

Application Analysis of Supply Chain Finance in Construction Industry -Take A Platform as an Example

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Abstract. With the development of globalization, competition between enterprises has increased, and supply chain management has become an important means for enterprises to gain competitive advantages. At present, the research on supply chain finance mainly focuses on risk management and effect analysis, and the research objects are concentrated on commercial banks and agricultural development, while the application of the construction industry is relatively small. This article uses case analysis and SWOT-PEST analysis method. Take A supply chain platform as an example to analyze the impact of the internal and external environment on the construction industry supply chain platform. Studies have found that many factors such as policy support, technological updates, economic fluctuations, and competition affect the development of the A platform. The development of the construction industry supply chain platform needs to grasp the direction of government strategy, fully understand user needs, seek technological innovation and establish a risk prevention mechanism.

Keywords: Construction industry, supply chain finance, SWOT-PEST analysis.

1. Introduction

With the development of blockchain and Internet technology, supply chain finance has received widespread attention. Supply chain finance, as the name suggests, includes two parts: supply chain and finance. Therefore, its research mainly has two perspectives, namely financial orientation and supply chain orientation [1]. From the perspective of financial institutions, the supply chain finance aims to integrate resources and lending to enterprises. From the perspective of the supply chain, it is mainly the overall coordination of the multi-party industry chain to improve their own performance. The construction industry is a capital -intensive industry [2], and the main financing method is bank loan. However, small and medium -sized enterprises usually lack sufficient fixed assets as mortgages. In addition, bank loans are more harsh on the conditions for small and medium -sized enterprises, making it less likely to gain financing for small and medium -sized enterprises [3]. Pay-in is also a common problem in the construction industry, and small and medium -sized enterprises are in the weak position of the industry chain. So their funds are badly tied up. The introduction of supply chain finance into the construction industry can well solve the difficulty of capital circulation. Through the industrial chain, all enterprises can use inter -account receivables and prepaid accounts for financing [4]. Taking the credit as a certificate of core enterprises can optimize the capital structure between enterprises and alleviate the problem of capital shortage. In recent years, the state has successively introduced relevant policies to support the development of investment and financing in the construction industry. The construction industry supply chain finance as an important tool for supporting the development of the real economy has also played an increasingly important role. This article uses case analysis and SWOT-PEST analysis method. Taking the A supply chain platform as an example, it analyzes the advantages, disadvantages, competitiveness and challenges, and the impact of the external environment on the supply chain platform. Thus, it provides practical suggestions for the development of platform A, and also provides references for the construction and improvement of other supply chain platforms.

2. Case

The A supply chain platform is deployed by J Group from three directions: supply chain restructuring, value chain integration and information-based supply chain [5]. Platform A is a supply chain management integrated service platform specially tailored for the construction industry, which relies on the domestic construction market to build a new scene of smart construction. The platform consists of several parts, including platform portal, bidding website, financial services, famous enterprise zone, industry information and Aijian mall (shown in Fig.1). A supply chain management platform uses information technology, such as blockchain, to unify the process rules platform and supervision, and effectively solve the problem of information island in industrial development [6]. In addition, platform A is committed to using cloud computing, network and big data technologies to provide enterprises with collaborative supply and supply chain management solutions.

