

# Literature review on the impact of supply chain finance on the financing ability of building ceramics export enterprises

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## Abstract

In recent years, affected by factors such as domestic macroeconomy, real estate market environment and environmental protection policies, the competition in the building ceramics product market has intensified, and the instability of the shipping situation and the international situation has amplified the unfavorable situation of China's building ceramics commodity exports. Therefore, whether it has a strong financing ability has become an important basis for measuring whether China's building ceramics enterprises can continue to operate. Based on the research of domestic and foreign scholars on the financing ability and supply chain finance of building ceramics export enterprises, this paper expounds the latest research path and provides a research direction for building ceramics export enterprises to enhance their own financing capabilities.

**Keywords :** Building Ceramic Export Enterprises; Supply Chain Finance; Financing Capacity

**Suggested citation :** Ye, J., Xi, J., & Liu, P. (2025). Literature review on the impact of supply chain finance on the financing ability of building ceramics export enterprises. *Journal of Current Social Issues Studies*, 2(4), 226–230. <https://doi.org/10.71113/JCSIS.v2i4.228>

## Background and implications

### Background

With the take-off of China's economy, China's export industry is also gradually growing in the wave. More and more building ceramics enterprises have gradually started to export business. The building ceramics industry as a whole presents a situation of "large market, small enterprises", low industry concentration, and structural overcapacity. And in recent years, affected by the domestic macroeconomy, real estate market environment and environmental protection policies, the export of building ceramic products "internal and external troubles": affected by national policies, power rationing and production have led to rising costs; The international situation is chaotic, the cost of shipping has risen sharply, and the unfavorable situation of exports has been magnified. The competition in the building ceramics industry has entered the era of shrinkage from the stock era, and the price competition of enterprises has intensified, and the financial pressure required for normal operation has increased. Because such enterprises are usually small in scale and cannot attract the attention of investment institutions, the financing channels are relatively narrow, it is difficult to solve the financing problem through commercial bank loans, and the financing ability of enterprises is poor.

What is architectural ceramics (abbreviated as building ceramics) and building ceramics export enterprises? According to the interpretation in the annual report of a number of building ceramics head enterprises, building ceramics refers to ceramic products used for building finishes or as building components, mainly referring to ceramic wall and floor tiles. This paper building ceramics export enterprises refer to the main building ceramics, and export products to other countries or regions of the enterprise, belongs to the production and export of industrial enterprises. The building ceramics industry is an asset-heavy and energy-intensive industry, which is more dependent on liquidity and cash flow.

Supply chain finance, as an emerging means to solve the financing of enterprises in recent years, provides a new idea for the financing ability of building ceramics export enterprises. The scale of building ceramics export enterprises is usually small, and they are in the position of non-core enterprises in the supply chain. With the help of supply chain financial instrument financing, the financial pressure of building ceramics export enterprises can be alleviated. This is because supply chain finance integrates the upstream and downstream enterprises of the supply chain centered on the core enterprises with the help of the credit radiation function of the core enterprises, and can provide high-quality financial services to the entire supply chain. This measure facilitates the financing of funds of enterprises in the supply chain, and also strengthens the flow of funds between enterprises and the ability of enterprises on the chain to resist risks. Therefore, in-depth research on supply chain finance can really effectively enhance the financing ability of building ceramics export enterprises, which is of great significance for the sustainable and healthy development of building ceramics export industry.

Therefore, the purpose of this paper is to study the method of better introducing the supply chain financial model into the building ceramics processing and export industry to improve the financing ability, integrate the capital flow into the supply

chain management, and find the cooperation space between the financial enterprises and the ceramic processing and export enterprises, which can effectively avoid the risks of financial enterprises, and also allow the ceramic processing and export enterprises to solve some of the financing difficulties, which is a realistic requirement for the realization of ceramic processing and export enterprises to enhance their financing capabilities.

## ***Implications***

### ***(1) Theoretical significance***

①Enrich relevant theoretical research. Traditional financing theories mainly focus on the impact of equity financing, bank credit and other financing methods on enterprises. As an emerging financing medium, the impact mechanism and effect of supply chain finance on corporate financing are further revealed. Through empirical analysis, research and analysis, the impact of supply chain finance on the financing ability of building ceramics export enterprises is studied, and the application and research of basic theories are deepened to understand whether supply chain finance can effectively break the information asymmetry between enterprises, improve the market competitiveness of enterprises on the chain, help win-win cooperation between enterprises, and broaden the financing channels of enterprises. Therefore, the theoretical system of supply chain finance has been enriched and developed, and the theoretical research on information asymmetry theory, competitive advantage theory, self-compensatory trade finance theory, resource horizontal integration theory, and traditional financing theory has been deepened.

