

Analysis of the Impact of Supply Chain Finance on Enterprise Value from the Perspective of Fintech

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ABSTRACT

This paper deeply analyzes how supply chain finance has a significant impact on enterprise value in the context of fintech. With the power of fintech, supply chain finance plays a key role in improving enterprise financing efficiency, reducing financing costs, optimizing operation management, and enhancing risk management capabilities. Through in-depth discussion of theories and analysis of practical cases, this paper provides practical suggestions and directions for enterprises to better utilize the integrated advantages of fintech and supply chain finance to achieve the maximum improvement of enterprise value.

KEYWORDS

fintech; supply chain finance; enterprise value; financing efficiency; risk management

In today's complex and changing global economic environment, the digitalization process is continuously accelerating. As an important bridge connecting finance and the real economy, supply chain finance is at a critical period of innovative development. The rapid rise of fintech has brought unprecedented opportunities and challenges to supply chain finance. It not only changes the operation mode of supply chain finance but also deeply influences the value creation path of enterprises. This paper aims to comprehensively discuss the multi-dimensional impact of supply chain finance on enterprise value from the unique perspective of fintech, providing strong theoretical support and practical guidance for enterprises' strategic decisions in the new era.

1 Fintech Improves the Financing Efficiency of Supply Chain Finance

1.1 Intelligent credit assessment

In today's digital era, fintech plays an important role in intelligent credit assessment. By using big data technology to widely collect multi-dimensional information such as enterprise financial data, transaction data, logistics data, and tax data, and through in-depth mining and analysis of these massive amounts of data, we can understand the enterprise's operating status, debt paying ability, and credit level more comprehensively, providing a more accurate basis for credit assessment. Machine learning algorithms have strong self-learning and optimization capabilities. In supply chain finance credit assessment, they can continuously learn from new data, automatically adjust and optimize credit assessment models. As data accumulates, they can predict enterprise credit status and default risk more and more accurately, and also monitor data changes in real time.

1.2 Fast approval process

Fintech has promoted the transformation of the fast approval process of supply chain finance. On the one hand, automated approval systems use artificial intelligence and rule engine technology to automatically review enterprise financing applications according to preset rules and models, quickly process large amounts of data, and determine whether enterprises meet financing conditions, greatly improving approval efficiency. For standardized financing products, approval can even be completed in a few minutes, providing timely financial support for enterprises. On the other hand, online platforms provide convenient financing application channels for enterprises. Enterprises can submit applications anytime and anywhere through the Internet without paper materials and cumbersome offline processes. Financial institutions receive applications online and quickly review them using big data and artificial intelligence technologies, which not only saves time and costs but also improves application transparency and traceability. Enterprises can view application progress and review results in real time.

1.3 Convenient fund disbursement

In supply chain finance, fintech brings convenient fund disbursement. First of all, the electronic payment and settlement methods supported by fintech provide convenient channels for fund disbursement. Electronic payment can realize rapid fund transfer without traditional paper checks and bank counter operations. The settlement system can automatically reconcile accounts and clear funds, improving the accuracy and efficiency of fund settlement. For example, enterprises can complete fund payment instantly through electronic payment platforms and speed up fund turnover. Secondly, real-time fund arrival service is also a great convenience. Through advanced payment technologies and networks, funds can reach enterprise accounts within a few seconds to meet enterprises' urgent fund needs. For example, when enterprises urgently need funds to purchase raw materials or pay employees' wages, they can provide timely financial support to avoid affecting production and operation. Finally, fintech means can monitor the flow of funds in real time. Through big data analysis and blockchain technology, financial institutions can clearly understand the source and destination of funds and ensure the reasonable use of funds.

