

Article

A Case Study on the Innovative Development of Digital Supply Chain Finance Based on MYbank in China

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Abstract: Small and medium-sized enterprises (SMEs) play a critical role in promoting the development of China's real economy and improving national productivity, but their financing still faces challenges. In recent years, supply chain finance (SCF) has become one of the most important solutions to SMEs' financing difficulties. Promoting the digital and innovative development of SCF can better meet the financing needs of SMEs. This study is based on a case study of Zhejiang MYbank Co., Ltd. (MYbank) in Hangzhou, China, which is a representative institution of digital supply chain finance development in China and committed to realizing the digital innovation development of SCF. Based on MYbank's financial index data from 2018 to 2022, the implementation effect of MYbank's digital supply chain finance is quantitatively analyzed from the perspectives of SMEs and MYbank. The main findings are as follows. (1) In the practice of digital supply chain finance, MYbank implements the new concepts of SCF decentralization and full coverage of supply chain links while enhancing the sustainability of SCF. (2) For SMEs, MYbank's digital supply chain finance development has led to an increase in the financing scale and financing availability of SMEs. (3) The analysis of MYbank's comprehensive benefits shows that the digital innovation development of SCF effectively increased the overall economic value of the enterprise during the period of 2018–2022. Based on these findings, this study provides implications for commercial banks and other financial institutions to develop digital supply chain finance.

Keywords: MYbank; digital; supply chain finance; innovative development; case study



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1. Introduction

Small and medium-sized enterprises (SMEs) play a critical role in improving national productivity and economic development [1]. SMEs are an indispensable force in stimulating domestic demand and promoting the development of the real economy, which are of great significance in relation to China's efforts to build an economic system based on large flows in the domestic economy. According to relevant data from the Ministry of Industry and Information Technology (MIIT) and the State Administration for Market Regulation (SAMR), by the end of 2022, SMEs had already accounted for more than 90% of registered enterprises in China [2,3]. The contribution of SMEs to the GDP is over 60%, and 50% of the country's tax revenues come from SMEs, which have become an important force in driving China's economic development. However, at present, the development of SMEs is faced with dilemmas in terms of market mechanism and institutional deficiencies, rising costs of raw materials and labor, and tightening of bank credit policies, among which the financing dilemma is the core problem restricting the development of SMEs [4,5]. One of the solutions to solve the above financing dilemma is supply chain finance (SCF) [6,7].

Research on SCF first began in 1970 [8]. The definition of SCF was originally proposed by Stemmler [9] to integrate financial services into supply chain management. After con-

tinuous development, SCF encompasses multiple subjects from financial institutions and supply chain firms by managing and controlling the flow of funds through the supply chain to create economic efficiency and overall supply chain value and to facilitate the management of transactional, physical, and information flows within the supply chain [7,10–12]. As a new financing model, SCF improves the flow of funds from a supply chain perspective [13] by aligning it with the product and information flows [14] to the benefit of the supply chain participants, e.g., by alleviating the financing dilemma of the supply chain participants [15,16], especially vulnerable participants such as SMEs [14].

Recently, more and more SMEs have utilized SCF to reduce supply chain risks, decrease financing costs, as well as increase the overall efficiency of the supply chain, thus alleviating the financing difficulties of SMEs to a certain extent [16,17]. However, the traditional supply chain finance business model still cannot completely solve the current financing dilemma faced by SMEs. In practice, the traditional supply chain finance business still has some problems, such as information asymmetry between participants, difficulty in transmitting the credit of core enterprises, and difficulty in meeting the personalized financing needs of SMEs.

This situation has been improved with the application of digital technology in the financial field. The combination of SCF and digital technology expands the financial service space of SMEs [18], alleviates information asymmetry [19], and enhances the efficiency of supply chain financing [7]. At present, the number of SMEs in China accounts for more than 97%, and the market space for SME financing is still huge. Therefore, it is necessary to further promote the development of digital innovation in supply chain finance to meet the huge financing demand of SMEs, therefore promoting the development of China's real economy.

In summary, supply chain finance plays a critical role in alleviating the financing problems of SMEs. The digitalization transformation has led to further efficient development of supply chain finance, which tends to help SMEs escape financing difficulties, thus promoting China's economic development. Among commercial banks and other financial institutions, the most rapid development of digital technology is the major Internet banks. MYbank, as a typical representative of Internet banks, has realized the innovation and practice of digital supply chain finance in recent years.

Therefore, this paper takes MYbank as a typical case of digital supply chain finance and adopts a combination of the case study method and quantitative analysis method for the research. First, we review the literature related to SCF and explain the basis of case selection and the digital innovation process of MYbank's SCF. Second, the case study is analyzed according to the digital innovation concept of MYbank's supply chain finance. Finally, this study summarizes the data related to financial indicators in MYbank's annual report and CSMAR from 2018 to 2022. Quantitative analysis is conducted from the perspectives of both SMEs and MYbank. It mainly uses the average value and growth rate to reflect the financing scale and financing availability rate of SMEs, and it uses the economic value added (EVA) to reflect the comprehensive benefit analysis of MYbank. The above indicators are used to analyze the trend of MYbank's digital supply chain finance and explore the implementation effect.

This paper's original points are follows. (1) This paper is based on the perspective of combining the development of supply chain finance with digital technology, combining theoretical and quantitative analysis with specific cases of financial institutions, and drawing relevant conclusions and developing insights to provide a reference path for the development of digital supply chain finance for Chinese commercial banks and other financial institutions, aiming to better promote the development of SMEs. (2) MYbank is selected as the case subject from the micro perspective. In the process of developing financial technology and digital supply chain finance business, compared with traditional commercial banks, Internet banks have certain resource and platform advantages. As a representative of Internet banks, MYbank is typical in the innovation and practice of digital supply chain finance. By summarizing the development mode and experience of its digital

supply chain finance, it will generate relatively high novelty and practical conclusions and insights.

The rest of the article is structured as follows. Section 2 shows the literature review that reviews the literature related to SCF. Section 3 presents the case selection, which describes the basis for choosing MYbank as the case subject and introduces the process of digital innovation in MYbank's supply chain finance. Section 4 depicts the case concept analysis, which mainly analyzes the innovation embodiment of MYbank's digital supply chain finance. Section 5 shows the case data analysis, which quantitatively analyzes the specific implementation effect of the digital development of MYbank's supply chain finance. Section 6 concludes the paper and presents the implications, which introduces the conclusions, implications, and limitations of this study.

2. Literature Review

This section provides a comprehensive overview of the international development trend of SCF, the theoretical research related to SCF, and the research on SCF in the Chinese banking industry.

2.1. Current Trends in SCF

In terms of international trends, SCF has been continuously adopted as a supply chain management approach to improve financial flows since the 2008 financial crisis [6,17,20,21], and it is a decisive factor in production and supply chain operations practices [7]. By analyzing the literature on SCF, Minh [22] pointed out that with the rapid development of financial technology in the current era, and the application of big data, cloud computing, blockchain, and other digital technologies, the development of the combination with technology is a research trend in supply chain finance. Digital supply chain finance with the deep integration of new technology and SCF then came into being. After the COVID-19 pandemic, the need for new financing mechanisms of digital technology and technological advances to accelerate sustainable SCF became more and more urgent for enterprises [23].

