

Data Enablement: Construction of the “I-shaped” Business Pattern Supply Chain Finance Platform

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Abstract: The article intends to tackle the financing issues for Small and Medium-sized Enterprises (SMEs), construct a supply chain finance platform, and implement risk control. By analyzing the current situation of SMEs and the role of supply chain finance, the platform is designed based on the “I-shaped” Empowerment Model. The platform possesses a variety of functions and advantages, including the ability to access production factors, information integration, risk management, and efficiency enhancement, and it adopts the microservice and distributed architecture. Through the “I-shaped” Empowerment Model and risk control measures, the platform effectively reduces various types of risks, provides reliable financial services for SMEs, and promotes the collaborative development of the supply chain. It will continue to be optimized and improved in the future to make greater contributions to economic development.

Keywords: “I-shaped” Business Pattern, Supply Chain Finance Platform, Implement Risk Control, Small and Medium-sized Enterprises, Data Enablement.

1. Introduction

1.1. Status of Small and Medium-sized Enterprises (SMEs)

Small and medium-sized enterprises (SMEs) constitute the crucial source of Chinese economic vitality, accounting for over 90% of the total number of enterprises in the country, contributing more than 80% of urban and rural employment, more than 70% of high-tech achievements, more than 60% of GDP, and more than 50% of tax revenue [1]. They are indispensable in the national economy. However, for a considerable period, the development of SMEs has been severely hampered by the issues of difficult and costly financing. More than 50% of SMEs are confronted with financial difficulties, believing that the conditions for accessing credit are demanding, and finding it challenging to obtain credit funds from banks [2]. There exists a serious imbalance between the enormous contribution of SMEs and the financial support they receive, as well as a significant mismatch between their importance in economic development and the financial services they enjoy [3].

1.2. Supply Chain Finance

Supply chain finance refers to the practice where banks regard the relevant enterprises in the supply chain as a whole, integrate the information flow, capital flow, and logistics, design programs for the liquid assets of enterprises, and utilize financial products to provide financing services for all enterprises in the supply chain, particularly upstream and downstream small and medium-sized enterprises, in order to address the issue of imbalanced distribution of funds and enhance the competitiveness of the supply chain [4-6].

In an era of deepening global economic integration, it is not a burden for small and medium-sized enterprises (SMEs) to rely on core enterprises for material delivery and the

development of their pathways. If SMEs in the supply chain can obtain low-cost financing funds and put them into operation, they can accelerate their own development, improve the speed of supply chain operation, and create greater synergistic value. Supply chain node enterprises share information, share risks, and complement each other, which can enhance their market competitiveness and market share. Therefore, supply chain finance plays a vital role in the development of SMEs [7-10].

Based on the above background, we have developed and established a supply chain financial service platform for SMEs, aiming to provide them with a full range of financial services, practically assist SMEs in resolving their financing issues, help SMEs progress steadily in the fierce market competition, and inject new vitality into the sustainable development of SMEs.

2. Construction of a New Supply Chain Finance Platform Empowered By “I-shaped” Business Pattern

Currently, common supply chain platforms in the market generally have shortcomings such as insufficient ability to acquire and control factors of production, an incomplete empowerment model, relatively weak risk control ability, a single financing product, and inadequate information integration and sharing. Therefore, to address these deficiencies, we have designed and developed a new type of supply chain financial service platform based on the “I-shaped” Business Pattern, which possesses unique advantages.

The unique “I-shaped” Business Pattern of the supply chain financial service platform is of great significance in promoting the development of the industrial internet and empowering the digital transformation of SMEs, and it has the following specific meanings:

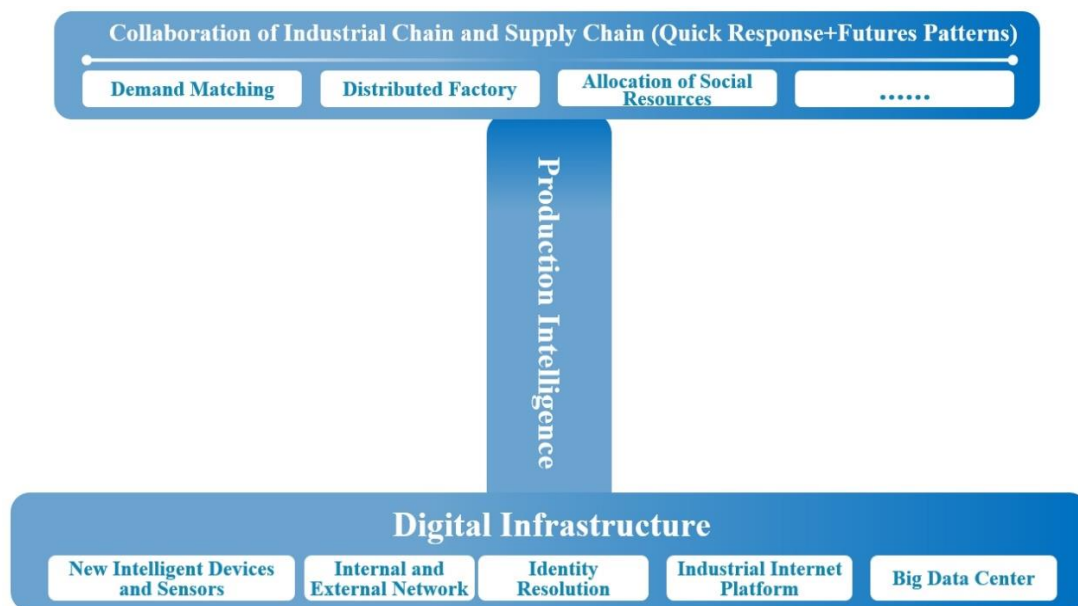


Figure 1. The “I-shaped” Business Pattern

The horizontal part above: By taking orders as a means, it opens up the entire chain from raw material supply, production to distribution within the enterprise, and provides services such as the construction of a digital integrated service platform for industrial parks and governments at all levels around the core enterprise, which can promote information sharing and collaboration between enterprises upstream and downstream of the industrial chain. In this process, the supply chain platform can better integrate industrial chain resources and obtain relevant information on production factors, including the supply of raw materials, the distribution of production capacity, and the sales channels of products, so as to realize the optimal allocation of resources.

The vertical part in the middle: represents production intelligence. Intelligent and innovative applications based on the supply chain financial service platform promote digital transformation and apply technologies such as digital twins, which help improve production efficiency and quality. In the process of production intelligence, the supply chain platform can access real-time data in the production process, such as equipment operation status, production process parameters, and product quality indicators, etc. These data are crucial for optimizing the production process, improving production efficiency, and ensuring product quality, and they also belong to the factors of production.

The horizontal part below: Driven by data elements, through “platform + service”, the industrial digital infrastructure is consolidated, including equipment networking, data interoperability, marking resolution, big data centers, and so on. The construction of these infrastructures provides technical support for the supply chain platform to access production factors, enabling it to obtain more accurate and timely information on production factors, such as the inventory of raw materials, the utilization rate of equipment, and the transportation of logistics, so as to improve the collaborative efficiency and responsiveness of the supply chain.

2.1. Introduction to Platform Functionality

The supply chain platform integrates functions such as information display, commodity trading, supply and demand matching, etc. It is a digital trading platform for channels,

realizing the digital connection from dealers to terminals, enhancing the ability of accurate docking, and improving the efficiency of terminal procurement. It mainly consists of the following functional modules: credit management, repayment management, quota management, customer management, product management, contract management, risk list management, data management, asset management, inbound and outbound inventory and management functions, price tracking platform, supervisory platform application, front-end mall, back-end management system, leveling platform, system management, and so on.