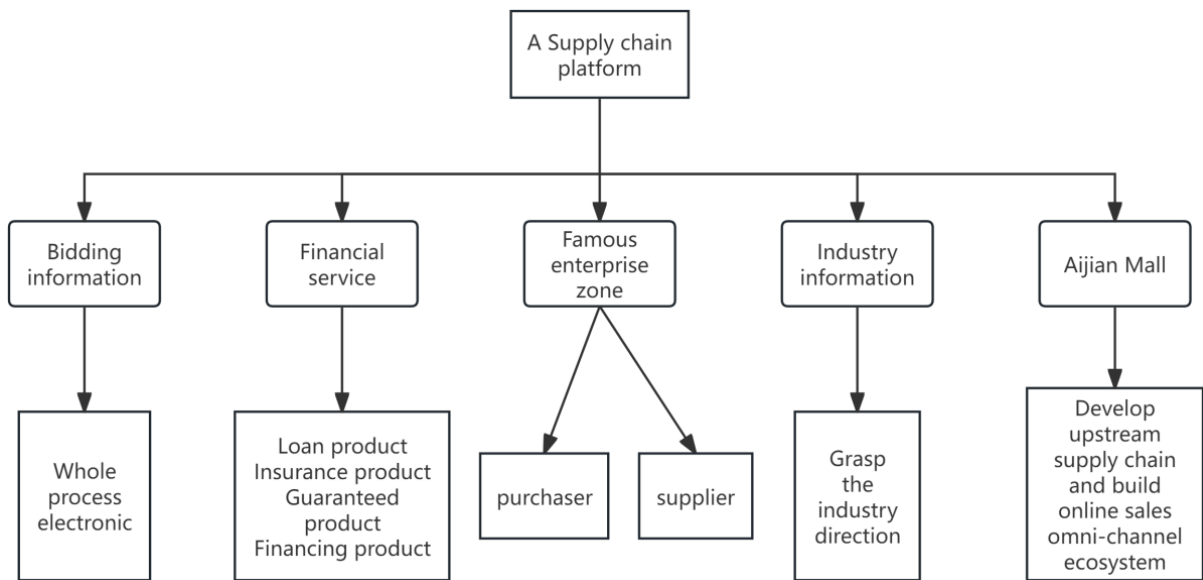


Figure 1. A Supply chain management platform products and services

Supply Chain Platform A has many partners, including owners, contractors, subcontractors and suppliers. Based on the needs of all parties and the financing problems they face, A platform has designed a variety of financial products, including loan products, insurance products, guarantee products and financing products (shown in Fig.2). At present, the credit amount of Platform A is 1.8 million yuan, and the loan amount is 1.5 million yuan.

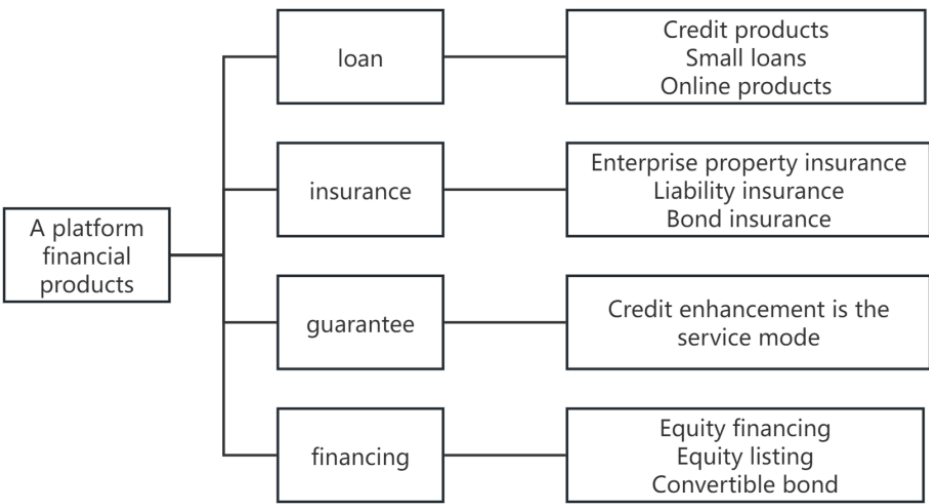


Figure 2. Platform A supply chain financial products

3. Analysis

3.1. Introduction to theoretical framework

As the construction industry is greatly affected by the policy environment, platform A, as a supply chain finance platform for the construction industry, is also affected by the macro environment. By considering the advantages, disadvantages, opportunities and threats of platform A under external factors such as politics, economy, society and technology, suggestions can be provided for the development of Platform A [7]. SWOT analysis can take into account the competitiveness of platform A, while PEST analysis focuses on the influence of external macro environment. By using the SWOT PEST analysis matrix, the internal and external environment can be comprehensively understood to formulate more scientific and effective strategic decisions, so that platform A can maintain its competitiveness in the complex external environment. The constructed SWOT-PEST analysis matrix is shown in Table 1.

