Analysis of supply chain finance development model for SF Holdings: comprehensive study for SMEs' financial accessibility

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Abstract. The supply of funds is a very important part of their development. Due to the problems of small and medium-sized enterprises with insufficient credit in banks and fewer mortgageable assets, it is challenging to obtain funds from banks for development and operation. Supply chain finance can help it solve these problems. Supply chain finance focuses on core enterprises, manages the capital flow, logistics and information flow of upstream and downstream small and medium-sized enterprises, and transforms the uncontrollable risks of a single enterprise into the controllable risks of the supply chain enterprise. The risk is controlled in the lowest financial service through three-dimensional access to various information. As the leader of China's logistics enterprises, SF Holdings has a mature supply chain management system and big data analytics capabilities and has more enterprise information, which can provide related financial services for small and medium-sized enterprises. This paper will study the supply chain finance model of SF Express Holdings, analyze its development and existing problems, put forward corresponding suggestions, and make predictions for its future development and the development of supply chain finance.

1 Introduction

In recent years, supply chain financing has received strong support from the state as a new financing tool. Supply chain finance is an innovative business that is based on the operation of the industrial supply chain and forms supply chain credit based on the transactions, logistics and other business and information generated between the parties involved in the supply chain, thereby providing comprehensive financial financing services for small and medium-sized enterprises in supply chain operations [1]. More and more small and medium-sized enterprises have begun to apply supply chain finance, and the results have been very significant [2]. It has also attracted the attention of all walks of life. Although small and medium-sized enterprises are not the main chain enterprises in supply chain finance, they can rely on the main chain enterprises, form a credit combination, and carry out financing business. This combination eliminates the shortcomings of insufficient fixed asset mortgage and obtains financial support lower than the loan interest rate of traditional Financial Institution Groups. It also relies on the capital flow injected by financial innovation to achieve its development.

Driven by China government's economic development and national policy incentives, small and medium-sized enterprises have sprung up and thrived in all walks of life. Small and medium-sized enterprises with large scale and volume have increasingly become important in China's economic and social development in solving employment problems, contributing to tax revenue problems, and stimulating market vitality.

After China's economy has entered a stage of high-quality development, with the increase of economic and trade activities in various countries, the acceleration of the process of world economic integration, the increasingly fierce market competition, and the occurrence of events such as COVID-19, the living environment of small and medium-sized enterprises have become more and more difficult. In the crisis of interruption or even depletion of capital flow, the dilemma of difficult financing and expensive financing gradually hinders its healthy development, and it is urgent to break the situation in the way of financing.

The studies of supply chain finance mainly from the perspective of commercial banks or large manufacturing enterprises. It focuses on theoretical research, such as risk management and legal systems, while the actual supply chain finance case studies could be more extensive and shallower. With the rapid development of Internet technologies such as the Internet of Things, big data, and blockchain, logistics companies are becoming increasingly important in supply chain finance. Therefore, it is very important to focus on the research on supply chain finance of logistics companies [3-5].

Taking SF Holdings, a leader in the logistics industry, as an example, this paper understands the general situation of SF Holdings and the development process

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and specific model of SF Holdings' supply chain finance business through actual cases, analyzes the characteristics of this model, and then studies SF Holdings' supply chain finance business. Motivation and effect point out the risks existing in the current SF Express supply chain finance business and propose corresponding risk management measures.

2. SF Holdings overview and financial case introduction

According to the data of the National Bureau of Statistics, with the continuous expansion of the scale of the logistics industry, in response to the call for national logistics development and financial support for industrial growth, based on expanding business and increasing profit growth points, it has also eased the financing of upstream and downstream small and medium-sized enterprises. Since 2019, SF Express, a leading enterprise, has begun to deploy in supply chain finance. In the context of introducing part of SF Express's core competitiveness in the 2019 SF Holdings financial report, it is clearly stated that SF Express should use scientific and technological strength to build the unique core competitiveness of the industry. It is necessary to strengthen the construction of data ecology, including using blockchain technology to build a traceability platform and a supply chain finance platform.

2.1 SF Holdings' corporate background and supply chain finance business

Founded in 1993, SF Holdings is committed to logistics transportation and supply chain management. The company has more than 500,000 square meters of logistics centers, more than 30,000 self-operated outlets, more than 30,000 professional couriers and more than 1,700 express vehicles worldwide. It has developed into one of several logistics giants worldwide.

