Digital Transformation of Enterprises in the Post-Pandemic Era

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Abstract: The sudden outbreak of COVID-19 has brought great impact on China’s economic development. How to scientifically and effectively help the economy has become the most important economic issue at present. During the COVID-19 pandemic, the service industry has been directly affected, while small and medium-sized enterprises (SMEs) have also been seriously hit, and the negative impacts on export-oriented enterprises cannot be underestimated as well. It is critical and urgent for these enterprises to quickly recover from the crisis and find ways to secure a viable competitive position in their respective industries in post-pandemic era. The Coronavirus (COVID-19) pandemic has not only brought unprecedented impact on China’s economic and social development, but also provided new opportunities for traditional industries to achieve digital transformation. Taking service industry, foreign trade enterprises and small and medium-sized enterprises for example, this study focuses on how China’s industries and enterprises in the post-pandemic era can recover from the impact of the pandemic by taking advantage of digital transformation opportunities: (1) Transferring services online and promoting upgradation of online business; (2) Cooperating with e-commerce platforms to transfer exports to domestic sales and catering to the need of domestic consumers; (3) Applying flexible production and shared manufacturing to better cope with external changes and reduce operation costs of small and medium-sized enterprises. Fintech also helps to reduce financing costs.

Keywords: COVID-19 Digital Transformation; Service Industry; Foreign Trade Enterprises; SMEs

1. The impact of the COVID-19 pandemic on industries

The spread of COVID-19 causes a significant impact on the efficiency of logistics and personnel movement across the country within a certain period. After the Spring Festival, companies tried to resume work and production; however, due to objective constraints such as personnel, logistics and industrial chain, it is still difficult for businesses to fully resume normal operations. At present, the prevention and control situation of COVID-19 pandemic across the country has continued to improve and the order of production and life has been restored at a faster pace. However, the shutdown, stoppage and shift in February and March still have spillover effects on the enterprise’s production and operation[1]. Digital transformation is an inevitable choice for enterprises to improve operating efficiency and competitiveness, which has shown great potential among different industries. It is important to understand market requirements and to keep abreast of its tendency.

1.1 Service industry bore the brunt

1.1.1 Life service industry

COVID-19 is highly contagious, and Prof. Nanshan Zhong confirmed at the early stage that the virus has obvious...
characteristics of “human-to-human transmission”, which means that the most effective way to fight against COVID-19 is to maintain social distance and isolation, so as to reduce the chance of transmission of the virus. However, the service industry, especially the traditional life service industry, is a typical interactive industry, and the face-to-face contact between customers and consumers is an essential part of service provision. As a result, the COVID-19 pandemic has had the most direct and devastating impact on life service industry. The Spring Festival Holiday is supposed to be the traditional peak season for tourism, which will boost the economic income of the local catering, accommodation, shopping and entertainment consumption markets. However, the outbreak of COVID-19 has caused great economic losses and operating pressure to domestic enterprises in the entertainment, physical store sales and other industries. On the other hand, the plan for resuming work and production depends entirely on the control and spread of the pandemic. Once it rebounds in the future, the life service industry still faces the risk of being shut down immediately again.

Although the consumption data after SARS in 2003 predicted that the COVID-19 pandemic would be followed by the same “retaliatory consumption” phenomenon 17 years later, this time is different[2]. The COVID-19 pandemic has spread to a wider area and lasted for a longer time than SARS. The global supply chain and financial system have been severely impacted, and the world economy is facing unprecedented severe challenges. In recent years, China’s economy has entered the “new normal”. With the slowdown of GDP growth and the adjustment of industrial structure, the service sector that was hit hardest by the pandemic appreciated from 42.03% in 2003 to 53.92% in 2019, making the rebound of consumer market no longer as strong as that after SARS. In the face of the pandemic, people’s future income expectations and consumer confidence have both declined, and the debt leverage ratio of the household sector has been increasing in the past 20 years, which makes ordinary consumers stay on the sidelines. However, with the relaxation of the policy of pandemic prevention and business closure and the recovery of consumption places, measures such as issuing consumption vouchers and encouraging weekend holidays of 2.5 days have injected vitality into “compensatory consumption”.