It provides an online self-service ordering platform for self-operated and franchised channel merchants, realizing the self-service, systematization, and standardization of the ordering business and the visualization of order processing, enhancing the business processing efficiency of both parties, and reducing the manpower cost. The platform realizes a unified entrance and unified process management for various business models, which guarantees the standardization and normality of management. However, an order is fulfilled jointly by multiple business entities, and the various aspects of attraction, sales, shipment, and distribution may be completed by multiple organizations, which brings great difficulties to the supervision of fulfillment, financial accounting, and current settlement, and the system needs to fully consider the digitization, standardization, automation, and intelligence of the business and financial processing under the new model. The system needs to fully consider the digitalization, standardization, automation, and intelligence of business financial processing under the new model.

Joint channel business, based on the online business platform integration of existing channels retail, third-party e-commerce platform, retail, official mall retail, and other retail business types, the platform can achieve centralized data control, integrated sales, differentiated market policies, localized order processing, and automated financial settlement, fully realizing the integrated use of traffic, customers, sales channels, service terminals, and other resources, to provide customers with a more convenient and efficient purchasing experience, provide more traffic and orders for channels, help enterprises improve efficiency and save costs, and ultimately achieve the effect of $1 + 1 + 1 > 3$.

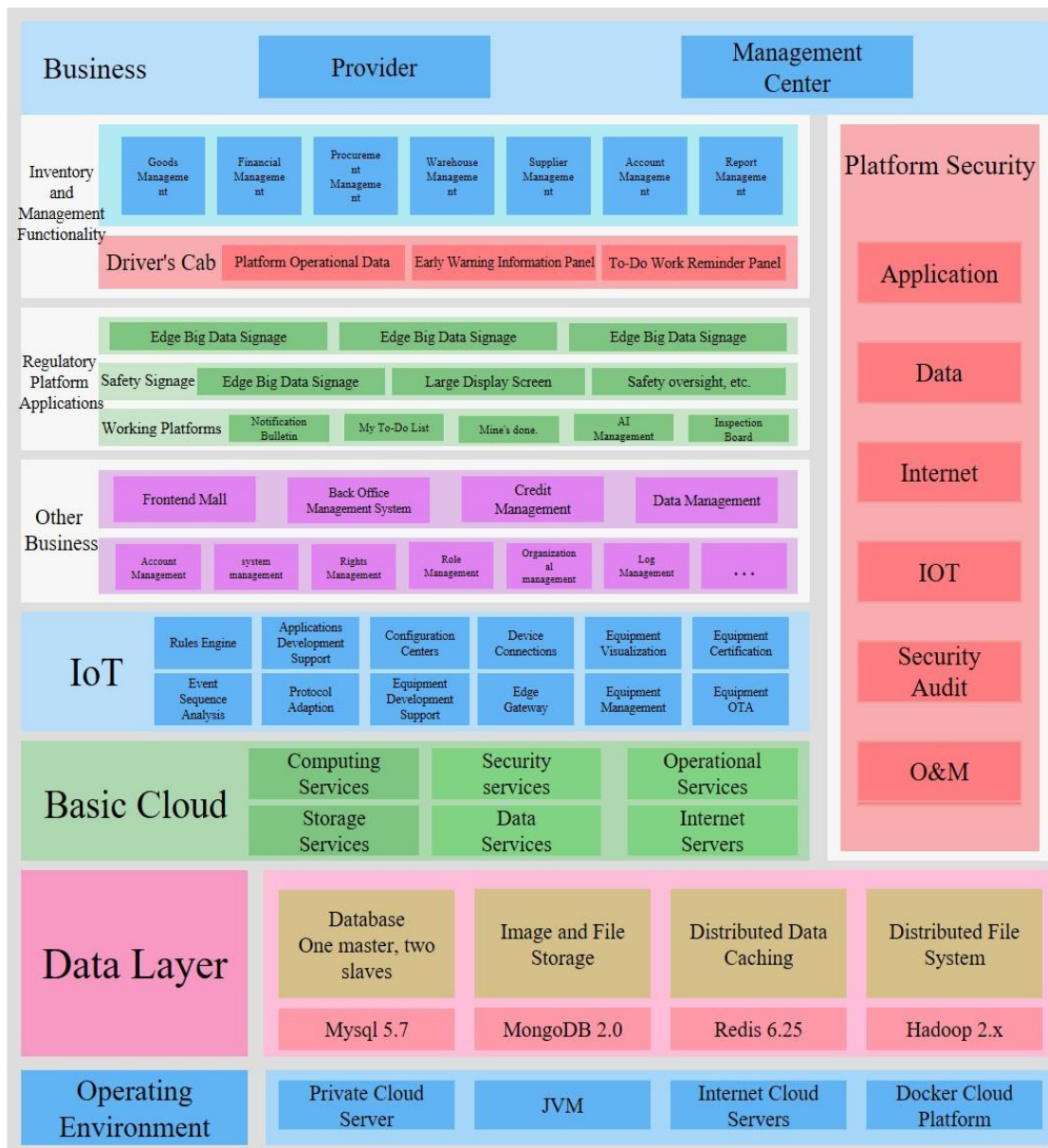


Figure 2. Supply Chain Platform Architecture Diagram

2.2. Advantages of the Platform

Compared with other supply chain finance platforms, the Platform demonstrates significant unique advantages with its unique “I-shaped” Business Pattern. This model enables the Platform to acquire production factors directly and efficiently, a capability that distinguishes it from other platforms. Through the “I-shaped” Business Pattern, the platform can comprehensively and deeply integrate the relevant information of the industrial chain supply chain and realize precise control of production factors. Whether it is the supply of raw materials, the operating status of production equipment, or the allocation of human resources and other aspects of production factors, the platform can obtain relevant data in real time and accurately.

This direct access to production factors brings the platform the advantage of rapid feedback and adjustment. Once any problems or potential risks are detected in the production process, the platform is able to respond quickly to adjust the production plan and optimize resource allocation in a timely manner to ensure the smooth progress of production. In contrast, other platforms may have a certain lag in information acquisition and feedback adjustment, making it