The supply chain finance business of SF Holdings is mainly divided into two aspects: supply chain finance solutions and supply chain finance products. Supply chain finance solutions refer to a complete set of supply chain financing solutions SF Holdings provides for small and medium-sized enterprises. SF Holdings' supply chain finance solutions cover the Chinese mainland and Hong Kong, including e-commerce, manufacturing, wholesale and retail, and service industries. The program's core is to connect core enterprises, suppliers and Financial Institution Groups through the SF Express Fengluo platform and the SF Express Supply Chain Finance platform to realize capital flow and financing support.

2.2 The position of SF Holdings in the field of supply chain finance

SF Holdings is a leading supply chain finance company among Chinese logistics companies, and its market share in mainland China and Hong Kong continues to expand due to its extensive express network and logistics coverage. SF Holdings provides supply chain services worldwide and has a self-operated logistics network with a coverage rate of over 85%. The core advantage of SF Holdings is to use a large amount of logistics data and anti-fraud models to assess potential risks and realize intelligent financing solutions and a higher level of risk control. However, as more and more Financial Institution Groups enter the supply chain financial market, market competition intensifies, and regulations and norms in this field are gradually improving. Therefore, SF Holdings needs to continuously develop and improve its supply chain financial products and services to maintain a competitive advantage while actively responding to regulatory and regulatory changes.

2.3 Main models of supply chain finance in SF Holdings

SF Holdings offers four main supply chain finance models: warehousing, factoring, Shunxiaodai, and order financing.

Warehousing financing is a supply chain finance model that uses warehousing assets as collateral or guarantee for financing. It includes warehouse receipt financing, mortgage loans, bridge loans, and leasing. This model allows enterprises to obtain funds using their warehousing assets. By using warehousing assets as collateral or a guarantee for financing, companies can meet their financial needs in the supply chain, improve liquidity, and support business development.

Factoring financing involves transferring accounts receivable to a factoring company to obtain financing. It includes open account factoring, undisclosed, single factoring, and double factoring. This model provides fast cash flow, reduces accounts receivable risk, and provides more funds for business operations and development. By purchasing or assuming accounts receivable, factoring companies enable companies to obtain funds in advance without waiting for customer payments. Additionally, factoring companies often provide services related to accounts receivable management, such as collection and risk management, thereby reducing the operational burden on enterprises.

Shunxiaodai is a small credit loan launched by SF Holdings, which provides loan services to small and micro enterprises through cooperation. Small and micro enterprises can apply for financing from Shunxiaodai to meet their fund needs for business development and working capital turnover. The loan amount and interest rate are determined based on the enterprise's credit assessment, business situation, and loan demand.

Order financing supports funding by using pending orders as collateral or a guarantee. This allows companies to receive financial support before production, reducing financial pressure and promoting business growth.

The main operating platform for supply chain finance in SF Holdings is "Shunyinfeng" (SF Finance). The platform has two main functions. First, it provides a funding platform for small and micro enterprises using SF services. It offers various supply chain financial products and helps enterprises match with more favorable funding institutions and products. Second, it recommends suitable customers to numerous funding parties cooperating with SF Finance, providing risk control and data services to help financial institutions expand their customer base more securely.

One supply chain finance model promoted by SF Holdings on the SFYF platform is called "collateralized financing with goods in the warehouse," also known as "pledge of property rights." This model involves a tripartite agreement among borrowing enterprises, qualified financial institutions, and logistics companies (SF Holdings) representing small and micro enterprises, reached on the SF Holdings-led platform. Borrowing enterprises pledge their collateral in warehouses under the control of SF Holdings, and the logistics company conducts a reasonable valuation of the collateral. Borrowing enterprises then apply for financing from financial institutions based on the valuation report and warehouse receipts. Financial institutions provide a certain proportion of financing loans based on the value of the collateral and other relevant factors. Before this, financial institutions also determine a financing limit range based on factors such as the scale of the logistics company, supply chain control capabilities, and warehouse management level. Afterward, customers can receive the corresponding financing within the predetermined limit range when they need funds due to cash flow issues. This approach helps solve the problem of inventory liquidity for small and medium-sized customers and enhances fund circulation. SF Holdings has a large number of logistics centers and millions of square meters of warehousing space under its group and strong advantages in land and air transportation. Additionally, timely consolidation of vehicle dispatch and warehousing information nationwide facilitates convenient information exchange and comprehensive management. Ultimately, this model enables warehousing financing for SF Holdings' customers, expands its sources of income, and further enhances its reputation in society.

