

Risk Changes and Prevention in the Innovative Development of Supply Chain Finance

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Abstract: With the increasing segmentation of social production, the nature of market competition has evolved, shifting from competition among individual customers within a supply chain to competition between entire supply chains. In recent years, supply chain finance has been widely applied in various sectors, effectively addressing the financing difficulties faced by small- and medium-sized enterprises (SMEs) in the supply chain. In this environment, the development of supply chain finance has received significant attention. To encourage its development, government agencies can leverage their macro-guidance capabilities, introduce relevant measures based on the actual situation, and require banking and insurance institutions to rely on core supply chain enterprises. By treating the transactions of core enterprises and their upstream and downstream partners as the foundation, financial institutions can integrate various types of information and provide comprehensive financial services to all participants in the supply chain. However, during the process of innovation and development in supply chain finance, various risks inevitably arise. These risks must be managed and mitigated through different risk management strategies to enable supply chain finance to better serve the real economy and promote its sustainable development.

Keywords: Supply Chain Finance Innovation, Risk Changes, Prevention Measures.

1. Significance of Supply Chain Finance Services

As a new concept, supply chain finance is yet to be rigorously defined in economic theory, but its existence is crucial in meeting the financing needs of enterprises during their production and operation activities (Figure 1). It also encourages enterprises to prevent and resolve operational risks. Within a supply chain, companies need to maintain stable business activities to ensure the realization of benefits for all participants [1-2]. Generally, companies organizing the supply chain and commercial institutions providing services are committed to integrating the flow of goods, information,

data, and funds to achieve overall operational goals. The financial structure of suppliers reflects not only their business, skills, and mechanisms but also serves as a bridge connecting service providers, customers, and managers, thereby offering equal financial service opportunities to businesses of all sizes. Key participants in the supply chain include financial institutions, SMEs, supporting enterprises, and core enterprises holding dominant positions in the chain. Given that disadvantaged SMEs often lack competitiveness, supply chain financing has unique significance in providing these companies with access to low-cost loans, relieving financial pressures, fostering healthy SME development, and enhancing the stability of the entire supply chain.



Figure 1. The Significance of Supply Chain Financial Services

2. Overview of the Innovative Development of Supply Chain Finance

2.1. Expanding Scope

Fundamentally, supply chain finance represents a financial service activity that treats the supply chain as an entity, encompassing a broad range of activities, primarily focused on the flow of funds between companies, among other actions. Supply chain finance differs substantially from regular financial activities in that it directly reflects real activities between companies and provides optimal financial services to

aid business growth [3-4]. In its early stages, supply chain finance mainly served small-scale businesses, leveraging its flexible usage cycle and low cost to promote SME growth. With further economic development, the scope of supply chain finance has expanded, allowing it to better serve a broader range of businesses. Additionally, the services provided have diversified beyond offering loans to optimizing resource allocation and bringing more economic and social benefits to companies.

2.2. Improved Quality

After extensive development and practice, supply chain financial services have gradually matured, significantly

improving service quality. Initially, these services only offered short-term loans to small enterprises, with limited work processes and a single model that failed to meet the needs of large companies. Economic progress has allowed supply chain financial services to enhance their service capabilities. In the case of core enterprises, their comprehensive strength, particularly their financial capacity, is significantly greater than that of other businesses, which allows them to play an important role in financial service activities. These well-funded enterprises, through financial service providers, help SMEs secure loans, thereby supporting the growth of other businesses to some extent. The rapid development of internet technologies has also presented new opportunities for supply chain finance. By utilizing internet technology, financial transactions can be accurately recorded, and data analysis can provide insight into a company's credit level, offering a more precise basis for financial services.

3. Risk Changes in the Innovative Development of Supply Chain Finance

3.1. Credit Risk

Credit risk in supply chain finance encompasses all core risks that may arise in lending activities, with the credit risk associated with core enterprises being especially critical. Core enterprises occupy a central position in supply chain finance; if they encounter credit risks, these risks are transmitted through the supply chain, expanding and potentially threatening the entire chain. Therefore, managing credit risk is a primary concern for internal company managers and related personnel. When evaluating credit risk, one should consider multiple factors, including industry position, credit rating, profitability, solvency, and product quality, to comprehensively and systematically assess a company's credit risk. This approach helps provide a more accurate picture of the credit risk situation and offers strong support for formulating effective risk control strategies.