Digital supply chain finance utilizes digital technologies to improve the efficiency of capital flows, payment processes, and financing in the supply chain [24]. Incorporating digital technology in SCF business can simplify and reduce the supply chain financing process, thus helping commercial banks to improve the efficiency of supply chain financing and serve a larger volume of customers [7]. Pérez-Elizundia et al. [25] argued that the rapid growth of financial technology, which is beginning to annex the market share of traditional financial intermediaries, will allow SCF to respond quickly to the financing needs of firms and promote sustainable supply chain performance, and in turn, efficient financial services can stimulate financing to a certain extent. It can be seen that the current development of SCF digital transformation is a global trend.

Although SCF in China started late, the financial market business is developing rapidly [26]. In the context of China's SME financing, the market space is still large, and SCF development also tends toward digital transformation. The traditional means of financial institutions can no longer meet the development needs of SCF. In recent years, the Chinese government has introduced a series of guiding policies. For example, the government work report in 2021 mentioned for the first time the innovation of supply chain financial service model separately, which strengthened the innovation guidance of supply chain finance. In 2022, the "14th Five-Year Plan for the Development of the Digital Economy" released at the beginning of the year was put forward to promote the innovation and development of supply chain finance with digital technology. The policy guidance puts forward some new concepts for the development of SCF, such as the decentralization of SCF, extension of supply chain links, scenario-based supply chain finance, and ecological development, which validates the development trend of digital innovation in China's SCF.

SCF decentralization disperses risk through multiple channels, meaning it is no longer completely dependent on a single core enterprise or financial institution for financing, and information transparency is improved to reduce the risk of default to a certain extent. The

new concept of SCF development is the use of digital technology to improve the flexibility of financing, optimize the financing process, reduce the cost of financing, and other mechanisms to accelerate the flow of supply chain information and enhance the overall value of the supply chain, thereby improving the efficiency of supply chain finance [27,28]. Thus, the development of SCF in China is more consistent with the global development trend.

2.2. Theories Related to SCF

2.2.1. Information Asymmetry Theory

Information asymmetry theory was first proposed by Akerlof [29]. The core idea is that there is often a large information gap between the parties to a transaction, which affects the behavior of buyers and sellers. Stigler [30] pointed out that the seller tends to be relatively more equipped with an information advantage, while the buyer is in a disadvantageous position. In addition, the existence of an information gap may lead to adverse selection and moral hazard [31,32]. In the financial sector, information asymmetry exists between financial institutions and firms, and for financial institutions such as commercial banks, it is difficult to identify “good borrowers” [33].

The essence of SCF is that commercial banks extract the credit information of SMEs from the information flow of the supply chain flow and complete a credit assessment and lending. The degree of informatization of the supply chain determines the overall efficiency of supply chain financing. Therefore, in the supply chain finance business, commercial banks, as the dominant player, need to improve the information transparency of the supply chain as whole as much as possible [34]. Commercial banks can realize the efficient output and flow of information by guiding the enterprises in the supply chain to strengthen the connection and collaboration, so as to improve the information transparency of the supply chain as a whole and alleviate the problem of information asymmetry [35,36]. The improvement of information transparency is also important for commercial banks to reduce the risk of default and for SMEs to reduce the cost of financing.

2.2.2. Transaction Cost Theory (TCT)

Transaction cost theory was originally proposed by Coase [37]. He argued that there is a cost to utilizing the price mechanism in the exchange mechanism, and the most obvious cost is the cost of all the discoveries of relative prices. The transaction cost explains well the existence of the division of labor organization in the market. Williamson [38] further enriched the use of transaction cost theory in microeconomics. More precisely, Carr and Pearson [39] pointed out that the transaction cost refers to “all costs necessary to run a relationship”, including capital, resources and time. Transaction cost theory has been continuously improved and developed, and it has been widely used in many fields. In the financial field, the borrowing and lending relationship is the most common transaction relationship. In the lending relationship, the borrower mainly bears the cost of capital brought about by the generation of interest, while the lender mainly bears the cost of the time value of money brought about by the transfer of funds. Both borrowers and lenders try to minimize their transaction costs as much as possible.

In supply chain finance business, as an upgraded lending relationship, supply chain financing also incurs transaction costs [40]. For financial institutions such as commercial banks, in the supply chain finance business, they are mainly faced with capital costs brought about by obtaining lending funds, service costs brought about by obtaining credit indicators of the lending enterprises, and management costs of post-loan fund management and ensuring the smooth flow of funds [41]. As for the borrowing SMEs, they mainly face the time cost, preparation cost, etc., of participating in supply chain financing [42]. Therefore, in this process, financial institutions such as commercial banks, as the leading party, need to ensure the smooth flow of information and capital in the supply chain as much as possible to reduce the cost of supply chain financing for both parties.

2.3. Overview of SCF in Chinese Banking Industry

Since 2000, SCF business forms, process deployment, and platform construction in China started to take off [43]. The Internet was not developed at that time, so the SCF business was mainly distributed offline. At that time, it was mainly based on commercial banks to meet the enterprise capital demand through traditional credit products. Compared with international studies, China focuses more on the study of SCF models. Chu and Gao [44] argued that the development of SCF in the banking industry has gone through three stages. The first is the primary SCF, with banks as the main body and manual credit approval mode, and the second is the linkage stage of “bank + core enterprise”, in which enterprises and banks establish information interaction and solve the mode of financing and credit for the main core enterprises. Third, “platform + financial institutions” as the leading platform for financial institutions to provide specialized information flow and logistics services, aiming to expand the core enterprise information penetration. With the help of Internet technology, business costs and operational risks can be reduced.

With the development of SCF theory and the progress of information technology, SCF has gradually transformed from a single product form to a diversified and integrated service model. SCF in the Chinese banking industry has entered the third stage. Under the scope of this financial model, financial platforms supported by fintech are an important force in the development of SCF [43], especially since entering the 21st century, with the Internet of Things, big data, cloud computing and other technologies gradually penetrating the financial field, especially blockchain and other technological means applied to major banks and financial service platforms, which provide strong technical support for the development of comprehensive SCF services [45].

The development of Internet finance has promoted further innovation and development of SCF. Internet banks, as represented by MYbank, have applied digitalization technology to the field of SCF. However, the digitization of SCF also faces some challenges. The digital transformation of the supply chain means that MYbank needs investment support. Digital development has a long return on investment cycle and a long-term impact on business sustainability [46]. Risks exist in Internet security and data privacy that may create trust issues among the supply chain partners involved [47].

The issue of acquiring best-practice management teams and securing the technical expertise of personnel should also be taken into account in this process [48]. The link with policy can also have some positive impact on the digital development of the supply chain from the side [46]. In the future, with the continuous advancement of technology and the continuous support of policies, SCF will play a more important role in the development of China’s banking industry.

3. Case Selection

3.1. Basis for Case Selection

3.1.1. Overview of MYbank

MYbank was founded in June 2015, with a registered capital of about CNY 6.571 billion, and the largest shareholder is Ant Group, a leading company in the industry, which is one of the first batch of private commercial banks in China. Since its establishment, MYbank has been committed to utilizing big data, cloud computing and other advanced technologies to provide inclusive financial services for micro, small and medium-sized enterprises, making it unique among commercial banks [49]. MYbank’s total assets have shown a rapid growth, rising from CNY 30.245 billion in 2015 to CNY 452.130 billion in 2023. The year-on-year growth in total assets indicates MYbank’s continued good operating efficiency. MYbank ranks No. 2 among China’s Internet banks in this asset size, second only to WEBank. MYbank’s asset type, with a large share of loans and advances, is growing the fastest, from CNY 7.413 billion in 2015 to CNY 270.582 billion in 2023, an increase of 35 times. This figure indicates that MYbank has achieved significant growth in the loan business.

