expected to rebound to US\$174.2 billion by 2027. This shows that, in the post-epidemic era, digital printing may become the main trend in the printing industry.^[2]

In the face of the sudden outbreak, printers took timely measures to reduce the adverse impact. Five printers negotiated with publishers to reduce print runs, two printers had staff on hand to complete print runs on time, and only one printer did not take any countermeasures.(see Fig.3) In summary, most printers mitigated their business losses in a timely manner during the epidemic.

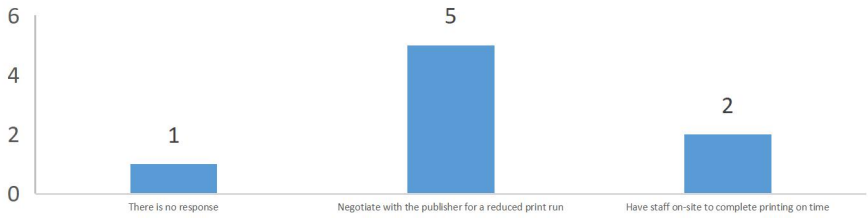


Fig. 3. Printers' response to printing disruptions due to the outbreak

During the epidemic, 75% of the sample companies chose to use Tencent meetings to meet and pass on information, etc., and 25% of the printers chose to use WeChat to better distribute tasks.(see Fig.4) In summary, all printers used online communication to carry out their printing work to help promote the prevention and control of the epidemic and to resume work and production.



Fig. 4. The way printers' jobs were issued during the outbreak.

4 Advantages of digital printing

4.1 Contribute to savings in printing costs

Due to the popularity of the internet and big data, many traditional media companies have seen a severe decline in traditional media sales, to the extent that some have been forced to close or transform.^[4] However, in the digital age, this has not changed much. The rapid growth of the digital age has provided many opportunities for traditional media companies to promote innovation and reduce their production costs.

4.2 Generating new cost-saving models

With the development of information technology and the rise of self-media, the reading of traditional paper publications such as newspapers, books and magazines has been drastically reduced. According to data from the relevant authorities, the number of readers in China is less than 8 million each year, and these people are

mainly concentrated in specific groups such as researchers, scholars, and candidates. By analyzing digital products such as WeChat and Jitterbug, they can bring innovation to traditional newspaper companies and that they do not conflict with the target audiences of these products, which can quickly stimulate market increment and provide a new, more efficient cost-saving model for traditional newspaper companies, namely the organic integration of online and offline.^[8]

4.3 Innovative profit models

With the rapid growth of the digital economy, traditional newspaper and magazine companies will face unprecedented challenges, and one of the more efficient profit models that can be achieved is the adoption of new subscription fee mechanisms. In addition, by opening personal or corporate e-commerce platforms, we can be more flexible in meeting the needs of consumers and at the same time reduce the cost of printing and distribution.

5 Problems with digital printing

5.1 Uneven geographical development of digital printing

The development of digital printing in China is also uneven between regions. At present, digital printing is developing relatively quickly in Beijing, Shanghai, Guangzhou, and Hangzhou, with digital printing already making its presence felt in key cities such as Beijing and Shanghai. These cities are transforming into international metropolises, concentrating many large and medium-sized companies at home and abroad, where people have newer ideas and accept new things more easily, and the demand for personalized print and on-demand printing is growing rapidly. The northeast and northwest regions, on the other hand, are developing more slowly, and in some cases are even blank. As local people are not aware enough of digital printing, they always compare traditional offset printing with digital printing, resulting in very low profits from digital printing.^[7]

5.2 Uneven development of the digital printing industry

Digital printing user groups can be divided into two types of work and business, using digital printing presses to complete the daily work of heavy printing tasks of banks, telecommunications, postal systems and other industry users belong to the work of the user; and for the business user groups, digital printing equipment is to make a living development tools, this market has just started, to be standardized In general, the operational digital printing industry lacks sufficient financial resources, industry knowledge and management skills, and needs further development. Meanwhile, in recent years, although there has been a growing acceptance of digital printing, some small color laser printers have had a significant impact on the market for large digital printers with their low printing prices, diverting many of their customers. ^[9]