2.4.Supply chain finance products offered by SF Holdings

2.4.1 Wine warehouse loan

This product primarily targets wine and liquor customers who will soon become SF Holdings' clients. There are three admission criteria: first, existing customers with normal settlement after warehousing; second, new customers who have been admitted for warehousing; third, branded liquor distributors (including but not limited to Baijiu, whiskey, beer, etc.). The specific plan involves determining a credit limit of 50% of the cost value of wine in the warehouse, up to 10 million, with an annual interest rate of 10%. The funds are used for upstream procurement. This product model provides customers with comprehensive services combining warehouse, distribution, and finance, which is replicable. It helps activate customers' inventory assets, address short-term turnover needs, and increase business volume while boosting SF's warehousing and distribution business income.

2.4.2 Auto parts warehouse loan

This product is similar to the Wine Warehouse Loan and is a financial product offered to automotive parts suppliers who are or will soon become SF Holdings' clients. It also has three criteria: first, the customer belongs to the automotive parts industry; second, they are currently using or will soon use SF's warehousing or supply chain services; third, they are either independent customers of small and micro-enterprises or associated customers in the upstream or downstream of core enterprises. The specific plan involves granting a credit based on the value of goods in the customer's warehouse, with a limit of 10 million, 12 months, and a 6-month individual loan term. SF provides warehousing and distribution services through a third-party supplier and deploys operational personnel on-site to supervise outbound shipments and control risks. The systems of both parties are interconnected, and the supply chain finance system issues real-time warnings and controls outbound shipments based on the changing warehousing status.

2.4.3 3C warehouse loan

This product is primarily offered to 3C customers already in SF's warehouse or will soon be. It mainly covers industries such as mobile phones, home appliances, and digital products. The specific plan involves granting a certain credit based on the value of goods in the customer's warehouse, with a limit of 3 million, 12 months, an annual interest rate of 10.8%, and a pay-as-you-go repayment option with daily interest calculation. For branded mobile phones such as Huawei and Xiaomi, the credit limit is calculated based on 50% of the cost purchase price of the pledged goods [6].

2.5. Key features of SF Holdings' supply chain finance

2.5.1 Comprehensive coverage of the supply chain

SF Holdings' supply chain finance aims to provide financial services to the entire supply chain ecosystem, including logistics, warehousing, distribution, and suppliers. Through close collaboration with all parties in the supply chain, SF can offer comprehensive financial support to enterprises, thereby optimizing the efficiency of the supply chain.

2.5.2 Integration of logistics and financial services

As a comprehensive logistics company, SF Holdings integrates logistics and financial services. By combining its extensive logistics network and expertise in financial services, SF can provide tailored supply chain finance solutions that cater to the specific needs of businesses, promoting seamless integration between logistics and finance operations.

2.5.3 Emphasis on small and micro enterprises

SF Holdings' supply chain finance products focus on supporting small and micro enterprises, often facing challenges in accessing traditional financing options. By offering flexible and specialized financial solutions, SF helps these enterprises improve their cash flow, enhance liquidity, and stimulate business growth.

2.5.4 Innovative financial products and services

SF Holdings continuously introduces innovative supply chain financial products and services to meet diverse business needs. SF's flexible financing models, such as warehousing financing, order financing, and factoring, along with related financial services like supply chain management and payment settlement, help businesses optimize cash flow, reduce risks, and promote business growth.

2.5.5 Integration of partner resources

SF Holdings actively integrates internal and external partner resources to build a collaborative ecosystem. SF Holdings can offer more comprehensive financial services, expand financing channels, and improve service quality and efficiency by partnering with financial institutions, insurance companies, technology providers, and others.

3. Risks and challenges facing SF Holdings' supply chain finance

This section addresses SF's supply chain finance's risks and challenges, including funding, credit, privacy, and other issues. The following solutions and recommendations are proposed to tackle these challenges.

3.1. Funding risk

The logistics industry faces significant challenges due to large capital investments and long turnover cycles, resulting in high operating costs. SF Holdings primarily relies on its funds to provide financing for developing its supply chain finance business. However, any operational issues can lead to a disruption in its funding chain and business stagnation.

According to SF's 2020 annual report, as of December 31, 2020, SF Holdings had a total of CNY 41.809 billion in current liabilities, including short-term borrowings of CNY 7.997 billion, accounts payable of CNY 15.485 billion, employee compensation payable of CNY 4.31 billion, and taxes payable of CNY 1.855 billion. Non-current liabilities maturing within one year amounted to CNY 2.945 billion. Although SF launched logistics industry park ABS projects from 2018 to 2020, the monetization capability of this model could be faster. Additionally, due to the unique nature of the logistics industry, SF needs to possess high capital operation capabilities.