With the deepening of MYbank’s financial field, its lending business continues to expand. In particular, the increase in lending to SMEs contributed to the rapid growth

of total loans and advances. The rapid growth in the loan business may be attributed to MYbank's efficient approval process and precise services to SMEs. The efficient approval process is due to MYbank's adoption of digital technology for optimization. The big data analytics system enables automatic assessment of the borrower's ability to make quick loan decisions [50]. In response to the different loan needs of SMEs, MYbank has launched diversified loan products and flexible loan amounts, which can be adjusted according to the actual business situation and capital needs of enterprises. In addition, it may also reflect the market's recognition and increased demand for MYbank's loan products.

MYbank occupies an important position in the commercial banking market and has strong competitiveness in the financial field. MYbank's SCF is wide-ranging, covering the whole chain from raw material procurement, production and processing to product sales. For example, procurement financing, production financing, sales financing and comprehensive financial services, with the aim of providing a full range of financial services to core enterprises and their upstream and downstream small and micro enterprises. In addition, MYbank's market positioning is different from that of large commercial banks in that it mainly serves small, medium-sized and micro enterprises. As MYbank's main audience, micro, small and medium-sized enterprises account for the vast major of its financing business. These enterprises are usually small in scale, have limited credit records, and find it difficult to obtain financing from traditional financial institutions. MYbank effectively solves their financing problems through digitalized supply chain finance, accurate profiling of SMEs, and rapid credit granting.

3.1.2. Rationale for Case Selection

Digital supply chain finance is a relatively new topic. In terms of case selection, cases from advanced SCF are more likely to produce meaningful results on the evolution, performance and future development of digital supply chain finance than those from traditional firms with less advanced research strategies.

Among commercial banks and other financial institutions, the most rapid development of digital technology is the major Internet banks. As one of the first batch of Internet banks in China, MYbank is highly representative of the practice of digital innovation in the field of SCF. MYbank deeply integrates Internet technology with financial services, providing a vivid case for the digital development of supply chain finance. The scale of MYbank's business and the strength of MYbank are continuously increasing. Expansion of the asset scale is an important symbol of the bank's comprehensive strength, which is conducive to the enhancement of the bank's market position and competitiveness. The increase in MYbank's total assets not only reflects its strong strength in the financial market but also highlights its leading position in the field of SCF. In addition, as one of the major shareholders of MYbank, Ant Group has a deep connection with Alibaba Group [51]. This connection enables MYbank to obtain more support and resources in the field of financial technology.

MYbank still belongs to the small and medium-sized banks compared to the large commercial banks controlled by the state. However, MYbank has a certain position in terms of the asset scale, business scale and market influence. In recent years, MYbank has realized the innovation and practice of digital supply chain finance. MYbank has expanded the scope of SCF through digital means. The special nature of the audience group also shows that MYbank has made positive contributions to supporting the real economy, especially the development of small and medium-sized enterprises (SMEs). This ability to serve the real economy is also an important indicator of a bank's social value and influence.

Therefore, the selection of MYbank as a case study is of great significance for an in-depth study of the digital development of SCF. The methodology of the research on MYbank consists of a case study of the concept of digital innovation and a quantitative analysis of the effect of the digital development of MYbank's SCF using indicators such as growth rate and economic value added.

3.2. Digital Supply Chain Financial Innovation Process of MYbank

Since its establishment in 2015, MYbank has adhered to its positioning as “inclusive” and committed to providing convenient, efficient and low-cost financial services to the majority of micro and SMEs. Through continuous exploration and innovation in the expansion of SME capital business, the enrichment of supply chain financial product system and financial technology, the bank has gradually realized the digitalization of the supply chain financial business. The formation and development of digital supply chain finance by MYbank can be summarized into three stages: germination stage, development stage and maturity stage.

3.2.1. Budding Period: 2015–2018

The period spanning from 2015 to 2018 is the embryonic period of supply chain finance development by MYbank. During this period, MYbank was committed to providing financial services for downstream dealers and brand owners of core enterprises, developing diversified supply chain finance business products, and constantly realizing technological innovation in database and risk control models. These efforts have laid the foundation for the development of digital innovation in supply chain finance at a later stage.

Formally established on 25 June 2015, MYbank initially positioned itself as a financial service provider for small, medium, and micro enterprises. MYbank has attached great importance to the application and innovation of financial technology since its establishment, and it formed the embryonic form of digital supply chain finance business during this period. For instance, in 2017, based on Alibaba’s e-commerce platform database and intelligent monitoring system, as well as its self-developed real-time market monitoring system and position grading early warning system, MYbank continuously improved the risk control model of supply chain finance, effectively improved the risk control and management efficiency of supply chain finance, and controlled the default risk. Through the continuous breakthrough and development of various financial technologies, the various technologies for digital supply chain finance of MYbank have begun to take shape.

3.2.2. Breakthrough Period: 2018–2021

The period from 2018 to 2021 is the period of accelerated development of digital supply chain finance by MYbank. During this period, MYbank built an open and inclusive supply chain business system, improved the layout of supply chain financial products, effectively realized technology integration and sharing, and achieved further breakthroughs in the development of digital innovations in SCF.

In the breakthrough period, MYbank effectively integrated digital technology and realized technological openness, thus committing itself to solving credit needs for more SMEs. On the one hand, in order to avoid dependence on Alibaba’s e-commerce platform and give full play to its own resource advantages, MYbank strengthened its technical support by integrating big data, blockchain, AI, Internet of Things and other technologies, so as to better connect its own resources with the resources of Ali’s economic system and improve the financing experience and efficiency of SMEs [52].

On the other hand, MYbank met the capital needs of micro and SMEs at a higher level by realizing the sharing of technology and information. In 2018, MYbank launched the “Fan Xing Plan”, aiming to share its capabilities in information receipt, data processing and technology innovation with the industry, enhance its product influence and enterprise awareness, and focus on the future development space while solving the existing financial problems of SMEs.

3.2.3. Maturity Period: 2021–Present

The period from 2021 to now is the maturity period of supply chain finance development by MYbank. During this period, MYbank’s digital supply chain finance product matrix “Dayan System” was launched and achieved good benefits. By practicing new concepts such as the decentralization of supply chain financing and full coverage of supply

chain links, MYbank has formed the digital supply chain financial product matrix of the “Dayan System”. The emergence of the “Dayan System”, a digital supply chain finance achievement, has significantly increased the business volume of MYbank, further enriched the product system and strongly strengthened the technical support.

Since the release of the digital supply chain finance product matrix “Dayan System” in October 2021, various brands and dealers have responded positively and signed contracts to enter the chain one after another. The digital supply chain product matrix with full coverage of MYbank links effectively solves the full link financing needs of small and micro enterprise customer groups [50].