Table 1. SWOT-PEST model

SWOT-PEST		Politics	Economic	Society	Technology
Internal factor	Strengths	SP	SE	SS	ST
	Weaknesses	WP	WE	WS	WT
External factor	Opportunities	OP	OE	OS	OT
	Threats	TP	TE	TS	TT

3.2. Strengths

The target positioning of Platform A is formulated in line with policy guidance. Platform A is the only platform in the construction industry in Shandong Province that focuses on construction supply chain management. It has won the third prize of the "Skills Make Shandong Prosper" Vocational Skills Competition, the "Second-Class Achievement of the Ninth Construction Enterprise Information Case", and the "Excellent Practice Case of Internet Development in the Engineering Construction Industry in 2023", etc. Platform A provides lifetime free intelligent online bidding and tendering services, builds a comprehensive financial service platform for the construction industry, and continuously explores the in-depth application of digital technology in the new urban construction industry field.

A supply chain management platform is built by J Group. J Group Co., Ltd. is a large state-owned Class I construction enterprise group with a registered capital of 303 million yuan. The group has perfect machinery and equipment, strong technical force and rich construction experience. A supply chain management platform has sufficient funds, which is conducive to enhancing supply chain stability and expanding business areas and markets. In addition, due to its good credit, J Group can better attract cooperation from various financial institutions and small and medium-sized enterprises, and enhance its influence through extensive partnerships and business scale.

A supply chain has more merchants and rich financial products. The efficient operation of supply chain finance requires the establishment of close cooperative relations with stable suppliers [8]. The financial service platform registered 13,123 enterprises and 10 registered institutions, and reached cooperation with Industrial Bank Co., Ltd., Industrial and Commercial Bank of China, Jinan Rural Commercial Bank Co., Ltd., E-Commerce Bank Co., Ltd. and other financial institutions. Platform A can meet the different needs of small and medium-sized enterprises as much as possible and expand financing channels.

Platform A adopts big data analysis technology to achieve visual procurement management, so that the transaction process can be monitored in real time. It also uses blockchain technology to enhance the security and reliability of data, thereby increasing the trust of financial institutions [9]. The intelligent online bidding service provided by Platform A greatly improves the efficiency of bidding and bidding. Platform A provides a safe and efficient supply chain management solution for the construction industry by integrating multiple advanced technologies.

3.3. Weaknesses

Since the key tasks of supply chain innovation policies are still consistent with the needs of our country's development stage, these policies are distributed in different policies. As a result, the supply chain becomes an adjunct to other policies, without specific mission plans and details. Platform A is limited in its ability to support industrial restructuring and upgrading. The construction industry has a long construction period, unforeseeable problems, and is greatly affected by the environment [10]. All these may lead to conflicts and coordination problems in the operation of the supply chain. At this time, the definition of each party's responsibilities becomes an issue that needs to be considered.

As a service platform of supply chain, user demand is the core and starting point of platform A. Macroeconomic policy uncertainty can affect investment and project progress in the construction sector, and changes in monetary policy can also cause interest rate fluctuations. Only by updating the business content in a timely manner and launching products that are more in line with the financing needs of financial institutions and smes can the service quality of the platform be guaranteed.

A supply chain finance platform allows enterprises to fill in corporate information through online registration. Although online audit has been carried out, due to the large number of enterprises, corporate information and qualifications are easy to falsify. Once there are information supervision problems in the supply chain platform, it will cause risks to the business of financial enterprises.

A supply chain platform adopts the SaaS multi-tenant management model, where each tenant's data is logically isolated from the data of other tenants. Ensuring the security and privacy of each tenant's data in a multi-tenant environment is a challenging task. Any security breach can lead to the disclosure of sensitive corporate data along the supply chain. Secondly, the platform serves all parties in the construction industry, and the needs of all parties are different. Therefore, there are shortcomings in the platform to meet the personalized needs of users. How to enable specific tenant customization for multi-tenant cloud-native SaaS is where the platform needs to improve [11].