According to the latest monthly data from the National Bureau of Statistics, from February to May 2020, the cumulative year-on-year growth rate of the production index of the service industry was -13.0%, -11.7%, -9.9% and -7.7% respectively[3]. From March to May 2020, the total retail sales of consumer goods fell by 15.8%, 7.5% and 2.8% year on year. According to the National Bureau of Statistics, the national catering revenue in 2019 was 4.762.1 trillion yuan, 15.5 percent of which came from the Spring Festival. But the restaurant industry suffered a lot during this year’s Spring Festival. According to the Evergrande research institute, the pandemic has caused a loss of about 500 billion yuan in retail sales of the catering industry in just seven days of the Spring Festival.

In March 2020, the income of catering industry was 183.20 billion yuan, and the retail sales of goods were 2,461.79 billion yuan, which decreased by 46.8% and 12.0% respectively compared with last year[3]. But fortunately, online retail was less affected by the pandemic. After a small decline at the beginning of the year, it picked up rapidly in April. By May 2020, online retail sales had reached 4017.58 billion yuan, up by 4.5 percent. With the gradual improvement of the pandemic situation in China and the gradual restoration of social production and life order, it still takes a long time for the recovery of the contact-intensive service industry.

1.1.2 Productive service industry

In recent years, China has actively responded to the new trend of industrial transformation and upgrading by promoting deep integration of manufacturing and modern service industries. In 2019, the value added of information transmission, software and information technology services, leasing and business services, financial services, transportation, warehousing and postal services increased by 18.7%, 8.7%, 7.2% and 7.1% respectively[4]. Producer service industries are technology, knowledge and human capital intensive in nature, which determines the degree and direction of a country’s industrial structure. Therefore, although the impact of the pandemic on the productive services industry is not as direct as the impact on the life services industry, it may be more far-reaching and destructive, and will affect China’s economic growth potential in the medium and long term. Taking the financial services industry for example, the insurance industry is more affected by the pandemic than the securities industry and the banking industry, which is mainly reflected in the increase of insurance claims and the short-term decline of new order sales. According to reliable
estimates in the insurance industry, the total number of new orders in the first quarter accounts for about 40%-50% of the new orders in the whole year on average. Due to the impact of quarantine, the activities of insurance agents are limited, so it is almost impossible to sign the orders on site.

Producer services are knowledge-intensive services whose inherent nature determines that the transmission mechanism of COVID-19 affecting producer services has three important characteristics. First, the industrial chain of producer services enterprises is longer and more complex than that of consumer services. The life service industry faces the final consumer, and its industrial chain is short and simple, while the industrial chain of productive service enterprises is often closely linked, and problems in one link may lead to the shutdown of the whole industrial chain. In particular, the technical and economic links established by productive service enterprises for a long time will be hard to recover once they are damaged, and there will be huge reconstruction costs. For example, customers may build their own supply chain or contract orders to producers in other countries for the purpose of safety and controllability. Secondly, the output of productive service enterprises is transformed into the cost input of the service enterprises. The part of the cost increase of productive service enterprises caused by the pandemic will be transmitted to all downstream enterprises through the industrial chain mechanism. Enterprises with low cost digestibility will be forced to face the risk of reducing production. Thirdly, with the help of modern technology, the life service industry breaks through the inherent nature of service that are explained as service subject and service object are inseparable, so as to realize the separation of production and consumption. As a result, speeding up digital transformation, upgrade and innovation of the industrial chain is a good way to respond to the external environment change.

