

Research on Supply Chain Finance Model of Commercial Banks from the Perspective of Fintech

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Abstract: *Small and medium-sized technology-based enterprises have great difficulties in obtaining loans from commercial banks due to their high risk and small proportion of real estate. The birth of supply chain finance facilitates the financing of small, medium and micro enterprises. In recent years, with the continuous development of big data, AI and blockchain technology, the application of supply chain finance has been expanding, which has had a profound impact on the loan business of commercial banks to SMEs. Based on the fintech perspective, this paper will further discuss the application mode of supply chain finance in commercial banks on the basis of analyzing the development status of supply chain finance, and put forward policy suggestions for its future development.*

Keywords: *Supply chain finance, Fintech, Commercial banking, Blockchain technology*

1. Introduction

Small and medium-sized enterprises play a vital role in the development of national economy, but their development has been restricted by problems such as financing difficulties and high financing cost for a long time[1]. In 2010, supply chain finance business began to rise in China. As an innovative financing mode, supply chain finance is of great significance for solving the financing difficulties of upstream and downstream enterprises of supply chain and expanding the in-depth business of banks. Although supply chain finance has developed for 10 years in China, compared with the one in foreign countries, the development time is shorter and the industry is still in its infancy. Therefore, there is still a large space for the development of supply chain finance in the future. In recent years, China's supply chain finance market is developing with each passing day. Especially with the vigorous development of Internet finance, more and more subjects, including commercial banks, e-commerce platforms, logistics companies and core enterprises are involved in supply chain finance. The initial offline mode of supply chain finance dominated by commercial banks has come to an end. With more and more subjects participating in the course of supply chain finance, how commercial banks develop supply chain finance with their innate capital advantages is a challenge that they are facing. It is also worth exploring whether commercial banks and leading parties will complement each other or compete with each other in the future.

It can be seen that in the context of the prevalence of Internet technology and the rise of fintech, commercial banks are not completely dominant in the emerging field of supply chain finance and are also facing fierce competition. How commercial banks should integrate Internet technology and fintech into supply chain finance business to solve the financing difficulties of SMEs is a huge opportunity and challenge for them.

2. Supply Chain Finance and Blockchain Technology

2.1 The Characteristics and Basic Principles of Supply Chain Finance

Supply Chain Finance is originated from Supply Chain management. Based on the production and sales relationship of the industrial chain, it is a financing mode that binds core enterprises with upstream and downstream enterprises and provides liquidity for upstream and downstream enterprises. Supply chain finance usually finds the core enterprises with good credit in the supply chain, and takes the core enterprises as the starting point to provide financial support for the relatively weak upstream and downstream enterprises of the chain. The core enterprise provides credit endorsement for the

upstream and downstream enterprises by using the credit purchase and credit sale invoices generated between them. On the SCF platform, individual or institutional investors can finance upstream and downstream enterprises by buying commercial invoices approved by core enterprises, helping small and medium-sized enterprises to collect money in advance and obtain funds.

Specifically, supply chain finance can be divided into prepaid accounts financing and receivables financing. Prepayment financing generally exists in core enterprises and downstream enterprises. As the downstream enterprises are relatively weak, they often need to pay the core enterprises a sum of payment, namely advance payment, and receive the goods after a period of time. Based on the real transaction background with the core enterprise, the downstream enterprise can apply for prepayment financing to the bank, which pays in advance and keeps the goods in the bank. The downstream enterprise pays the deposit, takes delivery of the goods in proportion, and then continues to pay the deposit with the sales money until the loan amount is repaid in full. Accounts receivable generally exist in core enterprises and upstream enterprises. Due to the relative weakness of upstream enterprises, they often need to deliver goods to core enterprises first and receive the purchase money after a period of time, that is, accounts receivable. After the core enterprise confirms the real credit sale and purchase relationship, the upstream enterprise can apply for accounts receivable loan to the bank and take the core enterprise's accounts payable as collateral. The future inflow of the core enterprise's accounts payable will serve as a repayment source until the loan is fully repaid.