②Provide theoretical support and reference for follow-up research. Traditional corporate finance theories mainly focus on the impact of the firm's own factors (such as financial status, governance structure, etc.) on the financing ability. Supply chain finance emphasizes the impact of core enterprises, financial institutions and other entities on the supply chain on the financing ability of enterprises from the perspective of the supply chain as a whole. Therefore, the study of the impact of supply chain finance on the financing ability of building ceramics export enterprises can expand the research scope of enterprise financing theory, provide theoretical support and reference for subsequent related research, and promote the in-depth and development of research in this field. At the same time, it can also provide valuable theoretical guidance and decision-making support for policymakers, financial institutions and enterprises.

### ***(2) Practical significance***

①Help solve the financing problems of building ceramics export enterprises. As an important part of China's building ceramics industry, ceramic export enterprises often face financing difficulties due to the small scale of enterprises, insufficient collateral and other reasons. As a new type of financing model, supply chain finance provides enterprises with more flexible and convenient financing services by integrating information flow, capital flow and logistics on the supply chain. Therefore, this study can help SMEs solve financing problems and provide decision-making value for enterprises.

②Promote the deep integration of finance and industry. The development of supply chain finance requires close cooperation between financial institutions and the real industry. Studying the impact of supply chain finance on the financing ability of building ceramics export enterprises will help promote financial institutions to have a deeper understanding of the operation rules and financing needs of the building ceramics industry, and then develop financial products and services that are more in line with the characteristics of the industry, and realize the deep integration of finance and industry.

## **Literature review**

### ***Research on the application of supply chain finance in foreign countries***

(1)Research on foreign supply chain finance models. Hartley (1998) proposed a prepaid account-centric financing method, in which both the capital demander and the fund provider can share information, and the fund provider prudently issues loans according to the specific information of the transaction, and then settles with the bank after the expiration of the fund use period, which is called the prepaid account financing model<sup>[1]</sup>. The prepaid account financing model provides a new financing channel for SMEs, but it has its own limitations. Basu (2012) solved the problem of the lag of prepaid accounts mode logistics through a stochastic dynamic programming model<sup>[2]</sup>. Meijer et al. (2013) studied the application of supply chain finance to capital flows<sup>[3]</sup>. Su Y (2015) argues that banks can use simulation to reduce credit risk and increase overall supply chain revenue<sup>[4]</sup>. Ronchini Alessio et al. (2021) found that during the pandemic crisis, companies in need of liquidity increased their adoption of supply chain finance solutions, so they looked at solutions from the direction of supply chain finance based on inventory and equipment<sup>[5]</sup>. Mitra Rony et al. (2022) used financial parameters to construct a lending model for financing enterprises in the supply chain, with 90% accuracy to distinguish whether enterprises have the ability to repay<sup>[6]</sup>.

(2)Research on the application of foreign supply chain finance. Blome and Schoenherr (2011) took eight European companies as examples to develop a set of risk assessment and control methods for supply chain finance, which has practical reference significance for supply chain finance practice<sup>[7]</sup>. Phillip Kerle (2014) argues that supply chain finance can bring effective liquidity to enterprises, optimize the allocation of working capital, and improve efficiency through win-win results, and the risks existing in supply chain finance have been continuously valued in foreign research, and various models have been developed to measure risks<sup>[8]</sup>. Nichapa Phraknoi et al. (2022) pointed out that the participation of SMEs in supply chain finance may lead to a potential loss of control in terms of physical and financial aspects, and it is necessary to focus on the transaction cost advantage<sup>[9]</sup>. Miller Thomas et al. (2023) argue that supply chain finance reduces the financing cost and increases the convenience of obtaining funds for SMEs, but there are many risks associated with the use of blockchain-based

DeFi technology in supply chain finance <sup>[10]</sup>. Nochebuena Evans Leiza (2023) found that the shareholder response to supply chain finance is negative, but this reaction may be weakened by the increase in share buybacks by some companies, but the liquidity and profitability of companies will decrease <sup>[11]</sup>.