difficult to achieve such a rapid and accurate response.

In addition, this supply chain platform has the following advantages:

Information Integration and Sharing: The platform actively connects with the information system of each enterprise in the supply chain, comprehensively integrates the information flow, capital flow, and logistics information, and is able to grasp the business dynamics of each link in the supply chain in a continuous and real-time manner, providing accurate data support for financial services. At the same time, as the key node of information convergence, the platform improves the transparency of information, reduces the potential risks caused by information asymmetry, and facilitates the better implementation of financial services.

Risk Management: The platform has constructed a perfect risk management system, which can meticulously identify, scientifically assess, and effectively control various risks in the supply chain to ensure the safety and reliability of the financing business. In addition, the cooperation with insurance organizations provides enterprises with a variety of risk management tools, such as credit insurance, which further reduces the risk loss of enterprises, improves the stability of the entire supply chain, and provides SMEs with

more preferential financing interest rates and reduces the cost of financing.

Efficiency Improvement: Compared with the cumbersome financing process of traditional financial institutions, the approval speed of this platform is significantly faster, and the procedures are simpler. Through the automated approval process and intelligent risk control model, it can quickly make accurate financing decisions for enterprises, which greatly shortens the financing cycle and improves the financing efficiency.

Financing Support: The platform has designed diversified financing products according to the needs and characteristics of SMEs, such as accounts receivable financing, inventory financing, prepayment financing, etc., which meets the financing needs of different enterprises and reduces the risk of a single financing product. SMEs have obtained valuable financing services through the platform, effectively solving the problem of capital shortage and providing financial support for enterprise development.

Collaborative Development: SMEs can use the platform to better understand the needs and conditions of upstream and downstream enterprises, optimize their own production plans and inventory management, and improve the overall efficiency of the supply chain. The platform promotes information sharing and business synergy among enterprises in the supply chain, strengthens the cooperation between SMEs and core enterprises and other enterprises, and enhances their own development capability. At the same time, the platform provides a platform for SMEs to showcase their strengths and products, which helps SMEs to obtain more business opportunities, jointly develop the market, and improve the competitiveness of their products.