2.2 The Suitability of Blockchain Technology and Supply Chain Finance

If supply chain finance is an effective way for SMEs to finance, then blockchain is the core technology to make supply chain finance better implemented. Blockchain is a chain distributed ledger data structure that is stored in chronological order with encryption algorithm, and has the characteristics of tamper-proof and unforgeable. The generalized blockchain technology emphasizes on following the distributed architecture and computing mode, namely, the block chain structure of data storage and verification, data production and update rely on the consensus algorithm of distributed nodes, encryption algorithm to ensure data security, and the use of smart contract code to manipulate data.

The emergence of blockchain technology provides an opportunity to solve the problem of supply chain finance. Studies have shown that there are multiple coupling between the characteristics of blockchain and the needs of supply chain and logistics management. The deep integration of blockchain technology with supply chain and logistics can solve the dilemma and empower the high-quality development of the real economy[2]. The rule making of blockchain technology itself can make up for and innovate the problems existing in the original supply chain finance -- building a blockchain platform and giving play to the guiding and supporting role of the credit mechanism established by highly credible participants[3]. CBRC General Office's Guiding Opinions on Promoting Supply Chain Finance to Serve the Real Economy (CBRC No. 155 [2019]) clearly points out that banking financial institutions are encouraged to use Internet of Things, block chain, artificial intelligence and other technologies on the basis of legal compliance, full information exchange and effective risk control. Cooperate with core enterprises to build a supply chain financial service platform for upstream and downstream enterprises to better meet the financing needs of enterprises.

3. The Application Model of Supply Chain Finance in Commercial Bank

3.1 Loan Pricing Strategies for Small and Medium-Sized Enterprises

The 2017-2022 In-depth Market Research and Investment Strategy Research And Analysis Report of China's Enterprise Operation Project Industry[4] points out that currently the total number of registered enterprises in China has exceeded 40 million, of which more than 99% are SMEs. Every year, SMEs contribute more than 60% of GDP, 50% of tax revenue, 65% of export volume and 80% of employment, which shows their vital position in economic development. However, contrary to this, SMEs are often subject to more stringent loan restrictions than large enterprises in their development, which seriously hinders the pace of their operation and development. According to the White Paper on Financial Services for Small and Micro Enterprises in China issued by the People's Bank of China and China Banking and Insurance Regulatory Commission[5], as of the end of 2018, the loan balance of legal persons of small and micro enterprises in China was 26 trillion yuan, only accounting for 32.1% of all corporate loans. SMEs are discouraged from bank credit due to less mortgageable assets, lower

credit rating and higher credit cost.

Generally speaking, in order to achieve the optimal ratio of benefits and costs, commercial banks often implement different loan interest rates for projects with different risk levels. However, some scholars have found that even if other indicators are consistent, if the market risk and credit risk of different loan projects are not correlated, banks will also implement different loan interest rates[6]. The determination of the loan interest rate will not only affect the income of the bank, but also affect whether the loan enterprise can get the operating funds at a lower cost, thus affecting the operation of the enterprise. Based on these reasons, some scholars believe that it is even necessary for SMEs to moderately develop "relational credit"[7].

However, the loan pricing model under the supply chain finance model may provide a new opportunity for SMEs. When their own credit conditions are poor, commercial banks can adjust the loan pricing according to the supply chain financial conditions, and give preferential loans to SMEs with relatively good supply chain performance, so as to reduce the loan burden of enterprises. However, if the supply chain condition of enterprises is poor, the supply chain finance loan pricing model will increase the loan interest rate of banks and further reduce the risk of banks. Therefore, the loan pricing model under the supply chain finance model reflects the differentiation principle of loan interest rate. The situation of different loan customers is different. Adopting "one-size-fits-all" loan pricing method not only makes growing enterprises unable to get the loan pricing in line with their own conditions, but also makes commercial banks face certain loan risks. By adopting differentiated loan pricing, that is, differentiated pricing based on the relevant characteristics of enterprises, commercial banks can create competitive credit products, optimize product services and customer experience, and not only attract new customers, but also improve customer loyalty.