2 Fintech Reduces the Financing Cost of Supply Chain Finance

2.1 Reducing information asymmetry

In supply chain finance, fintech can reduce information asymmetry. First, blockchain technology, with its characteristics of decentralization, immutability, and transparency, provides an effective means to solve the problem of information asymmetry. All participants in the supply chain record transaction information on the blockchain to achieve real-time sharing and synchronous update of information. Financial institutions can obtain real and reliable transaction data and reduce the risk of information fraud and concealment. For example, transaction records on the blockchain can show the source, circulation process, and transaction amount of goods, facilitating financial institutions to accurately assess the credit status and financing needs of enterprises and reduce financing costs. Second, establishing a data sharing platform can promote the flow of information between enterprises and financial institutions and break down information barriers. The platform integrates various types of enterprise data and connects the credit assessment and risk management systems of financial institutions. Through data sharing, financial institutions can understand the business operations of enterprises more comprehensively and improve the accuracy and efficiency of financing decisions. For example, enterprises authorizing financial institutions to access information

on the platform can reduce the cumbersome process of repeatedly submitting materials. Third, fintech means can quickly verify and check enterprise information.

2.2 Optimizing risk management

In supply chain finance, fintech can optimize risk management. First, fintech can establish a powerful risk early warning system. Through means such as big data analysis and artificial intelligence algorithms, it can monitor risk factors in supply chain finance in real time, comprehensively monitor enterprise operating conditions, market environment, industry trends, etc. Once potential risks such as deteriorated enterprise finances, market fluctuations, and policy changes are found, the system will issue warnings in time so that financial institutions and enterprises can take measures in advance to reduce risks. For example, the risk early warning system can predict potential default risks according to the changing trend of enterprise financial indicators and provide decision-making references for financial institutions. Second, the integration of insurtech and supply chain finance provides more comprehensive risk protection for enterprises. Introducing insurance products can transfer some risks to insurance companies and reduce the risk burden of financial institutions. For example, credit insurance can provide compensation for financial institutions when enterprises default and reduce financing risks. At the same time, insurtech can also innovate insurance products and services to provide more personalized risk solutions for supply chain finance. Finally, using fintech to continuously optimize risk assessment models can improve risk identification and control capabilities and reduce financing costs. For example, introducing machine learning algorithms and big data analysis technologies to improve traditional risk assessment models can make them more accurately predict enterprise default risks. Combining supply chain characteristics to establish risk assessment models for different industries and different links can improve the pertinence and effectiveness of risk assessment.

2.3 Improving capital utilization

In supply chain finance, fintech can improve capital utilization. First, fintech promotes the integration of supply chain finance platforms to achieve optimal allocation of resources. The integrated platform connects all participants in the supply chain, realizes information sharing and business collaboration. Enterprises can obtain financing services more conveniently, and financial institutions can manage risks and allocate funds more efficiently, improving capital utilization. For example, the platform can automatically match the most suitable financial products and services according to enterprise financing needs and risk conditions and reduce financing costs. Second, managing the capital pool through fintech means can achieve reasonable allocation and efficient use of funds. The capital pool concentrates the idle funds of multiple enterprises for unified management and allocation. Financial institutions provide financial support according to enterprise financing needs and risk conditions. For example, when enterprises need short-term capital turnover, the capital pool can quickly provide funds, improve capital liquidity and utilization, and at the same time reduce the capital cost and risk of financial institutions and improve overall efficiency. Third, establishing a dynamic pricing mechanism can adjust financing interest rates in real time according to enterprise risk conditions and market conditions to improve capital utilization and reduce financing costs. The dynamic pricing mechanism uses big data analysis and artificial intelligence algorithms to monitor and analyze factors such as enterprise credit risk, market interest rate, and capital supply and demand in real time. The system automatically adjusts financing interest rates to make interest rates more reasonably reflect enterprise risk levels and market conditions. For example, giving low financing interest rates to enterprises with good credit and low risk and

appropriately raising financing interest rates for enterprises with high risk can encourage enterprises to improve their credit levels and improve capital utilization efficiency^[1].

3 Fintech Optimizes the Operation Management of Supply Chain Finance

3.1 Supply chain visualization

In supply chain finance, fintech helps achieve supply chain visualization. First, the application of Internet of Things technology can track and monitor goods on the supply chain in real time. By installing sensors, RFID tags and other devices on goods, information such as the location, status, and temperature of goods can be obtained in real time and transmitted to the management systems of enterprises and financial institutions through the Internet of Things platform to achieve visualized management of the supply chain. For example, enterprises can know the transportation progress and inventory situation of goods at any time, and financial institutions can monitor the pledge status of goods in real time to ensure the safety of collateral.