The Platform's innovations in technology building include:

Micro-service Architecture: It is highly reliable and fault-tolerant, capable of meeting the needs of different users and industries, and realizing the differentiated coexistence of services. At the same time, it can be quickly released and upgraded online, and each micro-service focuses on a single function, which is easy to maintain and develop, and improves the overall efficiency of the system.

Distributed Architecture: The problem of storing and querying massive data is solved through the vertical splitting of the database by business application and the horizontal slicing of large table data. The platform combines its own characteristics to vertically split the database by business cloud and horizontally split the database by business occurrence date and other dimensions, which improves the data processing capacity.

2.3. Participants in the Platform

Core enterprises: Usually, core enterprises are the leading enterprises in the supply chain with strong strength and good credit. On the supply chain finance platform, core enterprises can give full play to their advantages and provide strong credit endorsement for upstream and downstream SMEs. In this way, it helps SMEs to obtain financing support and alleviate capital pressure. At the same time, core enterprises can also optimize their own supply chain management through the platform to improve the stability and competitiveness of the supply chain.

As the core link of the supply chain, core enterprises play a key role in the operation of the whole supply chain. Through cooperation with the platform, core enterprises can better manage upstream and downstream enterprises and improve the synergistic efficiency of the supply chain. For example,

core enterprises can monitor the delivery of suppliers in real time through the platform to ensure the timely supply of raw materials; they can analyze the sales situation of distributors and optimize the market layout of products.

Small and medium-sized enterprises (SMEs): As an important part of the supply chain, SMEs have gained valuable financing services through the supply chain finance platform, effectively solving the problem of capital shortage. SMEs can also make full use of the platform's information sharing and business synergy functions to strengthen cooperation with core enterprises and other enterprises and enhance their own development capability.

SMEs can communicate and cooperate with other enterprises on the platform to jointly develop the market and improve the competitiveness of their products. At the same time, the platform also provides a platform for SMEs to showcase their strengths and products, which helps SMEs to gain more business opportunities.

Financial institutions: Financial institutions, including banks, factoring companies, small loan companies, etc., provide rich and diverse financing services for enterprises through supply chain platforms. Financial institutions can take advantage of the information and risk management of the platform to reduce financing risks and expand business channels.

Financial institutions can obtain detailed information and risk assessment reports of enterprises on the platform, so as to more accurately judge the credit status and financing needs of enterprises. At the same time, the platform also provides a channel for financial institutions to directly dock with enterprises, reducing intermediate links and improving the efficiency and quality of financing services.

Platform operator: responsible for the construction, operation and management of the supply chain finance platform. By integrating the resources of all parties, the platform operator provides enterprises with one-stop financial services while charging a certain service fee.

During the process of the platform's construction and operation, the platform operator constantly optimizes the functions and services of the platform and enhances the user experience on it. Simultaneously, the platform operator also actively collaborates with all parties to expand the business scope of the platform and offer enterprises more comprehensive and high-quality financial services.

In conclusion, supply chain finance platforms possess significant economic and social value by integrating supply chain resources, providing innovative financial services, resolving financing issues for SMEs, and facilitating the collaborative development of the supply chain. In the future development, the supply chain finance platform will continue to innovate and improve to provide more robust support for the development of enterprises.

3. Risk Control Methods for Platforms Empowered By the “I-shaped” Business Pattern

Risk control is of paramount importance in the operation of the supply chain finance platform. The platform has effectively enhanced its risk control capability with the aid of the “I-shaped” Business Pattern.

The upper horizontal part of the “I-shaped” Business Pattern provides comprehensive information support for risk control by integrating the industrial chain and supply chain,

and promoting information sharing and collaboration. The middle vertical represents production intelligence, which facilitates precise risk control in the production process by obtaining real-time production data. The bottom one is driven by data elements, consolidating the industrial digital infrastructure to ensure that the platform can accurately and timely access information on production factors, improve the efficiency and responsiveness of supply chain collaboration, and thus better cope with risks.