3.4. Opportunities

In order to promote the modern supply chain system deeply embedded in the manufacturing industry chain, the state has successively introduced a number of supply chain financial policies for the construction industry. These policies mainly focus on strengthening multi-dimensional collaboration in the supply chain of construction enterprises, achieving lean management, accelerating digital transformation and improving supply chain resilience. Through the support given by policies, A supply chain platform can seize external opportunities, actively absorb suppliers and buyers, and expand the platform foundation.

At present, overall economic growth is slowing. In 2023 and 2024, the People's Bank of China has lowered the LPR twice, respectively by 10 basis points, to reduce the financing cost of enterprises and residents. In order to find a wider range of financing customers and reduce financing risks, A supply chain platform has become a better choice for financial institutions. In addition, the demand for construction has declined, and the supply-demand relationship in the real estate market has changed. The increasing cost of construction labor and materials has led to a decline in the profit margin of the construction industry, and small and medium-sized enterprises urgently need financing channels with lower financing costs and looser terms. A supply chain platform has become a bridge between financial institutions and small and medium-sized enterprises.

The proliferation of digital lifestyles has enabled Platform A to reach a broader customer base. A supply chain management platform adopts single sign-on technology, and each module business is logged in by the same account. According to the actual business needs, the platform gives different permissions to enterprises, and users can use mobile devices anytime and anywhere [12]. In this way, the platform greatly enhances user stickiness.

The integration and development of mobile technology and multi-terminal provide A supply chain platform with a more flexible and efficient operation model. The construction industry involves a lot of on-site construction. By using mobile devices for real-time monitoring to collect market data such as inventory levels and logistics status, timely data updates can be ensured.

3.5. Threats

Due to the variable nature of policies, changes in policies may require Platform A to adjust its business model and operational processes to make Platform A conform to the new specifications, which may increase additional costs. Especially when the policy relates to privacy protection and technical standards, the platform needs to adjust the technical architecture.

The construction industry is more affected by the macro economy. When the economy is sluggish, the willingness of enterprises and individuals to invest and consume decreases, and construction projects also decrease accordingly [13]. Construction companies often have high fixed costs, including depreciation and repair costs of fixed assets. These fixed costs still need to be paid even when the volume of business is reduced, increasing the risk of bankruptcy. Construction usually requires a lot of upfront investment. In order to win the bid for a project, advancing funds has become a common phenomenon in the construction industry. Under the effect of various adverse conditions, the operation risk of construction enterprises increases. The delay risk caused by supplier bankruptcy will affect the stability of the supply chain platform, especially when the delay risk spreads along the supply chain [14].

With the support of the country for the supply chain platform of the construction industry, various supply chain platforms continue to emerge, such as Zhongwei Bank, E-credit Pass of China Construction Bank and Cloud Construction Network. With the increase in the number of supply chain platforms, the competition faced by A supply chain platform also intensifies. Only by continuously improving the core competitiveness can the platform continue to grow and develop.

The increasing diversity of information channels means that enterprises need to face more data security threats, because each channel has its own specific security vulnerabilities and protection needs. As the number of information channels increases, so does the number of entry points that enterprises need to monitor. This may increase the risk of false positives and missed positives, which is a challenge for the development of A supply chain platform.

3.6. Matrix construction

Based on the introduction of the case of A supply chain platform and the analysis of the financial products of A platform, the SWOT PEST analysis matrix is constructed. This can help Platform A identify strengths, weaknesses, opportunities, and threats while considering political, economic, social, and technological factors, thereby helping it identify areas for improvement. The construction of the SWOT- PEST matrix is shown in Table 2.