### ***Research on the application of domestic supply chain finance***

(1)Research on domestic supply chain finance model: Xie Shiqing (2013) proposed three general models of supply chain finance, supply chain finance, as a new type of financial product, plays an increasingly important role in reducing logistics costs and improving economic benefits, but due to the lack of a systematic risk management system, supply chain financial risks are gradually exposed <sup>[14]</sup>. Luo Li (2016) proposed the concept of supply chain finance for construction machinery enterprises, hoping to provide some reference blueprints for the development of supply chain finance in China <sup>[15]</sup>. China's commercial banks have tried to use the innovative mechanism of supply chain finance to support small and medium-sized enterprise loans, and have achieved certain results.

(2)Research on the application of domestic supply chain finance. Song Hua, Yang Xuan, and Yu Kai (2017) found that the supply chain capabilities of SMEs can be used as an effective signal to help them reduce the level of information asymmetry with external financial institutions, and thus help them improve their financing performance. Moreover, the financing performance of the enterprise is largely determined by the evaluation of the enterprise by other network participants (financial institutions or financial service providers) outside the core supply chain of the enterprise, which can be reflected by the indicators of financing availability, financing cost, and financing flexibility of the enterprise <sup>[16]</sup>. Ouyang Jian (2017) argues that most Chinese scholars focus on the credit risk assessment of enterprises in the upstream and downstream of the supply chain finance industry chain and enterprises in the industrial chain around the modes of prepaid accounts and accounts receivable and inventory, focusing on the discussion of ideas, with few empirical studies and case studies, and limited guiding significance in industry practice <sup>[17]</sup>. Chen Sijie and Song Hua (2020) explored an effective way for SMEs to use their corporate networks and capabilities to improve their financing performance from the perspective of supply chain finance based on sample data of SMEs in 295 manufacturing industries <sup>[18]</sup>. Tan Jie and Yuan Dongliang (2021) believe that profitability, solvency, sales revenue, and technological innovation have a significant impact on the financing ability of small and medium-sized construction enterprises <sup>[19]</sup>. Xu Hui (2021) argues that the participation of upstream and downstream enterprises in supply chain finance will open up new business space for financial institutions while reducing the financing difficulty of upstream and downstream enterprises, find new profit growth points on the basis of risk control, and achieve a win-win situation for SMEs and financial institutions <sup>[20]</sup>. Zhang Wenbin (2021) showed that supply chain finance can effectively improve the financing performance of cross-border e-commerce SMEs, and the effect is better in cross-border e-commerce comprehensive pilot zones <sup>[21]</sup>. Zhou Lei, Deng Yu, and Zhang Yuyan (2021) found that the integration and empowerment of blockchain and supply chain can promote the healthy development of supply chain finance and alleviate the problem of difficult and expensive financing for small and micro enterprises <sup>[22]</sup>. Yu Hui and Wang Shuang (2022) found that core firms are motivated to participate in supply chain finance, and significantly prefer the inventory financing model <sup>[23]</sup>. Song Xiaochen and Mao Jiye (2022) found that the effective combination of blockchain reputation system and platform-based institutional mechanism can promote the construction of trust between online transaction organizations and identify the new phenomenon of "re-intermediary trust" <sup>[24]</sup>. Zhou Yongwu, Li Jiajian, and Zheng Xueliang (2022) found that the supply chain finance model can increase the order volume and output of the supply chain, which in turn can improve the revenue of suppliers <sup>[25]</sup>.