3.2 Accounts Receivable Business of Commercial Banks

Due to the existence of a large number of credit purchase and credit sales in the supply chain, accounts receivable business can also bring greater profits for commercial banks. The specific process of accounts receivable business of commercial banks is composed of the following steps: First, the core enterprise sends the goods purchase request to the upstream supplier, and the supplier confirms the order. Secondly, upstream suppliers push receivables into the pool and apply for financing to the third-party information collaboration service platform through the ERP system, while core enterprises propose loan review to the third-party information collaboration service platform. Thirdly, the third-party information cooperation service platform will provide the loan application and related information to banks, the fund provider, and banks will grant the loan to the settlement account of the core enterprise after approval. Finally, after the acceptance and confirmation of the goods by the core enterprise, the production and sales are carried out, and the sales income is used to repay the receivables.

Commercial banks have inherent advantages in developing accounts receivable business under the background of supply chain finance, for the following four reasons: First, accounts receivable is the direct source of repayment, which does not involve the issuance and distribution of inventory. From the process and time is easier to determine, the risk is more manageable. Secondly, the business is carried out around the core enterprises, which have higher credit qualification, so the probability of receivables recovery is greater. On the other hand, as the core enterprise is the center, and the core enterprise is already the customer of the bank, it is easier to carry out accounts receivable supply chain finance business on this basis, and the cost of acquiring customers is lower. Finally, through supply chain finance, commercial banks directly connect with the core enterprise ERP system, reducing the cost of connecting with many upstream small and micro enterprises. Therefore, the development of accounts receivable supply chain financial services by banks has the advantage of congenital regular customers and controllable risks from the business point of view, the application of technology has realized the online submission of data and the full penetration of risk control. However, the key role of the core enterprise is irreplaceable because it ultimately depends on the repayment of the core enterprise, which will not change substantially with the further penetration of fintech.

3.3 Commercial Banks Upgrade their Non-Credit Business Model

In addition to credit business, commercial banks also play an important role in non-credit business such as enterprise payment and settlement, bill development and goods circulation. In the non-credit business of traditional commercial banks, a large number of offline work, such as interview and credit

investigation, is also required to confirm the operating state, industrial cycle and main demand of operating entities, which seriously hinders the efficiency of financial services. For example, in the traditional purchase and sale process, simple actions such as delivery, logistics transportation, receipt confirmation, account confirmation, bill issuance, payment and settlement need to be operated on multiple platforms, resulting in complicated operation prone to information redundancy error, and information can not realize the synchronous circulation of the whole cycle. This not only hinders the development of financing business, but also hinders commercial banks from serving the real economy through intermediary services such as financial consulting, payment and settlement.

In the field of the finance business, in the supply chain finance, can get enterprise business through the Internet of things related sensor data and data in ERP system, analysis of enterprise cash flow situation, orders, production operations, financial services and business flow, logistics, fusion, and effectively grasp the enterprise development cycle, improve financial consultants, cash management services such as precision. At the procurement level, after the integration of financial system with Internet of Things and industrial Internet platform, it can realize real-time payment and automatic ordering of key components to form efficient procurement through intelligent vehicles, intelligent manufacturing robots and other equipment, combined with facial recognition, fingerprint recognition and other technologies. In terms of account management, unified account management and scenario-based payment and settlement can be realized by combining electronic wallet and blockchain smart contract technologies on the industrial Internet platform. In terms of customer management, it can collect production data of enterprises, clarify the operating status of enterprises, identify various financial needs of enterprises, and carry out perfect customer relationship management and cross-selling, including merger and acquisition consulting, financial consulting, market analysis, business strategy development consulting, etc., to provide customers with better services.