In addition, MYbank has found more powerful technical support to realize new models and practice new ideas. In terms of feature capture, MYbank utilizes advanced big data analysis technology to upgrade the enterprise relationship mapping and construct a more comprehensive three-dimensional digital profile for SMEs. This allows for a clearer positioning of SMEs within the supply chain, facilitating a better understanding of their characteristics, which in turn aids in credit evaluation and risk management. Additionally, in terms of risk control, MYbank has achieved more efficient risk identification and effective mitigation through advanced algorithm technologies such as intelligent interactive self-certification.

As an Internet bank, MYbank is currently cooperating with commercial banks such as Postal Savings Bank and China Guangfa Bank, which have offline branches, to jointly establish a data risk control model and make up for the shortage of its offline business. The upgrading and innovation of technology have brought bottom-level support for the goal of MYbank to serve tens of millions of SMEs.

4. Case Concept Analysis

During the formation and development of digital supply chain finance, MYbank has been constantly innovating and practicing new concepts of supply chain finance. Through the continuous innovation of business model, it has continuously injected new impetus into the digital development of supply chain financing.

4.1. Decentralization of Supply Chain Financing

In the traditional supply chain finance business model, the credit endorsement of core enterprises plays a critical role, which leads to the financing of micro and SMEs at the end of the supply chain relying too much on core enterprises. In supply chain financing, commercial banks and other financial institutions that provide supply chain financing provide loans or funds to enterprises upstream and downstream of the supply chain according to the information from the business flow, logistics, information flow, capital flow and other aspects of the supply chain. The essence of information asymmetry theory is that one party has more information than the other. In the field of SCF, information asymmetry is particularly prominent, and the information gap between SMEs and banks has become a key factor restricting financing efficiency.

However, in the traditional supply chain finance model, for the small and micro enterprises at the end of the supply chain, commercial banks can only rely on the core enterprises to obtain their business flow, logistics, information flow, capital flow and other aspects of information, through the core enterprises in the chain and the transaction relationship between the upstream and downstream middle and lower enterprises, debt credit and other aspects, to obtain the indicators or basis for lending to the upstream and downstream SMEs. Therefore, in the traditional supply chain financing model, the core enterprises need to guarantee SMEs and use them as an information bridge to solve the problem of information asymmetry. However, under the condition of over-reliance on core enterprises, there are still many SMEs whose capital needs are difficult to meet.

The traditional supply chain relies too much on the credit endorsement of core enterprises, which promotes the innovative development of supply chain finance. Against the background of the high development of financial technology, supply chain finance

is also constantly carrying out digital innovation. From the policy perspective, the 2021 government Work Report for the first time proposed to innovate the supply chain financial service model. In 2023, the “Opinions of the CPC Central Committee and The State Council on Promoting the Development and Growth of the Private Economy” mentioned that the banking industry and other financial institutions should actively explore the decentralization mode of supply chain financing, that is, to break away from or weaken the credit guarantee role of core enterprises in supply chain financing. In the mode of supply chain financing decentralization, the amount, probability and efficiency of loans for SMEs can be greatly improved, which is better to help the development of small and micro enterprises and the real economy.

The digital supply chain finance offered by MYbank has created and practiced a new model of supply chain financing decentralization. Compared with the general digital supply chain financing model, the digital supply chain finance of MYbank pays more attention to the digital synergy effect between upstream and downstream enterprises in the supply chain, and between the main enterprises and financial institutions. By reducing the intermediate links, information is more directly and efficiently communicated and shared. MYbank extends the traditional linear supply chain to a network structure, establishing a vertical and horizontal network that caters to a significantly larger number of small and micro enterprises, providing them with a more precise capital allocation service scheme.

MYbank makes use of powerful digital technology to build a supply chain network and effectively realize the decentralization of supply chain financing. In the digital supply chain finance model of MYbank, every non-core enterprise or small, medium and micro enterprise in the main chain will become a new core. Thus, the relationship between the upstream and downstream industrial chains behind the new core will be explored, and a new supply chain will be extended. The MYbank network supply chain effectively extends credit linkages to every enterprise in the chain, reaching the end of each primary supply chain. In this scenario, the lending criteria for supply chain financing will increasingly prioritize the creditworthiness of SMEs, relatively diminishing the credit guarantee role of core enterprises, thereby achieving the decentralization of supply chain financing.

In MYbank’s network supply chain financing model, the bank primarily relies on indicators or financial data of small and micro enterprises themselves as the basis for lending or risk control logic. Enterprises with sound financial standing and good credit can secure loans with higher efficiency and greater amounts [53]. MYbank’s precise allocation of credit funds to SMEs can help reduce the adverse selection problem caused by information asymmetry, which reduces the likelihood of credit-poor enterprises obtaining low-cost financing. This greatly reduces the financing threshold for SMEs, allowing more companies that would otherwise have difficulty obtaining bank loans to have access to capital. Therefore, we expect that under the more efficient SCF procedure of MYbank, the loan probability or financing success rate of SMEs may be improved.

4.2. Full Coverage of Supply Chain Links

In the traditional supply chain finance business model, the supply chain financing in the procurement, operation and sales stages is separated, which cannot meet the integrated financing needs of SMEs. For example, a small or medium-sized enterprise is faced with a shortage of funds for purchasing raw materials in the production stage, and it solves the financial problem in the procurement stage through supply chain financing. However, in the subsequent operation and sales links, if SMEs are still facing the capital gap, they need to choose other platforms or other financial products on the same platform for new financing. The supply chain financing that separates the various stages of enterprise financing has some problems, such as low financing efficiency and cumbersome financing process. These problems are especially obvious in small and micro enterprises with poor credit performance, which seriously restricts the development of small and micro enterprises.

MYbank practices the concept of full coverage of supply chain links, which greatly solves various financing defects caused by the separation of each link. By building a digital

supply chain financial product matrix, MYbank has completely exploited the supply chain financing of enterprises in various stages of development, such as procurement, operation and sales, and continuously extended the industrial chain to solve the capital needs of SMEs in the fully closed loop [54]. In this case, each enterprise is in the supply chain of the whole link and the whole scene. Under the condition of unified credit granting, no matter which link the enterprise is in the procurement, operation or sales stage, it can obtain loans based on the supply chain integrated financing platform. The full coverage of the supply chain has effectively alleviated the information asymmetry and improved the financing efficiency, so that SMEs can obtain financing support more conveniently. This not only improves the financing scale and efficiency but also stimulates the vitality of the small and medium-sized enterprise market and the real economy.

The digital supply chain financial product matrix of MYbank has achieved full coverage of supply chain links. Table 1 introduces the financial dilemmas faced by different entities and the supply chain product solutions of MYbank in different scenarios. In the supply stage, some suppliers who have just won the bid often face the problem of capital shortage, but generally, the loan of supply chain financing will wait until the supplier completes the performance of the contract, and the capital shortage problem existing in this time difference restricts the development of their business. The “bid-winning loan” product in the matrix of digital supply chain financial products of MYbank solves this problem well. Once the enterprise wins the bid, it can apply for the “bid-winning loan” and obtain the corresponding loan on the integrated platform of supply chain financing of MYbank.

Table 1. Financial dilemmas faced by entities and product solutions of MYbank.