SF Holdings' funding sources for its supply chain finance business are relatively limited, mainly relying on retained funds, self-credit, and capital market financing. However, if a significant portion of retained funds is used for supply chain finance, it may impact the company's normal operations. SF has invested substantial funds in warehousing, transportation, and other aspects, resulting in limited retained funds. Therefore, SF can only rely on self-credit or capital markets for financing, which pose certain funding risks.

Since its listing in 2016, SF Holdings has been able to raise funds through the capital market. However, excessive issuance of stocks can lead to equity dilution and loss of operational control. As the supply chain finance business expands, SF needs more funds to support it. Efficient, secure, and cost-effective financing and the prevention of funding risks are pressing issues that SF must address.

3.2. Credit risk

When SF is carrying out supply chain finance business, the main credit risk SF faces is upstream and downstream customers. As SF's supply chain finance business continues to develop, it is increasingly difficult to identify the credit risk of loan customers. In integrating information on logistics, information flow and capital flow in the supply chain, SF also has to analyze and integrate different customer data collected to determine different credit levels. At present, SF's credit risk identification and control mainly focus on "transaction data", "business registration information", "financial statements", "logistics information" and "credit information" of the lending enterprise. The five parts are "logistics information" and "billing information since cooperation", and the main credit risk identification comes from "transaction data". However, SF cannot fully identify the credit risk level of an enterprise through transaction data, as the operational data of an enterprise is the result of multiple factors, the most important of which is its operating conditions, and also influenced by partners, upstream and downstream enterprises in the supply chain and national policies. Therefore, controlling the financial risk of such enterprises is difficult, and SF needs to analyze its pre-lending and post-lending supervision to minimize the credit risk.

3.3. Privacy risk

A complete financing process includes "credit, verification, valuation, transportation, storage and delivery", each requiring a large workforce to operate. If there is a human error in one part, the whole business will not be carried out. As of December 31, 2020, SF Holdings had the highest percentage of operational employees, accounting for 54% of the total number of employees. Still, the large base of operational personnel may lead to the risk that employees need professional operational capabilities, which may harm the interests of the enterprise. The specific operational risks of SF Holdings include improper valuation of the collateral, making the financing amount provided significantly too high, inconsistency between the delivered assets and the written records due to errors in checking the accounts by the receiving and inspection personnel, loss and damage of the inventory goods due to improper management by the warehouse management, etc. This series of operational risks will affect the interests of the enterprise and damage the image of the enterprise. At the same time, natural disasters and other force majeure factors have a greater impact on SF warehousing. SF needs to develop perfect emergency treatment plans to deal with the risk of a warehouse fire, rain leakage, etc.

4. Countermeasures to prevent the risk of supply chain finance of Shunfeng Holdings

4.1. Build a perfect credit supervision system

First, strengthen the supervision of customer credit. When SF provides supply chain finance business to SMEs, it needs to fully collect their credit information and analyze the information comprehensively and systematically to control their detailed dynamic data, and finally form an accurate credit evaluation result for the enterprise. More assessment methods should be added for enterprises using the service for the first time, and the supervision of their ability to repay after the loan should be increased. At the same time, enterprises can also adopt ways to avoid risks, such as suspending cooperation or replacing personnel. By taking various methods to increase customers' credit supervision, we can reduce the loan risk of the SF supply chain finance business, provide more opportunities to SMEs with conditions and financing needs, and promote the more stable development of this business.

Second, the establishment of a corporate credit database. The most risky stage of SF's supply chain finance business is the stage of repaying the loan after the loan, and the failure of SMEs to repay the loan on time will lead to economic losses for SF. Therefore, SF can use its main logistics business to collect information on enterprises' business status and repayment ability and build a corporate credit database to grasp supply chain SMEs' creditworthiness fully. Establish an online operation platform where operators operate online, from signing contracts to completing cooperation. By constructing an enterprise credit database, SF can identify the credit risk of enterprises more efficiently and conveniently, and predict the possibility of default in advance, thus reducing the loss caused by SMEs' default. Before the loan, filter out bad credit to choose enterprises with better credit conditions to reduce the risk of default. After the loan, always supervise the loan enterprise, pay attention to the flow of funds, clarify the use of funds, and also pay attention to the dynamic changes in the credit status of the loan enterprise, timely update the enterprise credit database. And supervise and manage their operation norms, and provide timely feedback in case of irregular operation.