The location of goods can be represented by three-dimensional coordinates. Let the location of goods be $P(x,y,z)$, where x represents longitude, y represents latitude, and z represents altitude. By updating this coordinate in real time, enterprises and financial institutions can know the specific location of goods at any time.

Second, the analysis of supply chain data can provide decision support for enterprises to optimize supply chain operation and management. By collecting and analyzing data such as transactions, logistics, and inventory, understand the operation efficiency, cost structure, and risk status of the supply chain, and use data analysis technology to mine potential value and provide optimization suggestions for enterprises.

Supply chain operation efficiency can be represented by the formula $E = O / I$, where E represents efficiency, O represents output, and I represents input. By analyzing the input and output data of each link, the operation efficiency of the supply chain can be evaluated. For example, by analyzing sales and inventory data, more reasonable production plans and inventory management strategies can be formulated to reduce costs and risks.

Finally, establishing a supply chain collaboration platform can promote information sharing and collaborative cooperation between enterprises and suppliers and customers, integrate all links of the supply chain to achieve business collaborative operation. Enterprises can communicate and coordinate production and supply plans with suppliers in real time to improve the response speed and flexibility of the supply chain.

The demand response time can be represented by the formula $T = T_n + T_a$, where T represents response time, T_n represents notification time, and T_a represents adjustment time. By shortening the notification time and adjustment time, the response speed of the supply chain can be improved. For example, when customer demand changes, enterprises can promptly notify suppliers to adjust production plans through the collaboration platform to avoid the risk of inventory backlog and shortage.

3.2 Inventory management optimization in supply chain finance

Fintech can achieve inventory management optimization. On the one hand, the intelligent inventory management system supported by fintech can monitor inventory levels in real time, obtain inventory data through Internet of Things technology, and use data analysis technology to predict market demand and automatically adjust inventory levels.

Inventory level can be represented by the formula $L = C / D$, where L represents inventory level, C

represents current inventory quantity, and D represents average demand quantity. Through this formula, the inventory status can be intuitively understood. For example, when inventory is too high, the system automatically warns and reminds enterprises to promote sales or reduce purchases. When inventory is too low, purchase orders are automatically generated to ensure reasonable supply.

On the other hand, using data analysis technology can predict market demand and achieve precise replenishment. By analyzing historical sales data, market trends, and customer behaviors, predict future market demand, and enterprises can formulate reasonable replenishment plans according to this to avoid the risk of inventory backlog and shortage.

Future demand can be represented by the formula $F = H \times T_c \times T_s \times T_p$, where F represents future demand, H represents historical average demand, T_c represents trend coefficient, T_s represents seasonal coefficient, and T_p represents promotion coefficient. Through this formula, market demand can be predicted more accurately. For example, using machine learning algorithms to predict the sales trends of different products and provide personalized replenishment suggestions.

In addition, innovative inventory financing models can improve inventory capital liquidity and optimize enterprise capital structure. For example, dynamic pledge financing models allow enterprises to dynamically adjust the quantity and value of pledged goods according to changes in inventory levels to improve capital use efficiency. At the same time, fintech can also provide more convenient operation and management methods for inventory financing, such as online evaluation and remote monitoring, to reduce financing costs and risks.

Capital liquidity can be represented by the formula $M = A / V$, where M represents liquidity, A represents available funds, and V represents inventory value. By increasing this ratio, the enterprise's capital structure can be optimized.

3.3 Process automation

In supply chain finance, fintech can achieve process automation. First, robotic process automation (RPA) technology can automate repetitive tasks in the supply chain finance process, improve work efficiency and reduce operating costs. For example, in links such as invoice processing, data entry, and report generation, RPA can automatically execute tasks, reduce errors and time waste of manual operations, and at the same time can make automatic decisions according to preset rules and processes to improve the standardization and normalization of processes.

The efficiency improvement ratio can be represented by the formula $R = (T_m - T_r) / T_m$, where R represents efficiency improvement ratio, T_m represents manual processing time, and T_r represents RPA processing time. Through this formula, the efficiency improvement brought by RPA technology can be intuitively seen.