Entities	Financial Dilemmas	Product Solutions
Upstream suppliers	Accounts receivable have not been settled, resulting in a shortage of funds	Supplier loan, bid-winning loan and other products to alleviate the shortage of funds
Downstream dealers	The upstream purchase requires cash and the downstream account is not due, capital turnover is difficult	Franchisee loan, purchase loan and other products to help with capital turnover
Downstream retailers	There is a time lag between product sales and money collection, resulting in a financial disconnect	Payment collection treasure, monthly payment and other products to help fund return

In the distribution stage, some SMEs will be faced with the problem that the downstream account period has not expired and the upstream purchase must be in cash, which leads to the difficulty of capital turnover. Products such as “payback treasure” and “purchase loan” in the digital supply chain financial product matrix of MYbank can help the downstream accounts to return quickly, provide credit funds for raw material procurement, and solve the capital turnover problems of SMEs. The digital supply chain financial product matrix with full link and full scene coverage of MYbank solves the capital needs of SMEs in all these aspects.

The full coverage of the supply chain adopted by MYbank reduces the intermediate links, and effective funding solutions have been proposed for both upstream and downstream enterprises in Table 1. MYbank’s SCF product could be meet the different funding needs of enterprises facing major funding shortages or turnover issues, and the efficiency of SMEs obtaining loans is increasing [55]. After the problem of funding shortage is solved, SMEs can obtain more loan quotas, which not only alleviates the financing pressure but also expands the financing scale accordingly. The expansion of the financing scale will have a positive impact on the loan demand of SMEs. Therefore, we expect that under the full coverage of MYbank’s supply chain, the loan amount or loan growth rate of SMEs may show an upward trend.

4.3. Sustainable Supply Chain Development

Combined with the above analysis, it can be seen that the traditional supply chain financing business model is single, so the sustainability is poor. On the one hand, the traditional supply chain financing chain is single, and each supply chain financing business on each chain needs to carry out new credit granting and risk assessment based on the information of logistics, information flow and capital flow on the supply chain. On the other hand, the traditional supply chain financing links are separated, and each supply chain financing business needs to build a new chain scene. These defects not only cause the process of supply chain financing to be cumbersome and inefficient but also cause the “one-time” chain construction and credit evaluation to cause the poor sustainability of the supply chain financing business.

These problems lead to the increase in the cost of supply chain financing services provided by commercial banks, the reduction of customer sources and other problems, and restrict the development of SMEs. In the process of SCF business, both borrowers and lenders need to make various efforts to perform the transaction, making the transaction costs a factor that cannot be ignored. Under the traditional SCF model, banks need to invest lots of manpower and material resources to collect information on SMEs, evaluate their credit status and conduct post-loan management, which will increase the transaction costs. For SMEs, they also face the search cost and time costs of participating in SCF. Both banks and SMEs will try to reduce their transaction costs as much as possible.

MYbank injects the concept of sustainable development into the process of developing digital supply chain finance, which effectively increases the sustainability of customer sourcing and the supply chain financing business of SMEs [56]. By means of scene integration, chain extension, resource sharing and value aggregation, MYbank is committed to making every scene construction of the supply chain, every extraction of information flow and every credit evaluation sustainable, which effectively solves the problems of the low efficiency of supply chain financing, resource waste and customer loss. The SCF business saves transaction costs for both borrowers and lenders. According to the transaction cost theory (TCT), the reduction of transaction costs is not only beneficial to the development of both parties but also helps to promote the sustainable development of the entire supply chain.

The increase in sustainability of supply chain financing not only contributes to the development of supply chain finance business of commercial banks but also increases the convenience of financing for SMEs. The realization of the sustainable concept of digital supply chain finance of MYbank is mainly based on the following paths.

Firstly, the digital supply chain finance of MYbank extends each single chain and integrates each single scene to create an ecological relationship network of supply chain finance. Through this relationship network, the one-time positioning and credit granting of multiple and multi-link supply chain financing can be realized to achieve sustainable supply chain financing while reducing the intermediate links and improving the financing efficiency.

Secondly, MYbank fully collects, extracts and penetrates the credit information of each enterprise in the supply chain network into the whole supply chain network. This process is not only intended to sort out the enterprise's own financial indicators and operating conditions but also to use digital technology to highly integrate the massive data in the supply chain network, including its public services, social networking and other aspects, and screen and refine them to become the “intermediary indicators” of lending, so as to achieve “on-demand”. It not only reduces the workload but also greatly increases the probability of the next financing to achieve sustainable supply chain financing.

Thirdly, based on its online payment system, Ali system and some of its own online open platforms [52], MYbank will fully open and share the information, technology and resources it owns, so that they can flow to all the links of the supply chain network, so as to establish an open ecological service system. The rational distribution and balanced sharing of information and resources make the overall value of the supply chain gather,

thus reducing the overall cost of the supply chain, increasing the income, and enhancing the overall sustainability of the supply chain.

Fourthly, the open and inclusive supply chain ecosystem enables MYbank to attract new SMEs to enter the supply chain while capturing the existing customer sources, which forms feedback to the supply chain financial business of MYbank, thus promoting the further extension and integration of the supply chain network, continuously carrying out reasonable circular flow, and promoting the overall sustainable development of the supply chain.

With the continuous promotion and popularization of MYbank's SCF, its service scale will continue to expand. This will bring economies of scale, which will have a positive impact not only on SMEs but also on MYbank's operating conditions. The sustainable concept of MYbank's digital supply chain finance mentioned above shows that MYbank is constantly expanding and optimizing SCF. MYbank uses technological tools, such as big data and artificial intelligence, to improve the efficiency and accuracy of SCF's business. The upgrading of technology requires a large amount of capital investment, and the benefits will be reflected in the financial or operational performance of MYbank, which will have an impact on the overall value of the enterprise. Whether from the perspective of service scale or operational capability, MYbank's development tends to be long term and sustainable. Therefore, we expect the digital development of SCF to have a positive impact on the enterprise value of MYbank.

5. Case Data Analysis

As shown in Section 3.2, the development of MYbank's SCF belonged to the foundation phase in 2015–2018. Since 2018, the digitization of MYbank's SCF has been truly developed. MYbank had a breakthrough in digital supply chain finance from 2018. Therefore, this paper selects the data related to financial indicators in MYbank's annual report and CSMAR from 2018 to 2023.

5.1. Effectiveness Analysis of SMEs

The financing scale and financing availability rate of SMEs in a certain commercial bank or financial institution well reflect the effect of SMEs' financing through that financial institution.

5.1.1. Increased Scale of Finance

The scale of financing refers to the size of loans that an enterprise receives from a commercial bank or financial institution and demonstrates the lending capacity of that commercial bank or financial institution. The financing size can be measured by the average loan balance indicator received by business customers. Table 2 presents the average loan balance and growth rate of SMEs in MYbank from 2018 to 2022. It can be seen that the average loan balance of SMEs in MYbank has shown a positive growth trend from 2018 to 2022 (in Table 2), growing from CNY 30,000 in 2018 to CNY 45,600 in 2022. This indicates that the amount of loans and financing provided to SMEs by MYbank has risen consecutively over the past five years, playing an important role in solving the financing difficulties of SMEs and contributing to the development of the real economy.

Table 2. Average loan balance and growth rate of SMEs in MYbank 2018–2022.

Item	2018	2019	2020	2021	2022
Average loan balance (CNY 10,000)	3.00	3.10	3.81	4.00	4.56
Average loan balance growth rate (%)	/	3.33	22.90	4.99	14.00

Data source: MYbank annual reports.