### ***Research on the ceramic industry and enterprises in the context of supply chain finance***

(1)Research on the ceramic industry. Liu Yue and Li Yang (2019) believe that the growth rate of Foshan ceramic exports has become a significant reduction in recent years, and take Dongpeng ceramics as an example to demonstrate that the ceramic industry should pay attention to brand building, adjust the industrial structure, and realize the ceramic industry to move towards the high end of the value chain <sup>[26]</sup>. Liu Guozhen (2020) believes that ceramic exports face many problems, such as insufficient independent innovation ability, low added value of products, and lack of world brands with international influence; Ceramic enterprises have overcapacity and fierce disorderly competition, so it is recommended to speed up industrial upgrading <sup>[27]</sup>. Huang Hong, Xu De, and Zhang Cheng (2020) believe that affected by the epidemic, the production capacity and demand of ceramic enterprises have decreased, the capital flow of enterprises has slowed down, and the loan interest, rent, water and electricity, and employee wages of enterprises cannot be reduced at all, and the capital chain is extremely fragile and may break at any time, leading to the closure of enterprises. Moreover, the brand influence of Chinese ceramic enterprises is still insufficient, and there is still a certain gap compared with international brands <sup>[28]</sup>. Shu Jin (2021) believes that small and medium-sized production and processing enterprises are generally faced with the dilemma of shortage of funds but unable to find financing channels, and through the combination of theory and practical analysis, he concluded that supply chain finance financing is indeed an effective method to solve the financing problems of small and medium-sized production and processing enterprises in the current environment <sup>[29]</sup>. Yan Yan et al. (2021) found that commercial banks strictly control bad loans and lend prudently, so it is difficult for small and medium-sized enterprises in the stone industry to obtain financing, and in-depth research should be conducted in combination with supply chain financing services <sup>[30]</sup>. Wang Yan (2022) studied the spatial relationship between China's architectural ceramics industry cluster and the regional economy and its industrial collaborative innovation path, and believed that the building ceramics industry cluster is an important force for China to participate in regional or international competition, and it is necessary to improve the financing capacity and policy support of enterprises <sup>[31]</sup>.

(2)Research on ceramic enterprises. At present, there is a big problem in building ceramics enterprises is how to obtain the favor of capital, promote the transformation and upgrading of industrial structure and promote the birth of more well-known

enterprises, and improve the competitiveness of Chinese ceramic products. In the context of this crisis, Guo Jieyun (2010) started from the research of Xiamen stone industry, conducted a systematic study on the upstream and downstream participation of supply chain finance in the stone industry, designed a set of supply chain financing plans for stone enterprises, and analyzed their risks and response strategies, providing a reference plan for the financing of building ceramics enterprises [32]. Yang Guang (2019) pointed out that small and medium-sized ceramic enterprises in Jingdezhen are small in scale, low in anti-risk ability and imperfect in enterprise system, and believes that supply chain financing and accounts receivable pledge financing involve more stakeholders and greater risks, so small and medium-sized building ceramics export enterprises dare not adopt these two financing methods because of fear [33]. Zhong Zhaohua, Feng Aoyi, and Lu Qiuping (2022) took the practice of exploring the "three-chain integration" of Foshan's architectural ceramics industry as an example to analyze the current situation of the ceramic industry chain and supply chain, and introduced the ways in which the Zhongtaolian platform solves the procurement and financing difficulties of enterprises [34].

## Conclusions

The research on supply chain finance in foreign countries is relatively early, and there are many studies related to it. Although the research directions of supply chain finance are different, there is a common denominator that most of the research focuses on supply chain finance model innovation or the study of local enterprises or enterprise-related risks and indicators, and begins to pay attention to the impact of blockchain technology application on supply chain finance. Foreign researchers believe that supply chain finance, as a financial technology tool, can optimize the allocation of funds, reduce credit risk, effectively improve the financing ability of enterprises, and achieve a win-win situation. Although there are some potential points out of control, the purpose of risk control can be achieved through reasonable construction of financing models and screening of financing enterprises.

Domestic scholars believe that domestic ceramic enterprises are generally family-owned small and medium-sized enterprises, independent innovation is low brand, insufficient influence and lack of core competitiveness, disorderly competition. Building ceramics enterprises need to change this status quo, upgrade products and supply chains, reduce disorderly competition, and create more world brands with international influence. Supply chain finance binds the upstream and downstream enterprises of the supply chain together, greatly controls the cost of enterprises, and improves the anti-risk ability of the supply chain. Through internal agreement control, enterprises in the supply chain can be integrated into one large enterprise, which can jointly help industrial upgrading and reduce disorderly competition. These studies have laid a solid theoretical foundation for the research in this paper. At present, the research direction of supply chain finance is mainly in the direction of model, blockchain technology or cash flow of small and medium-sized enterprises, and the research on the impact of the building ceramics industry and financing capacity is relatively lacking, and the relevant theoretical and practical results need to be improved.

By reviewing the literature, it is found that the previous studies mainly focus on the field of ceramics, and there are few literatures that directly study the export enterprises of building ceramics, and most of the studies in the field of building ceramics are technical studies. The application of foreign supply chain finance is more abundant, and the domestic supply chain finance is less used in the research of building ceramics export enterprises, and the research of this paper can provide a certain reference for the research of building ceramics export industry and the application of supply chain finance.

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