3.2. Systematic Risk

Supply chain finance plays a vital role in promoting the coordinated development of industrial chains and optimizing resource allocation. However, it also faces numerous challenges, with systematic risk being particularly significant. Systematic risk primarily stems from external environments and changes in macro policies, making it difficult to predict and exerting broad effects. Due to the lack of a comprehensive risk prevention system, supply chain finance struggles to withstand external shocks, which can lead to systemic crises within the entire supply chain. Systematic risk often shows a certain degree of concentration, with crises triggered by external factors such as natural disasters or adverse climate conditions spreading to SMEs in upstream and downstream sectors [5-6]. For instance, any disruption in the procurement of raw materials or production processes may disrupt the balance of supply and demand, leading to significant production cost fluctuations, which in turn impacts profitability. Such factors can affect normal business operations and ultimately lead to systematic financial risks in the supply chain.

3.3. Transaction Risk

Transaction risk refers to the potential for discrepancies in

transactions between supply chain participants, which may be caused by incomplete or inaccurate data, fraudulent activities, or insufficient regulatory oversight. Given the complexity and scale of supply chain finance, transaction risks are more likely to occur, especially when transactions are executed across multiple jurisdictions or involve numerous parties. Inadequate record-keeping, differences in standards, or inconsistencies in regulatory compliance can further amplify the chances of transaction risk. Ensuring transparency and reliability in all stages of a transaction, from initiation to settlement, becomes crucial to mitigate these risks.

3.4. Capital Risk

Capital is the lifeline for the survival and growth of any business, and a disruption in capital flow directly impacts normal operations. A broken capital chain is detrimental and can lead to bankruptcy. Under the innovative development of supply chain finance, it is essential to recognize changes in financial risk. SMEs often have a mismatch between credit limits and credit guarantees, which hampers their ability to provide effective settlement funds, making it difficult to repay debts on time, resulting in increasing financial gaps and a growing threat to operations. The complex and variable supply chain finance market, influenced by objective factors, also heightens the probability of financial risks. Despite achievements in supply chain finance development through measures like securitization, numerous factors continue to induce financial risk. Therefore, corporate management and staff must pay close attention to capital risks, adopt scientific measures for prevention, and ensure sustainable business development.

3.5. Information Risk

With advancements in technology, innovative information technologies like cloud computing, blockchain, and financial technology have been widely applied in supply chain finance. These technologies can upgrade traditional financial products, enhance product efficiency, and reduce operational costs. In the context of financial technology, information-sharing mechanisms within supply chain enterprises have improved, making it easier for participants to access information. However, these advancements have also brought new risks, such as information leakage and data loss. The financial sector must adopt a cautious approach when utilizing financial technology [7]. Compared to other systems, financial systems are more vulnerable to external factors, such as asset price fluctuations, government policy changes, and shifts in the global economy, which may lead to systemic or localized risks. More in-depth research and practical validation are needed to ensure the effectiveness and safety of financial technologies in mitigating risks.

4. Risk Prevention Measures in the Innovative Development of Supply Chain Finance

4.1. Constructing a Risk Prevention System

A company's credit status is directly reflected by its credit rating. To ensure effective risk prevention in supply chain finance, credit ratings must be closely monitored, assisting financial institutions in better controlling the issuance of loans and avoiding lending risks due to irrational credit allocation. Establishing a scientific and effective credit evaluation system is crucial to ensure the smooth progression of supply

chain finance activities (Table 1). Such a system can provide an overview of a company's credit status, serving as an important foundation for preventing liquidity risks and supporting rational credit allocation and reducing bad loan rates. In evaluating micro and small enterprises within the supply chain, factors such as creditworthiness, transaction information, and asset status must be thoroughly assessed to achieve transparency in assets throughout the business lifecycle. For core enterprises, the credit evaluation outcome directly correlates with credit limits and ratings across the entire supply chain, underscoring the importance of core enterprises in guiding supply chain finance. Industry prospects, profitability, solvency, innovation capability, company size, operational status, and asset-liability conditions are key factors considered in the credit evaluation of supply chain finance to comprehensively assess an enterprise's credit situation.