1.1.3 The setbacks that export encountered

Since the outbreak in Wuhan, COVID-19 has attracted worldwide attention, and on 31 January 2020, the World Health Organization declared that the COVID-19 outbreak constituted an “international public health emergency.” When we enjoy the convenience brought by economic globalization, we must also face the impact of the pandemic on globalization. In the early days of the pandemic, foreign countries imposed entry control and vessel parking restrictions on China, and some countries raised tariffs, suspended import of some goods and customs clearance. These measures have greatly hindered the normal operation of foreign trade enterprises. Firstly, movement of international personnel was limited and the stoppage of domestic work has delayed the timely delivery of international orders. Secondly, affected by the pandemic, foreign investment has lost confidence in China’s future economic situation and operating environment, further reducing foreign investment plans. However, as the pandemic situation in China is effectively controlled, the pandemic situation abroad becomes more and more severe, foreign trade orders are still facing the risk of delay or cancellation due to the reduction of foreign demands. In addition, international logistics cannot run smoothly, increased trade barriers and other external factors make it even more difficult for foreign trade enterprises to survive. According to the latest national statistics, by the end of April 2020, the total value of imports and exports had reached $1,298,175,462, a decrease of 7.6%, of which the total value of exports had reached $678,219,655,000, a decrease of 9.0%. The total value of imports was $619,955,497, down by 6.0%. The total value of import and export from February to April 2020 year-on-year declines were 11.0%, 4.0% and 5.1%[3]. If the global spread of COVID-19 cannot be effectively controlled, the impact on foreign trade enterprises will always exist. Therefore, it is urgent for foreign trade enterprises to consider how to actively find a new way out when the pandemic situation is still unclear.

1.1.4 Survival crisis that SMEs faced

China’s SMEs are important foundation for building a modern economic system and promoting high-quality economic development, and they are also important support for expanding employment, improving people’s livelihood and promoting innovation. To what extent we can help SMEs over the difficulties largely decides the stability of employment and the resumption of economic growth. The fact that most SMEs are relatively small scaled, poor managed and specialized leads to weak anti-risk ability in the face of the pandemic.

When facing capital turnover difficulties, SMEs often turn to commercial banks for credit funds to tide over temporary liquidity problems. Working capital loans can meet the short-term (temporary, seasonal) capital needs of these SMEs in the production and operation process. However, due to the rising non-performing loan ratio, the narrowing net
interest margin, their own management requirements and other restrictions, banks have trouble in meeting the credit needs of SMEs. It is important to help SMEs get loans easier at a lower cost under the fact that their credit system is not sound, and the shortage of assets and incomplete business data is also critical in the short term.

2. Seize the new opportunities of digital transformation

The year 2020 is destined to be remembered in Chinese history. A sudden COVID-19 outbreak has shattered the peaceful atmosphere of the Chinese New Year. After months of universal battle against the disease, we finally have won significant stage victory. At present, in coordinating the control of the pandemic and the resumption of work and production, we should not only seize the favorable factors such as compensatory consumption that will appear after the pandemic, but also make full preparations from the production and supply sides to make up for the losses suffered during the pandemic as far as possible. For the most ravaged industries, the various new production and consumption demands generated during the pandemic will make them more willing and motivated to carry out digital transformation.

2.1 Service industry

2.1.1 Flourishment of online service

Life service industry will expand online service channels and intelligently meet the needs of the public. During the pandemic, large-scale home quarantine and pandemic prevention measures reduced the frequency of people’s going out, therefore, consumer demands lead to forced closure of the traditional consumer-oriented life service industry. The digitization of life service industry promotes the reform of service mode. Compared with the traditional service mode, the digitization of life service industry transforms the offline service into the online service, which greatly expands the number of network users and gathers more customer data which is difficult to achieve in the traditional service mode[4].

Online entertainment has already existed for quite a long time, but the outbreak has accelerated the pace of transformation. More and more stars interact with fans online through live broadcasting, and traditional performances can also play new tricks online. The fast development of 5G network makes it possible to broadcast synchronously across regions and even countries. At the same time, in order to better cope with risks and challenges, part of the attracted web traffic and capital can be fed back to offline entertainment, striving to achieve effective integration of online and offline activities.