5.3 The level of development of digital printing is relatively backward

The level of pre-press processing technology is not high, the quality of practitioners is not high, and there are few professionals. At the same time variable data software, database technology and digital printing with the supporting post-press processing technology and equipment cannot fully meet the needs of digital printing, especially post-press processing, most of which are semi-automated manual operation, so that it is difficult to produce high-quality products. With the continuous improvement of technology, this gap is also gradually narrowing.

6 Conclusion

6.1 Innovative market services for printers

With the advancement of technology, and with the widespread use of the Internet, people can access information in a variety of ways, which has led to the influence of the paper medium diminishing. This is even though it is still the most important source of news, with its strengths including diversity of information, access to experts, and good timeliness. As market share continues to decline over time, the traditional publishing industry must take steps to adapt to this situation. This means that it must manufacture and promote a variety of different products and services in line with the needs of the market. By combining this with e-reading, it will be able to offer consumers a wider range of choices and win over the competition.

6.2 Government to increase publicity on digital printing.

With the continuous development of digital technology, people are demanding more convenience in their lives and prefer paperless and electronic compared to traditional printing. Therefore, the government should support traditional printers and help them transform to digital printing while doing a good job of publicity to expand the popularity of digital printing. Fujian Xinhua United Printing Group has been adhering to the concept of developing a digital economy, actively broadening its development space in Fujian Province, striving to build the most influential digital printing production base in the province, constantly exploring new development opportunities, accelerating the leapfrog development from traditional printing to digital printing, and achieving a model of printing industry in Fujian Province. With the support of the Fujian Provincial Government, the Printing Group is actively promoting innovation, upgrading and transformation, promoting the application of digital technology, promoting the popularity of Quantum Cloud Code, making full use of the technical advantages of Quantum Cloud Code, building an economic model of "Internet + printing", promoting "Internet + printing" The future of the digital economy will be an era of opportunities and challenges.[5]

6.3 Government to establish a mechanism to evaluate the implementation of support policies

For digital printing to really take root, the "last mile" of the "printing policy implementation evaluation mechanism" is essential to support the four aspects of precise policy formulation, fine service, precise supervision, and sincere governance, and strive to promote the implementation of various policy measures to achieve the best results.

1. Precise policy implementation: improve printing policy. The government should continue to promulgate policies related to digital printing in accordance with the characteristics of the printing industry and the development of science and technology, focusing first on the major printing companies to focus on their corporate development trends and reduce the impact of digital technology on them as much as possible.

2. Refined services: Optimizing the service mechanism for the printing industry. By enhancing the timeliness, accuracy and consistency of policies, publishing printing policies and other information with precision, and using digital and smart technologies to support accurate policy development.

3. Precise regulation: strengthening regulatory mechanisms. To increase production capacity, printers are working to improve internal management and create a more efficient and flexible organizational structure for better decision-making, execution, and supervision.

4. Good governance: Establishing a common governance mechanism for printing. To promote sustainable economic growth, we should strive to establish a competitive industry group and strongly support the Beijing-Tianjin-Hebei region in terms of harmonization, 'internet printing' and several other advanced products. In addition, we should invest more in green printing projects to promote innovation.

6.4 Favorable government policies on loans and financing for enterprises

In order to better promote the development of the printing industry, optimize the business environment for small and medium-sized enterprises, and encourage the provision of better services for readers, the government should improve the financial service system in view of the current difficulties in the financing of the printing industry and, in view of the characteristics of the digital publishing industry, which is based on copyright and other soft assets, study the assessment and management system and process suitable for the strategic emerging industries. In view of the characteristics of digital publishing industry, which is mainly based on copyright and other "soft assets", the government should study the assessment and management system and process suitable for strategic emerging industries.^[6]

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