Table 1. Construction method of supply chain finance risk prevention and control system

Risk prevention and control measures	Content
Establish a credit evaluation system	Evaluate corporate credit rating
	Assess the credit ability, transaction information and asset status of upstream and downstream small and micro enterprises
	Evaluate the core enterprise credit, and relate the credit line and credit level of the whole supply chain
Be clear about what to evaluate	Industry Outlook
	profitability
	solvency
	Ability to innovate
	Scale of enterprise
	Status of operation
Risk monitoring mechanism	Balance sheet position
	Real-time monitoring of supply chain risk
	Establish a risk early warning system

4.2. Application of Various Financial Technologies

As supply chains become increasingly complex and SMEs face growing financial needs, insufficient credit transparency has become a key factor impacting the stability of supply chains and a primary reason behind SME financing difficulties. In severe cases, this hampers account settlement speed and reduces efficiency. To effectively control risks during the innovative development of supply chain finance, advanced technologies, particularly financial technology, can be leveraged. In practice, strengthening information transparency helps core enterprises enhance the credit rating of upstream and downstream SMEs, effectively reducing operational risks in supply chain finance [8]. For example, blockchain technology can be used to digitize relevant documents, thereby improving the level of financial innovation in supply chain finance, optimizing management, and providing more reasonable and reliable data results. The trust relationship between core enterprises and upstream and downstream SMEs is consolidated by enhancing core enterprises' transparency, fostering a sound supply chain finance ecosystem.

4.3. Increasing the Strength of Financial Supervision

To support the robust development of supply chain finance, it is necessary to strengthen financial supervision. As the supply chain finance ecosystem grows, a series of challenges and problems have emerged. Effective regulatory mechanisms are needed to manage these issues and mitigate potential risks. First, market entry mechanisms must be regulated. As the economy evolves, market entry thresholds need adjustment, and companies that have entered the market should be rigorously assessed to ensure the promotion of excellence and elimination of deficiencies, thereby enhancing information security and preventing unfair competition. Second, regulatory policies must align with market transactions. In supply chain finance, significant attention must be given to operational activities and diverse applications, and policies must be both practical and executable, providing clear guidance. Revising and improving existing regulatory frameworks is essential to establish a risk-prevention and incentive mechanism that motivates banks to lend actively, thereby maximizing the unique value of supply chain finance in supporting the real economy [9].

4.4. Comprehensive Monitoring of Financial Issues

Comprehensive supervision of supply chain finance is vital to prevent problems before they escalate. Monitoring should cover all aspects, including transactions, credit levels, regulatory compliance, and the integrity of all data exchanged across the supply chain. Effective auditing practices are essential to identify discrepancies, fraud, or non-compliance, and robust corrective actions should be in place to mitigate risks. Additionally, transparency in financial transactions must be maintained by regularly disclosing accurate information to all stakeholders, thus ensuring trust across all parties.

4.5. Improving the Credit Evaluation System

A robust credit evaluation system is the cornerstone for the effective operation of supply chain finance. With intensified global market competition and rapid advancements in financial technology, an enterprise's credit rating becomes a key indicator of its reputation, reducing business risks and safeguarding funds. Therefore, it is necessary to create a scientific and reasonable enterprise credit evaluation system that is highly operational. In terms of evaluation, both the credit evaluation systems for core companies and those for upstream and downstream SMEs should be optimized. This includes assessing their solvency, understanding their assets and transactions, and achieving asset transparency. From a practical application perspective, credit evaluation standards should be tailored according to the characteristics of different supply chain enterprises, accurately profiling the enterprise's credit status and determining its position and solvency [10]. Detailed credit evaluation processes should be adjusted based on development needs, simplifying procedures where appropriate to achieve effective management outcomes. Financial technology tools should be used to dynamically assess credit ratings in a way that aligns with the latest information and reflects the real transactions taking place, thereby providing objective and fair evaluations of credit status to all parties.

5. Conclusion

In recent years, innovative developments in supply chains have yielded notable results, but in the course of specific developments, it is essential to clearly identify changes in risk and adopt effective risk prevention measures to mitigate these risks, ensuring orderly and healthy supply chain finance development. This approach secures the sustainable growth of both core enterprises and upstream and downstream SMEs. However, due to the influence of multiple factors, risks can significantly hinder supply chain finance. Therefore, to effectively address related problems, it is essential to build a risk prevention system, enhance enterprise credit transparency, strengthen financial supervision, and comprehensively monitor financial issues. These actions can mitigate risks stemming from the innovative development of supply chain finance and foster the long-term, healthy development of the field.

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