“Smart Tourism” based on Internet of Things, wireless technology, positioning and monitoring technology can improve the comfort and satisfaction of tourism in an all-round way. Through real-time information exchange, reasonable travel planning can be made to avoid tourists clustering in scenic spots and ensure safe travels during the pandemic. Panoramic tourism using VR/AR, network broadcast and other new forms of tourism enable tourists to enjoy the beautiful scenery of the world without being on site, and it also effectively relieves the operating pressure of scenic spots during the pandemic.

Catering industry also experiences the digital transformation. “Contactless Distribution” is an effective measure during pandemic isolation to protect the safety of both consumers and distribution member, however, as the catering industry resumes to work and production, there is a gradual increase of the flow of diners eating on the spot, and “contactless dining” may become a new business model to minimize risk of infection. When entering the store, consumers can scan the code through their mobile phones and place orders. Indoor robots are responsible for dish delivery and checkout, which can reduce unnecessary contacts between waiters and customers.

2.1.2 Upgradation of productive service industry

As for productive service industry, insurance companies for instance, are generally aware of the importance and urgency of digital transformation, and efficient Internet channels will be the key to success in the future competition. Many insurance companies quickly launched and upgraded a number of online customer services, such as online insurance, online claims, intelligent customer service and other innovative services, to meet the needs of customers in special times. By continuously increasing investment in the layout of online business, insurance companies are accelerating the construction of more efficient and convenient online service system, replacing actuaries with big data model,
and realizing the automation of insuring and claiming, data-oriented internal management and intelligent customer service. Precision marketing continues to enrich product forms and service scenarios and bring customers more friendly Internet product purchasing and service experience. In order to better cope with external uncertainties, service industry can, through artificial intelligence and big data analysis, provide users with goods and services that meet their needs in appropriate scenarios and improve consumer experience, and thus maximizing sales. In the long run, how to start with the details of customer experience and make full use of Internet scenes and data resources to provide customers with more meaningful experience will become one of the core foundations of differentiated competition for insurance companies in the future\textsuperscript{[6]}.

2.2 Foreign trade enterprises

2.2.1 Domestic sales with the help of e-commerce platforms

As the coronavirus spreads around the world, foreign trade enterprises cannot see a turnaround for a while. In the face of the uncertain international situation and unstable external demand, foreign trade enterprises can reduce the overstock by transferring exports to domestic sales, avoid the risk of foreign exchange collection from exports, and smoothly tide over the pandemic. On June 17, 2020, the general office of the state council issued relevant implementation opinions on promoting the docking of standards and systems between domestic and export market\textsuperscript{[6]} . These opinions include strengthening the financial services of supply chain, increasing fiscal and tax assistance, and many other measures to support the transfer of export products to domestic market. In addition to enjoying preferential policies, foreign trade enterprises themselves can take advantage of e-commerce platforms to transfer the resources of manufacturers and brands online, which can further expand consumer groups and seize potential cooperation opportunities.

Although the pandemic situation in China has been effectively controlled, the global pandemic situation has not yet come to an end. When the novel coronavirus vaccine has not been developed to fundamentally control the pandemic situation, personal protective equipments such as medical protective clothing and masks are still in heavy demand. However, some foreign trade enterprises are taking a long-term view and starting to prepare for the competition in the "post-pandemic era".

2.2.2 Accurate user profile and efficient operation mode

Traditional foreign trade enterprises should rely on the consumption data feedback from e-commerce platforms to open the domestic market. Through big data analysis, they should research and develop marketable domestic products that accurately meet the upgrading demands of domestic consumers. This requires foreign trade enterprises to cooperate closely with e-commerce platforms and local governments, which can also help local foreign trade enterprises to connect with e-commerce platforms. Social media influencers can also be invited to do live sales, so as to jointly promote the digital transformation of foreign trade enterprises.