Take payment business as an example. With efficient Internet of Things technology, commercial banks can comprehensively upgrade payment and settlement business in terms of product capacity, delivery capacity and operation capacity. After comprehensive integration with industrial operation, commercial banks can form front-end payment system and back-end payment system through the whole cycle. Through mutual support of transaction account, capital account, transaction details and capital subsidiary account, they can form a payment and settlement subdivision scheme that is highly adaptable to the scene. With the support of emerging digital technology, the commercial bank payments and settlement system can improve the concurrency carrying capacity, improve the system stability and all-weather agile implementation and operational error correction ability, eventually to the user of customer and customer as a starting point, based on the data analysis and application of intelligent push and ceaseless overlay suitability of products and services, continue to increase customer value, strengthen customer stickiness, mining customer value, and further improve and innovate financial products and services to realize the transformation and upgrading of financial services[8].

4. Policy and Suggestion

4.1 According to the Characteristics of Supply Chain Finance, an Appropriate Loan Pricing Model Should Be Established

Nowadays, with the rapid development of China's manufacturing industry, policy support has injected new vitality into traditional manufacturing SMEs and provided development opportunities for supply chain finance business. In the context of the global epidemic, China's manufacturing industry once faced a cold winter due to labor shortages, weak offline demand and shrinking trade. The orderly development of supply chain finance business plays an important role in resuming production of SMEs and ensuring the safe and stable development of supply chain. In the supply chain finance loan pricing model, enterprises with low supply chain credit are at a disadvantage. Enterprises with excellent supply chain can enjoy more favorable loan prices. Commercial banks should seize the development trend of supply chain finance, actively explore high-quality customers, explore institutional changes such as off-site account opening and inter-bank payment settlement, organize financial service institutions such as financing and payment settlement, and gradually form a coordinated service system.

4.2 Pay more Attention to Core Enterprises and Develop the Business Model of Receivables

The bank itself has a good basis for the development of receivables business, but the development

of this business is inseparable from the core enterprise. The real transaction background of the core enterprise is an important premise to increase the credit of the small and medium-sized enterprises. Whether the bank can recover the loan also depends on whether the core enterprise confirms the accounts receivable. Although commercial banks can verify the transaction background of enterprises in multiple ways to confirm the authenticity and increase the credit line, it is difficult to judge and measure the repayment ability of non-core enterprises' counterparties. Once enterprises cannot repay, commercial banks will increase the proportion of bad accounts receivable. On the other hand, due to the lack of integration between banks and industries, fintech cannot be fully applied in supply chain finance. Banks need to communicate and cooperate with core enterprises to understand industry information and grasp the development trends of the industry, so as to accurately assess the solvency of enterprises in the industry. Therefore, even if the authenticity of the transaction can be ensured, the core enterprise should be firmly grasped, on the one hand, to ensure that the funds receivable can be repaid, on the other hand, to strengthen the understanding of the industry.

4.3 Leverage Emerging Technologies Related to Supply Chain Finance to Help Upgrade Non-Credit Business

In addition to the credit business, the non-credit business of commercial banks is also closely related to the circulation and turnover of goods in the supply chain. Supply chain finance itself is also developing. With the continuous progress of Internet technology, more emerging digital technologies should also be applied to supply chain finance[9]. Commercial banks can make use of emerging fintech means in supply chain finance, such as intelligent Internet of Things, industrial Internet and AI, to realize real-time tracking of information and improve the carrying capacity and response agility of payment, billing, consulting and other non-credit industry systems. In the future, with the popularization of blockchain technology in the supply chain and the resulting improvement of the level of digitalization of all links, digital supply chain finance based on blockchain technology will become a more efficient and inclusive financial support means, enabling banks and other financial institutions to better serve the development of physical enterprises.

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