In terms of risk control of the financing model, the platform designs diverse financing products, such as accounts receivable financing and inventory financing, based on the needs of different enterprises, and conducts risk assessment and classification management. The financing period is reasonably determined to match the transaction cycle and capital turnover needs of enterprises, while the supervision of the use of funds is strengthened to ensure the safe utilization of funds.

In terms of operational risk control, the platform establishes a robust internal management system, clarifies the responsibilities and authorities of each department, and standardizes business operations. It strengthens personnel training and management, enhances employees' business quality and risk awareness, and also increases investment in information technology, establishes an advanced information management system, reduces human errors in operations, and safeguards information security.

In terms of credit risk control, the platform establishes a scientific credit assessment system, determines credit ratings by considering factors such as the financial status and operating performance of enterprises, and formulates corresponding financing policies and risk control measures. It strengthens credit management of core enterprises, closely monitors their operating conditions and credit records, and adjusts credit policies in a timely manner. Guarantee and insurance mechanisms have been introduced to reduce credit risk losses, and a risk early warning mechanism has been established to monitor the status of enterprises in real time and take timely risk control measures.

In market risk control, the platform pays close attention to the macroeconomic situation, industry development trends, etc., strengthens market research and analysis, and timely adjusts financing strategies and risk control measures. It establishes diversified financing channels, cooperates with a number of financial institutions, introduces different financing products, and flexibly adjusts the financing structure. It sets reasonable pricing and establishes a risk compensation mechanism and risk reserve to compensate for the losses caused by market risks. It strengthens risk management and internal control, establishes a sound risk management system, clarifies responsibilities and authorities, and regularly evaluates and improves to enhance the level of risk management.

In conclusion, through the combination of the "I-shaped" Business Pattern and risk control measures, the platform can effectively reduce the financing model risk, operational risk, credit risk and market risk, ensure the stable operation of the platform, provide reliable financial services for SMEs and promote the healthy development of supply chain finance.

4. Summary

This article focuses on the current situation of SMEs, the concept of supply chain finance and its role for SMEs, details the "I-shaped" Business Pattern of the supply chain financial

service platform, its functions, advantages, participating subjects, and technological and application innovations, and describes the platform's measures in risk control.

SMEs occupy an important position in the national economy, but they have long faced the problems of difficult and expensive financing, and there is a mismatch between their contribution and the financial support they receive. Supply chain finance provides financing services to enterprises in the supply chain by integrating information flow, capital flow, and logistics, which helps to enhance the competitiveness of the supply chain and promote the development of SMEs.

The supply chain financial service platform we developed has a unique "I-shaped" Business Pattern, which brings multiple advantages to the platform by promoting industrial chain and supply chain synergy, realizing production intelligence, and consolidating the industrial digital infrastructure. The platform can directly and efficiently acquire production factors and realize rapid feedback and adjustment; comprehensively integrate industrial chain and supply chain information and accurately control production factors; provide diversified financing products to meet the financing needs of different enterprises; build a perfect risk management system to reduce various risks; improve information transparency and information integration and sharing; and, compared with traditional financial institutions, has a faster approval speed and simpler procedures, which can greatly shorten the financing cycle and improve the financing efficiency; it promotes the synergistic development of enterprises in the supply chain and provides more business opportunities for SMEs.

In addition, the platform has technical innovation points such as micro-service architecture and distributed architecture, which improves the reliability, fault tolerance, openness, and maintainability of the system and solves the problem of storing and querying massive data.

In terms of risk control, the platform has ensured the stable operation of the platform and safeguarded the interests of all parties through the effective control of financing model risk, operational risk, credit risk, and market risk.

To summarize, our supply chain financial service platform has played an important role in solving the financing problems of SMEs and promoting the collaborative development of the supply chain. Looking ahead, we will continue to optimize and improve the functions and services of the platform, strengthen cooperation with all parties, continuously innovate the supply chain financial service model, improve the level of risk management, provide stronger support for the development of small and medium-sized enterprises, promote the healthy development of the supply chain finance industry, and make a greater contribution to the prosperity of the economy.

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