The sudden outbreak of the pandemic has enhanced the requirements of adaptability between customer demand and innovation of business model, making corporate strategy switch from competing for greater customer traffic to the mining of new customer demand. It can be regarded as a new impetus for the development of digital economy\textsuperscript{[7]} . Sanhe, a world-known pot manufacturer in Ningbo, with over 16 years of foreign trade OEM experience in China, has been trying to sell pots in domestic market since 2015. In order to meet the domestic consumers’ demand for pots and pans with multi-functions, high quality and durability, it redesigned the products in the aspects of appearance, material and manufacturing processes. In 2019, Sanhe and Pinduoduo, a large China’s e-commerce platform which focuses on trading low-price commodities, jointly developed a cost-effective pot specifically for Pinduoduo users which only costs 99 yuan and it later became one of the best-selling products.

In C2M mode, factories rely on the consumer profile provided by Pinduoduo through big data analysis to develop and produce products in a timely manner. Merchants can have a comprehensive view of the operation of their stores from multiple angles, such as website traffic, sales conversion and other quantitative measures to compare their performance with other competitors. In March, Pinduoduo signed a strategic cooperation agreement with the People’s Government of Ningbo City, Zhejiang Province, which promotes the conversion of export-oriented production capacity...
of 15,000 private enterprises to domestic market and accelerates the assistance to foreign trade enterprises struggling to survive during the pandemic.

2.3 SMEs

In the face of the sudden outbreak of COVID-19, many SMEs find it is difficult for traditional production methods to cope with the rapid changes of industrial chain and supply chain; therefore, they will certainly need to accelerate the transformation and breakthrough of production mode and enhance the resilience in the face of uncertainty in order to survive and secure a lasting competitive advantage. Just as SARS accelerated the popularization of the Internet in 2003, the COVID-19 pandemic in 2020 provided new opportunities for SMEs to thrive in digital transformation. From a long-term historical perspective, the pandemic has created a unique depression scene with both weak supply and demand, but it also accelerated the difficult transformation of enterprises.

2.3.1 Flexible production that can better cope with external changes

In response to the sudden outbreak, masks have become a scarce commodity in the market. Companies that can produce masks during special periods tend to have automated and digitized production lines, so as to avoid the spread of the virus caused by the gathering of people while resuming production. At the same time, in addition to the traditional mask manufacturers, many large manufacturing enterprises relying on their sophisticated manufacturing technology and strong financial support, started to produce masks. The main feature of flexible production is that there is no need to change production lines frequently when changing product types, it only needs to modify system parameters of the digital production system so as to meet diversified product demands. In the midst of COVID-19 pandemic, companies in a greater level of digitalization can resume production in the first time with minimum interference of human and have shown competitive advantages in dealing with the short-term demand for a large number of diversified products.

During the pandemic, enterprises have gained a more comprehensive and profound understanding of the usefulness of digital technologies such as artificial intelligence, big data and cloud computing. It has removed technological cognitive barriers and will further accelerate the extensive and in-depth application of digital technologies. But intelligent manufacturing is far from simply replacing manual data with computers. It contains many advanced management concepts[8], such as Toyota’s concept of lean production whose successful application requires deep understanding and true acceptance of an entire enterprise from the management level down to the production line employees. If there is no change in management philosophy, then the effect of digital transformation would be greatly reduced.

2.3.2 Less production costs through shared manufacturing

Shared manufacturing will become a new mode of production to cope with uncertainty. Sharing manufacturing is a new mode of production that gathers idle production capacity and carries out elastic matching and dynamic sharing among demanders. In essence, it is the reflection of enhancing the flexibility of economic activities by using digital technology.