Finally, build a perfect pre-credit risk warning mechanism and post-credit management system. SF's supply chain finance business is a loan service based on a whole supply chain, and when there is a problem in a certain link of the service, it may affect the whole link. SF can identify credit risks in advance by building a pre-lending risk warning mechanism to prevent unnecessary losses. And in the post-loan, when the enterprise improperly uses funds, the flow of funds is broken, leading to the difficulty of loan recovery; the post-loan management system can quickly identify the risk in time to reduce the degree of harm. These two systems completely cover both the pre-lending and post-lending aspects of SF and comprehensive monitoring of the financing process can effectively reduce the credit risk of enterprises and reduce SF's losses [7, 8].

4.2. Strengthen the introduction and training of high-quality talents

First of all, high-quality logistics talents with professional competency should be employed in employing personnel. If enterprises want better development, the introduction and cultivation of talents are not negligible. Nowadays, logistics enterprises are not only traditional transportation and warehousing, but also the use of blockchain, big data and other technologies require more and more participation of Internet technicians, which involve cryptography, artificial intelligence and other disciplines, so comprehensive logistics talents need to be cultivated continuously. Therefore, SF Holdings should not only make requirements in terms of education when recruiting but also pay more attention to the professional skills of employees as well as the overall ability of employees. After hiring employees, systematic and targeted training should be conducted to improve business capabilities while familiarizing themselves with business processes.

In addition, excellent performance assessment standards should be established, and the corresponding reward and punishment mechanism should be carried out. Employees with outstanding work performance, excellent business ability and compliance with company regulations should be rewarded accordingly. In contrast, employees who are not dedicated, have poor work attitudes and make mistakes in business operations should be punished to a certain extent. To continuously strengthen the system's construction and improve the personnel management level. Through these awards, effective punishment incentives and other systems can attract professional talents and mobilize employees' enthusiasm to ensure the stability and orderliness of the operation process of SF's supply chain finance business.

Finally, the continuing education of in-service employees should be addressed. As logistics technology is constantly updated and iterated, the knowledge reserve of the person also needs to keep up with the times. In-service employees should be trained to become comprehensive logistics personnel, and only through on-the-job training can the future new technologies be better applied to supply chain finance [9-10].

5. Conclusion

This study combines the current actual situation, based on relevant research literature at home and abroad, clarifies the concept, model and characteristics of supply chain finance, takes the case of supply chain finance of SF Holdings as an example, and introduces its development history and four supply chain finance models in detail. In addition, the supply chain finance model of SF Holdings is analyzed in depth from four aspects, including characteristics, motives, effects and risks, and corresponding risk prevention and control measures are proposed. Through the above research, this study draws the following conclusions:

SF supply chain finance has four characteristics, namely, it can integrate information through mainstream business, thus effectively controlling business risks; SF's unique direct mode can greatly protect the risk of warehouse pledge; the funds of this business form a closed loop, which can effectively ensure loan security; and it can promote development and improve the competitiveness of SF's supply chain.

The main reasons for Shunfeng to carry out supply chain finance are: to respond to the national call, to expand the business model, to reduce the financing cost of SMEs in the supply chain and alleviate their financing problems.

The analysis of the effect of supply chain finance by SF has the following findings: firstly, for SF Holdings itself, the development of the supply chain finance business makes its business cover a wider area, which not only improves SF's profitability and risk operation ability but also helps SF improve its corporate competitive performance such as development potential and value creation. Then, for the whole supply chain, the development of SF's supply chain finance business has reduced the financing cost of enterprises in the chain, eased the financing problem of SMEs, and helped SMEs affected by the epidemic to resume work and production, thus enhancing the competitiveness and stability of the whole supply chain.

Although there are business risks such as capital risk, credit risk and operational risks in SF's supply chain finance business, the risks can be controlled by taking corresponding measures, including widening the channels of capital sources, suggesting the establishment of a perfect credit supervision system, and strengthening the introduction and training of high-quality talents.

China's supply chain finance market is still in its initial stage, but due to the huge volume of China's economy, it has a broad prospect and huge development potential. At the same time, China has introduced supporting policies one after another, and relevant laws and regulations have been gradually improved. Supply chain finance will be applied to more fields, helping more small and medium-sized enterprises to solve financing problems and promoting the healthy and stable development of China's economy.

As one of the leading companies in the field of logistics enterprises in China, SF Holdings can achieve significant advantages in the field of supply chain finance through its perfect management system, excellent customer service and advanced information analysis capabilities. The continuous development of SF Holdings' supply chain finance business will set a model to lead the industry development for Chinese logistics enterprises and contribute to the reform and improvement of China's supply chain finance market.

Authors Contribution

All the authors contributed equally,
and their names were listed alphabetically.

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