In addition, Table 2 shows that the growth rate of the average loan balance of MYbank SMEs in 2020 and 2022 is higher than the other years, which are 22.90% and 14.00%, respectively. The possible reasons for this are as follows.

First, as mentioned in Section 3.2, 2019 is in the development breakthrough period of MYbank's digital supply chain finance. During this period, MYbank's digital supply chain finance made a large degree of breakthroughs in its business, products, and technology, which helped MYbank's supply chain finance business to flourish. As a result, the financing scale of SMEs in MYbank has increased significantly and the average loan balance of SMEs has achieved breakthrough growth.

Secondly, MYbank released its digital supply chain finance product matrix "Dayan System" at the end of 2021. It aims to meet the integrated and differentiated financing needs of millions of SMEs, and it has achieved good results. As a result, the financing scale of SMEs in MYbank has significantly increased and the average loan balance has also grown significantly.

5.1.2. Increased Availability of Finance

The financing availability rate refers to the success rate of enterprises applying for loans in a commercial bank or financial institution for financing, which can reflect the effect of the implementation of the enterprise lending business of the commercial bank or financial institution. From an intuitive point of view, according to MYbank's annual report 2022, the loan availability rate of SMEs has increased significantly from 30% to 80% since access to MYbank's digital supply chain finance "Dayan System" began in 2021. This reflects the fact that MYbank has effectively improved the financing success rate and service level of SMEs through its new concept, new model and digital technology.

In addition, the financing availability rate indicator can also be flanked by the number of small and micro enterprises served and the net increase in loans and borrowings. Table 3 reports the side reflection of the financing availability rate of small and micro enterprises in 2018 and 2022. Table 3 shows that the cumulative number of small and micro enterprises served by MYbank exceeded 12.27 million in 2018 and 50 million in 2022.

Table 3. Side reflection of finance availability in MYbank 2018 and 2022.

Item	2018	2022
Total micro and small enterprises served (10,000)	1227	5000
Growth rate of total micro and small enterprises served (%)		307.50
Net Increase in loans and borrowings (CNY million)	18,218	58,185
Growth rate of net increase in loans and borrowings (%)		219.38

Data source: MYbank annual reports.

During the five-year period, MYbank's SCF digital innovation and development has led to a threefold increase in the cumulative number of micro and small enterprises served. It has enabled more micro and small enterprises to obtain loan support. The side reflects that MYbank's digital supply chain finance development has effectively improved the loan availability rate of micro and small enterprises, and it has truly fulfilled its purpose of serving millions of micro and small enterprises.

MYbank's net increase in loans and borrowings is CNY 18,218 million in 2018 and CNY 58,185 million in 2022. During this period, MYbank's digitalization of SCF has resulted in a more than twofold increase in the net increase in loans and borrowings. The growth in MYbank's net increase in loans and borrowings reflects the increased demand for its loans from micro and small businesses.

Internet banks such as MYbank have utilized advanced technologies such as big data and cloud computing to improve the efficiency and accuracy of loan approvals and lower the threshold for loans for small and micro enterprises. This shows that the demand for loans from small and micro enterprises is increasing while the availability of loans is also improving. The above data reflect the effectiveness of MYbank's digital supply chain finance development in 2018–2022 from the perspective of benefiting small and micro enterprises.

5.2. Comprehensive Benefit Analysis of MYbank

Based on the data of relevant financial indicators in MYbank's annual report and CSMAR, the benefits of the implementation of MYbank's digital supply chain finance are comprehensively analyzed by using the economic value added (EVA). The EVA is a comprehensive indicator that evaluates the financial and performance status of an enterprise [57,58], which is an indicator that takes into account the role of the cost of capital from the perspective of capital appreciation, adjusts the accounting profit of the enterprise accordingly, and reflects the performance status of the enterprise more objectively and comprehensively from an economic perspective.

The EVA has a high sensitivity to changes in the financial situation of enterprises. In the process of SCF's digital development, enterprises often need to invest a large amount of capital in technology upgrades and system construction. These inputs can be reflected in the EVA calculation, making the assessment results more relevant. The EVA indicator encourages enterprises to focus on long-term value creation, and the digitization of SCF is one of the most important ways for enterprises to achieve long-term value creation.

Therefore, the EVA of MYbank is calculated to analyze the comprehensive benefits of the implementation of digital supply chain finance on its financial position. Referring to Jankalová and Kurotová's [58] calculation method, the EVA is obtained by Formula (1). The used indicators and data are presented below.

$$\text{EVA} = \text{NOPAT} - \text{TC} \times \text{WACC} \quad (1)$$

where NOPAT is the net operating profit after tax; TC is the total capitalization; and WACC is the weighted average cost of capital.

5.2.1. Net Operating Profit after Tax (NOPAT)

The NOPAT is equal to the net value of sales revenue minus all the operating costs other than interest expense, that is, the sum of the net profit and interest expense. In the EVA theory, it is also necessary to adjust a series of costs and expenses, such as the capitalization of research and development expenses and return of impairment provisions, from the perspective of the cash basis in order to reduce the space for operators to manipulate financial data and artificially set the financial performance, and to try to avoid the distortion of the accounting information, so as to objectively and impartially reflect the real performance of the enterprise in order to more accurately reflect the profitability of the total amount of capital invested in the enterprise. The process of NOPAT calculation is as follows. Table 4 presents the input data for the calculation of MYbank's NOPAT from 2018 to 2022.

$$\text{NOPAT} = \text{Operating profit} - \text{Income tax expense} + [\text{Interest expense} + \text{Impairment loss} + \text{R\&D expense}] \times (1 - \text{Income tax rate}) + \text{Increase in deferred income tax liabilities} - \text{Increase in deferred income tax assets}$$

Table 4. Input data for the calculation of MYbank's NOPAT (2018–2022).

Item	2018	2019	2020	2021	2022
Operating profit	8.12	15.29	17.76	22.03	38.21
Income tax expense	1.39	2.71	4.86	0.91	2.77
Interest expense	0.96	0.00	0.00	1.47	7.63
R&D expense	3.74	5.51	7.30	10.38	11.42
Impairment losses on credit	15.40	16.54	35.97	0.00	0.00
Impairment loss on assets	0.00	0.00	0.00	67.66	73.13
Income tax rate	25	25	25	25	25
Increase in deferred income tax assets	2.74	2.77	−0.16	5.50	1.54
NOPAT	19.07	26.34	45.50	75.27	103.02

Note. All units in the table are in 100 million (CNY), except for the income tax rate unit, which is in percent (%). Data source: MYbank annual reports.

MYbank's NOPAT can be obtained by calculating the data in Table 4. MYbank's NOPAT rises from CNY 1.907 billion in 2018 to CNY 10.302 billion in 2022. The NOPAT in 2022 is 5.4 times higher than that in 2018. The rise in the NOPAT shows that there is an improvement in MYbank's profitability during these five years, which proves that MYbank's operations are sustainable. MYbank's R&D expenses are CNY 0.374 billion in 2018 and CNY 1.142 billion in 2022. The R&D investment has been rising every year, which shows that MYbank has emphasized technological development during this period to provide technological security for the digital development of SCF.