Shared manufacturing can also be applied in SMEs. It not only promotes the evolution of technology and capital investment, but also makes sharing of labor an inevitable trend of hiring. SMEs, as the backbone force contributing to China’s innovation achievements, share the ability of product design and development by pooling the society’s diverse intellectual resources, so as to meet their flexible and low-cost innovation needs. At the same time, we will develop a sharing platform for manufacturing resources such as production equipment, special tools and production lines, and further reduce the production and operation costs of SMEs by renting, selling and using equipment sharing services on demand[8]. Shared factories can also be developed to achieve economies of scale and enhance the competitiveness of SMEs in the manufacturing industry. In the e-commerce service and logistics industry, surplus labor in catering, accommodation, tourism and other industries can be shared to solve the temporary shortage of labor in the manufacturing industry, which improves the efficiency of labor resource allocation to a certain extent.

2.3.3 The helps of Fintech to reduce financing costs

Through supply chain finance, the credit of core enterprises is released and distributed to supporting enterprises in the same industrial chain. In this way, supply chain finance transforms the uncontrollable risk of a single enterprise into
the controllable risk of the whole supply chain enterprises, and it enables the bank to dare, and be willing to lend, which fundamentally changes the way of risk management and reduces financing costs for SMEs in the upstream and downstream industry chain[9]. Block chain, on the other hand, enable banks to trace data and verify the authenticity of every transaction by applying distributed ledger technology, which is also conducive to build trust among all participants in the supply chain and strengthen data reliability.

Fintech alleviates the information asymmetry between enterprises and debtors, thus making it easier for SMEs to obtain loans at a relatively lower cost.

3. Conclusion

Every major crisis is accompanied by new industry opportunities. Digital economy has shown great vitality during the pandemic outbreak. It forced companies to turn to digital tools for survival and change from a short-term focus on the day-to-day operation of enterprises and customer services provision to a long-term focus on the collaboration of entire industrial chain and further enhanced their knowledge of digital transformation. Digital transformation is the general trend of technology accelerating business transformation. It has played an active role in helping industries severely affected by the pandemic to broaden service channels, promoting foreign trade enterprises to expand domestic demand and achieve precision customer marketing, and helping small, medium and micro enterprises to flexibly change production modes and reduce production and financing costs. In the post-pandemic era, enterprises should actively embrace the digital revolution and have faith in the future.

References

1. Luo L. Policies designed to support enterprise development in the context of COVID-19 (in Chinese). Research on United Front Science 2020; 4(2): 48–55.
2. Iresearch. Epidemic observation: Digital upgrade research report of China’s small, medium and micro enterprises 2020 (in Chinese). Iresearch Series Research Report 2020; (4).
3. National Bureau of Statistics, PRC. Monthly data [Internet]. Beijing: China Statistics Press; 2020. Available from: http://data.stats.gov.cn/easyquery.htm?Cn=A01.
4. Fan Z, Cheng J. Development opportunities and countermeasures of digital economy in the context of COVID-19 (in Chinese). Journal of Chongqing University of Posts and Telecommunications (Social Science Edition) 2020; 32(3): 91–101.
5. Wang X. In the post-pandemic era, digital transformation is the best choice for enterprises (in Chinese). Smart Factory 2020; (3): 4–13.
6. General Office of the State Council of the People’s Republic of China. Implementation opinions on supporting the transfer of export products to domestic market [Internet] (in Chinese). State Council (2020) No. 16 (in Chinese); 2020. Available from: http://www.gov.cn/zhengce/content/2020-06/22/content_5521078.htm.
7. Wang W, Wu Z. Research on the development of digital economy under the influence of COVID-19 epidemic (in Chinese). Economic Review 2020; (3): 16–22.
8. Zhang L, Dong F. Reflections on the digital development of China’s manufacturing industry in the post-pandemic era (in Chinese). Robotics Industry 2020; (2): 11–15.
9. Zhang Z, Huang F, Lu H. Challenges and opportunities of Fintech under the impact of the epidemic (in Chinese). Bankers 2020; (5): 121–124, 127.