Second, using fintech to achieve automated document processing can reduce manual operations and improve the accuracy and efficiency of document processing. For example, optical character recognition (OCR) technology can automatically recognize and extract key information in documents, and the automated document processing system automatically enters this information into the management system to reduce the workload and error rate of manual entry.

Accuracy can be represented by the formula $A = N_c / N_t$, where A represents accuracy, N_c represents the number of correctly processed documents, and N_t represents the total number of documents. Through this formula, the accuracy of automated document processing can be evaluated.

Third, the intelligent customer service system can provide enterprises with fast and accurate consulting services, improve customer satisfaction and optimize the operation and management of

supply chain finance. The intelligent customer service system uses natural language processing technology to understand customer questions and automatically give answers or solutions. For example, when enterprises encounter problems during the financing process, they can quickly obtain answers through the intelligent customer service system to improve financing efficiency and customer experience.

Customer satisfaction can be represented by the formula $S = N_s / N_t$, where S represents satisfaction, N_s represents the number of satisfied customers, and N_t represents the total number of customers. Through this formula, the improvement effect of the intelligent customer service system on customer satisfaction can be evaluated.

4 Fintech Enhances the Risk Management Capability of Supply Chain Finance

4.1 Risk identification and assessment

Fintech plays a significant role in risk identification and assessment in supply chain finance. Big data technology collects massive amounts of data from multiple channels. Analyzing enterprise transaction flows and others can insight into risk factors, accurately identify potential risks, and provide a basis for assessment. Artificial intelligence algorithms establish risk prediction models by learning from historical data, monitor the impacts of external factors and adjust the models to provide forward-looking preventive measures. Fintech also helps build diversified risk models. By introducing technologies such as big data, artificial intelligence, and blockchain, it increases risk assessment dimensions and improves the comprehensiveness and accuracy of assessment.

4.2 Risk dispersion and transfer

Fintech promotes the securitization of supply chain finance assets, realizes risk dispersion and transfer, improves transparency and efficiency, and provides financing channels for enterprises. Insurance and reinsurance play a risk protection role. Credit insurance compensates financial institutions for losses. Reinsurance disperses the risks of insurance institutions. Establishing a win-win cooperation model enables enterprises, financial institutions, suppliers, and customers to jointly share risks and improve the stability of supply chain finance.

4.3 Emergency response and crisis management

Fintech helps enterprises formulate emergency plans, conduct data analysis and simulation, realize digital management, and improve the efficiency and accuracy of emergency response. Real-time monitoring of crisis factors, using big data analysis and artificial intelligence to timely discover potential crisis signals, and combining with the early warning system to provide enterprises with a time window for response. Establishing a rapid recovery mechanism. Fintech supports fund allocation and tracing. Big data analysis assesses the impact of crises. Artificial intelligence assists in formulating recovery plans and provides the optimal decision-making plan for enterprises^[3].

5 Conclusion

In conclusion, the application of fintech in the field of supply chain finance has brought many positive impacts to enterprises. Through improving financing efficiency, reducing financing costs, optimizing operation management, and enhancing risk management capabilities, the deep integration of supply chain finance and fintech has strongly promoted the improvement of

enterprise value. In the future development, enterprises should fully recognize the importance of fintech, actively explore and apply new fintech means, and continuously innovate supply chain finance models. Financial institutions should also increase investment and research and development efforts in fintech to provide enterprises with more efficient, convenient, and safe supply chain financial services. At the same time, the government and regulatory authorities should also strengthen the guidance and regulation of fintech and supply chain finance, create a good development environment, promote the deep integration of fintech and the real economy, and jointly promote the sustained and healthy development of the economy.

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References

- [1] Zhang Yuru. Supply chain finance, digital empowerment and enterprise competitiveness[D]. Shanxi University of Finance and Economics, 2024(01).
- [2] Cheng Cheng, Yang Shenggang, Tian Xuan. The impact of supply chain finance under the empowerment of financial technology on enterprise value[J]. Journal of Management Sciences in China, 2024, 27(02): 95-119. [3] LiYixuan, LiLanqing. Exploration on the future development path of supply chain financial technology platforms[J]. Business Economy, 2023(11): 184-188.