5.2.2. Total Capitalization (TC)

The total capital includes the debt capital (invested by creditors) and shareholders' equity capital, which is the book value of all the capital invested in the enterprise. The need to consider the cost of equity capital is the main difference between the EVA and the traditional net profit-centered financial performance system for invested capital. Considering the industry characteristics of the banking industry itself, MYbank's debt capital is only bonds payable. The TC calculation process is as follows. Table 5 lists the input data for the calculation of MYbank's TC from 2018 to 2022.

$$TC = \text{Shareholders' equity} + \text{Provision for impairment of assets} - \text{Deferred income tax assets} + \text{Bonds payable}$$

Table 5. Input data for the calculation of MYbank's TC (2018–2022).

Item	2018	2019	2020	2021	2022
Shareholders' equity	53.65	105.18	139.89	179.40	214.97
provision for impairment of assets	15.40	16.54	35.97	67.66	73.13
Deferred income tax assets	5.71	8.48	8.32	13.82	15.36
Bonds payable	19.83	0.00	0.00	32.75	158.87
TC	83.17	113.24	167.54	266.00	431.61

Note. All the units in the table are in 100 million (CNY). Data source: MYbank annual reports.

MYbank's TC can be obtained by calculating the data in Table 5. It could be seen that MYbank's TC has shown a positively growth trend in Table 5, from CNY 8.317 billion in 2018 to CNY 43.161 billion in 2022. An increase in the TC usually means that the bank has greater financial strength to support the expansion of its business scale. For MYbank, this could mean being able to serve more SMEs and companies in the supply chain, further consolidating its market position in the SCF field. And with the improvement in the TC, MYbank's competitiveness in the market may also be enhanced.

5.2.3. Weighted Average Cost of Capital (WACC)

The weighted average cost of capital (WACC) is the composite cost of capital calculated by a firm using the proportion of two different types of capital in the total capitalization as weights, which is the cost of financing and the minimum expected return on the shareholders' return on their investment. The WACC is calculated by Formula (2).

$$WACC = E/(E + D) \times K_e + D/(E + D) \times K_d \times (1 - T) \quad (2)$$

where E is the equity capital; K_e is the cost of equity capital; D is the debt capital; K_d is the cost of debt capital; and T is the income tax rate. $K_d \times (1 - T)$ is the after-tax cost of debt capital; $E/(E + D)$ is the ratio of owner's equity to total capital; and $D/(E + D)$ is the ratio of interest-paying debt to total capital.

MYbank's interest-bearing liabilities are bonds payable, which all have a maturity of more than two years. Therefore, this paper uses the 3-year bank loan rate to calculate the cost of debt capital K_d .

The cost of equity capital K_e is calculated using the capital asset pricing model (CAPM). The risk-free rate in this paper uses the benchmark three-year treasury bond rate for each

year. Since MYbank is not a listed company, the joint-stock bank Huaxia Bank is chosen as the benchmark company. The β -value of Huaxia Bank for 2018–2022 is used, and the data are obtained from CSMAR financial data. Due to irrational movements in the stock market, the market risk premium is taken as China's GDP growth rate from 2018 to 2022. K_e is calculated by Formula (3). Table 6 lists the input data for the calculation of the cost of equity capital from 2018 to 2022.

$$K_e = \gamma_f + \beta \times \gamma_m \quad (3)$$

where γ_f is the risk-free rate of return; and γ_m is the market risk premium.

Table 6. Input data for the calculation of the cost of equity capital K_e (2018–2022).

Item	2018	2019	2020	2021	2022
Risk-free rate of return (γ_f)	4.00	4.00	3.97	3.80	3.35
Market risk premium (γ_m)	6.70	6.00	2.30	8.10	3.00
β -value	0.80	0.72	0.93	0.61	0.51
Cost of equity capital (K_e)	9.36	8.30	6.11	8.73	4.88

Note. All the units in the table are in percent (%), except for the β -value. Data source: CSMAR database and National Bureau of Statistics of China.

The cost of equity capital for MYbank can be obtained from the data in Table 6. The cost of equity capital decreases from 9.36% in 2018 to 4.88% in 2022. The decrease in the cost of equity capital reflects the reduction in MYbank's financing cost and the increase in investors' confidence in MYbank. This may be due to a combination of risk reduction, operational efficiency improvement, and market expansion brought about by SCF's digital development. From Formula (2), it can be seen that the cost of equity capital is positively correlated with the WACC, and the decline of equity capital also affects the WACC, which means MYbank can improve its operational stability.

The WACC of MYbank for 2018–2022 is calculated based on Formula (2) and the data obtained above. Table 7 reports the results of the WACC calculation. In 2018, MYbank's WACC was 8%, although the overall trend in the WACC fluctuated slightly over the period. However, it eventually decreases to 4.4% in 2022. The decline of the WACC usually means that MYbank's operational soundness has been enhanced. This may be due to the digital development of SCF, which has enabled MYbank to make significant progress in risk management and operational efficiency. The reduction of the WACC helps to enhance MYbank's profitability, thereby reducing the demand for its risk premium by investors. The enhanced operational soundness helps to boost investors' confidence in MYbank and lays a solid foundation for its future growth.

Table 7. Input data for the calculation of MYbank's WACC (2018–2022).

Item	2018	2019	2020	2021	2022
Debt capital	19.83	0.00	0.00	32.75	158.87
Equity capital	63.34	113.24	167.54	233.25	272.74
Debt capital ratio	23.84	0.00	0.00	12.31	36.81
Equity capital ratio	76.16	100.00	100.00	87.69	63.19
After-tax cost of debt capital	3.68	3.68	3.68	3.49	3.56
Cost of equity capital	9.36	8.30	6.11	8.73	4.88
WACC	8.00	8.30	6.11	8.08	4.40

Note. The unit in the table in the first two row is 100 million (CNY), and the rest are %. Data source: MYbank annual reports.

5.2.4. Economic Value Added (EVA)

The EVA is calculated based on Formula (1) and the above data. Table 8 reports the EVA of MYbank from 2018 to 2022. Table 8 shows that MYbank's economic value added reached CNY 1241 million in 2018, rising to CNY 8404 million in 2022. It could be seen that MYbank's EVA shows continuous and significant growth during this five-year period.

The EVA takes account of the cost of all the capital and more truly reflects MYbank's value creation ability.

Table 8. Calculation of MYbank's EVA for 2018–2022.

Item	2018	2019	2020	2021	2022
NOPAT	19.07	26.34	45.50	75.27	103.02
TC	83.17	113.24	167.54	266.00	431.61
WACC	8.00	8.30	6.11	8.08	4.40
EVA	12.41	16.95	35.26	53.77	84.04

Note. All the units in the table are in 100 million (CNY), except for the WACC, which is in percent (%). Data source: MYbank annual reports.

The rapid growth of MYbank's EVA is due to the improvement of the effectiveness of the digital supply chain finance, which reflects MYbank's good performance status and development prospects from the economic point of view. MYbank's digital supply chain finance has been developing rapidly, and the effectiveness of MYbank's digital supply chain finance has continued to improve due to the growing number of SMEs' customers and business volume, the constantly enriched integrated product system, and the breakthroughs in digital credit-granting technology. MYbank's development of digital supply chain finance not only solves the funding problems of SMEs but also fully demonstrates and enhances its corporate value.