Table 2. SWOT-PEST Analysis Matrix

SWOT-PEST		Politics	Economic	Society	Technology
Internal factor	Strengths	Target positioning in line with policy orientation	Well-funded, large-scale	Numerous partners	The use of various advanced technologies
	Weaknesses	Unspecified policy rules and mission programmes	Stressful business innovations	Lower entry threshold	Disadvantages of SaaS
External factor	Opportunities	Strong support from national policies	Lower financing costs	The digital lifestyle is normalized	Development of mobile technology and multi-terminal
	Threats	Changes in regulatory policy	Vulnerability of the construction industry	Increased peer competition	Diversification of information channels

4. Suggestion

4.1. Expand advantages

Platform A should always grasp the policy direction to ensure that the corporate strategy always conforms to the policy orientation. It will also actively promote the modernization and digital development of the construction industry, focus on supply chain innovation and optimization, and strive to solve the financing difficulties of small and medium-sized enterprises. Group J can establish long-term and stable strategic alliances with key partners in the supply chain, give full play to the advantages of core enterprises, build brand effect and expand its influence. Platform A can do market research, understand the financing needs of small and medium-sized enterprises, and establish different types of financial products according to the needs to meet the diversified needs.

4.2. Reverse disadvantages

The platform can assign teams to track the dynamics of supply chain policies issued by national and local governments to deeply analyze the impact that may have on the platform. Based on the analysis of the policy and its own situation, platform A can formulate internal supply chain innovation strategies and implementation plans. In terms of macroeconomic changes, the platform can use research reports of professional institutions and market forecasting tools to predict potential economic fluctuations and interest rate risks in advance [15]. The platform needs to regularly assess supply chain risks, including policy risks, market risks and financial risks, and establish a risk management system. The platform needs to implement strict authentication processes such as two-speed authentication or legal representative authentication when new users register. For the qualification documents submitted by enterprises, Platform A needs to conduct a detailed review and establish its own reputation evaluation system. Businesses with poor credit are flagged and their functions on the platform restricted. To address the drawbacks of SaaS's multi-tenant management model, the platform can implement fine-grained access controls to ensure that only authorized users can access specific functions and data [16]. Platform A can regularly review and update user permissions to prevent unauthorized data from being accessed, and regularly backup platform users' data to ensure quick recovery in case of faults.

4.3. Seize opportunitise

Platform A should seize the wind of policy dividend, develop the platform construction towards the direction of fine management and digital transformation, actively absorb small and medium-sized enterprises, and reach cooperation with financial institutions to launch more updated financial products. Platforms need to play the role of Bridges, connect financial institutions and small and medium-sized enterprises, give full play to core corporate reputation advantages, and actively promote cooperation. It is also an important task to improve the single signon technology and ensure the security of user information. The platform can integrate mobile technology and multi-terminal integration into the system construction, such as the monitoring of bidding process and real-time control of on-site construction.

4.4. Prevent risks

To cope with the variability of policies, the platform can formulate flexible supply chain strategic planning, including selection scheme and rapid response mechanism, and design diversified supply chain structure to reduce the dependence on a single region. The supply chain platform needs to conduct a comprehensive financial and operational risk assessment of construction enterprises to identify their potential bankruptcy risks, establish and improve the information sharing mechanism to ensure that all parties in the supply chain can timely understand the operating conditions of the construction industry and the progress of the project. It is necessary to formulate a series of measures to strengthen supply chain financial risk management, including credit risk, trade risk, cash flow risk and financing product risk [17]. In addition, platforms also need to define market positioning, find

their own target customer groups and refine the market to develop unique services and products and achieve differentiated competition. Platform A can focus on the development of customized solutions for the construction industry and use data analysis tools to deeply mine customer data and market trends to provide user satisfaction services. Most importantly, platforms should conduct security audits of various information channels, check for security vulnerabilities, and evaluate the audit results. According to the results obtained, the platform should take corresponding improvement measures.

5. Conclusion

With the development of cloud computing, big data and blockchain, supply chain platforms have become smarter and more efficient. A supply chain platform should give full play to advantages such as resource integration, risk control and convenient operation in the development process to actively respond to market competition and overcome disadvantages such as technical bottlenecks and legal and policy restrictions. Platform A should seize opportunities such as policy support, strong market demand and technological innovation and guard against threats such as economic fluctuations, industry risks and regulatory risks. Only by taking diversified measures can the long-term development of the platform be achieved.

The development prospect of supply chain platform in construction industry is broad, but some technical and operational challenges need to be overcome. This study only analyzes the supply chain platform A in detail, and future research can select more diversified cases to verify the universality of the research results.

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