In addition, as shown in Section 5.1, the development of MYbank's digital supply chain finance has broadened the financing scale of SMEs and satisfied the loan demand of SMEs to a much greater extent. The positive benefits of MYbank's digital supply chain finance for SMEs further contributed to MYbank's EVA improvement.

The EVA enhancement fully reflects the management concept of creating value for the enterprise and contributes to the creation of value wealth for MYbank itself and wider society. MYbank's EVA enhancement gives MYbank more incentive to continue to serve SMEs. MYbank has more incentive to develop digital technology by which SCF can better satisfy the financing needs of SMEs, to enhance the financing efficiency of SMEs, and to provide more convenient and efficient financial services for SMEs. Therefore, a positive circular flow is formed.

6. Conclusions and Implications

6.1. Conclusions

Based on the perspective of combining SCF and digital development, this paper takes MYbank as the case subject. Firstly, we review the literature related to SCF and analyze the current trend of SCF, and we introduce the basis of case selection and its innovation process. Secondly, the digital innovation concept of MYbank's supply chain finance is analyzed in the case. Finally, based on the data related to MYbank's financial indicators from 2018 to 2022, it is divided into two perspectives, SMEs and MYbank, to quantitatively analyze the implementation effect of MYbank's digital supply chain finance. The main conclusions are as follows.

We review the relevant literature on SCF and find that the integration of finance and technology is a global trend. The addition of digital technology can, to a certain extent, solve the problems of information asymmetry and high transaction costs in SCF. Moreover, driven by policies, Chinese commercial banks and other financial institutions are supportive of the further development of SCF.

The case study of MYbank found that in the practice of digital supply chain finance, MYbank responded to the relevant policies and flexibly applied the new concepts of decentralization of supply chain finance, full coverage of supply chain links, and sustainable development of supply chain, and it practiced them through digital technology in SCF business.

The case data analysis shows that the scale of financing and the rate of financing availability have been improved for SMEs. The average loan balance provided by MYbank to SMEs was in a trend of positively growth from 2018 to 2022. Since MYbank's adoption of the "Dayan System" (the result of digital supply chain finance) in 2021, the loan availability rate for SMEs has increased significantly from 30% to 80%. It can be seen that MYbank's SCF's digital innovation has broadened the financing scale of SMEs and more effectively met their financing needs. As Song et al. [59] have shown, the SCF uses digital technology with clear support for the financing of SMEs, and digital platforms are providing more effective services to SMEs [60,61].

The analysis of MYbank's comprehensive benefits reveals that MYbank's EVA shows continuous and significant growth during the period of SCF's digital innovation and development in 2018–2022. This reflects MYbank's good performance status and development prospects from an economic perspective. This shows that MYbank's development of digital supply chain finance not only solves the financing problems of SMEs but also fully demonstrates and enhances its own corporate value. The EVA increase gives MYbank more incentive to provide more convenient and efficient financial services for SMEs. This finding is consistent with the findings of the studies by Blackman [62] and Li [63] that the combination of SCF and digital technology has a positive impact on the business performance of banks and lending companies and their enterprise value.

6.2. Implications

SMEs account for a relatively high proportion of China's economic contribution, and the question of how to meet the financing needs of SMEs and alleviate the financing of SMEs is the focus of research. This study introduces the application effect of MYbank's financial technology in specific supply chain scenarios to provide the precise needs of SMEs. It emphasizes that MYbank's innovative practice promotes the application of digital technology in the SCF field. Particularly, MYbank proposes corresponding solutions to the problems of SMEs' financing difficulties, high financing costs and information asymmetry. In the process of practice, MYbank's innovative models and concepts can be used as references by other financial institutions to enhance the efficiency and coverage of SCF services. MYbank's application of digital technology well fills the gap in the digital innovation practice of banks or financial institutions in SCF.

The significance of this study lies in demonstrating the effectiveness of combining SCF and digitalization using individual cases of commercial banks. Compared with related studies [18,23,63], this study makes progress in analyzing banks or financial institutions. Commercial banks are the group that serves SMEs, and their improvement in the scale and efficiency of SMEs' services can positively contribute to the sustainable development of the entire supply chain. The results of the data analysis also prove the effectiveness of MYbank's digital development in SCF. Both for SMEs and for MYbank, it promotes their development in the SCF process. Based on MYbank's theoretical analysis and data results, we propose the following recommendations.

In the supply chain finance business, commercial banks often face a credit risk, operational risk and liquidity risk, so risk control has become an inevitable link in the SCF business. In the process of risk control, MYbank emphasizes the application of digital technology and builds an intelligent risk control system to effectively control risks. Commercial banks and other financial institutions can strengthen the use of digital technologies such as big data and cloud computing to achieve intelligent risk control when facing all kinds of traditional risks in the SCF business and some new risks brought about by market changes. By strengthening the training of digital intelligence technology talents and investment in financial technology research and development, commercial banks and other financial institutions can practice the digital intelligence risk control strategy and continuously improved the risk management level of their supply chain finance business.

The financing needs of SMEs are increasingly diverse and differentiated. This is not only reflected in the diversification of financing scale but also in the different needs of

multiple dimensions, such as financing methods, financing periods and use of funds. With the continuous innovation of the SCF market, the financing scale and financing availability of SMEs have been improved to a certain extent, which provides strong support for their development. However, we must continue to deepen our services to and support for SMEs to ensure that their financing needs are met in a comprehensive, timely and effective manner. As an important part of the market economy, the satisfaction of SMEs' financing needs is directly related to their survival and development, and it then affects the national economy. Therefore, it is still an important task in the current financial field to continue to pay attention to and conduct research on the financing needs of SMEs and provide more convenient and transparent channels for SMEs to obtain financing.

SCF's digital development has brought significant EVA enhancement to MYbank. However, the intervention of digital technology does not come without cost. While commercial banks and other financial institutions are enjoying the dividends of digitization, they are also facing the challenge of surging capital investment. Infrastructure upgrades and data security enhancements all require financial support. For example, in 2021, MYbank released the "Dayan System", and its cost of equity capital rose. This means that banks need more capital to support loan origination and risk management.

The increase in capital investment will impose a certain financial burden on commercial banks and other financial institutions in the short term, and it may even affect their profitability and market competitiveness. The timely introduction of policies is particularly important. The government can introduce more preferential policies to encourage financial institutions to increase investment in SCF digitization, especially credit support for SMEs. Through tax deductions and risk compensation measures, commercial banks and other financial institutions can reduce the financing costs and risks of serving SMEs and provide strong support for their digital transformation.

6.3. Limitations

This study is based on a single case, which limits the generalizability of the findings. Digital technology is constantly evolving and its integration with SCF has been demonstrated in other examples. Careful consideration needs to be given to the applicability and limitations of the findings of a particular case when applying them directly to other banks or financial institutions. This study analyzes the development of digital supply chain finance in commercial banks in developing countries, and more extensive research is needed to derive global trends.

The other possible limitations in this case are the selection of data or indicators. For data collection, multiple cases or industry data analysis can be used in subsequent studies to obtain more objective results. In addition, for the measurement of the economic value of the enterprise in addition to the EVA, it can be judged from the comprehensive ability of the enterprise in many aspects, such as profitability and solvency. In the process of digital development of SCF, the environment is also a factor that cannot be ignored. In future research, we believe that we can analyze the enterprise from the aspect of environmental, social and governance (ESG).

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