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# Key Factors in Supply Chain Financial Credit in Logistics Industry

Ling GUO[1], Jianli FENG[2], Jeff W. GUO[3]

## Abstract

Credit businesses have been an important part of bank management. It is not simply the primary source of bank revenue, but also satisfies industrial & commercial enterprises and individual financing demands. The firm credit check allows a bank effectively allocating and applying resources to activate the market and accelerate economic development. The quality of credit therefore is closely related to bank management and the security of social resources. Logistics industry, presenting critical status in national economy, connects thousands of businesses and maintains national economy. However, financing difficulty has been a bottleneck for the development. The frequent financing difficulty becomes a restriction against the development of logistics industry. Aiming at banking credit personnel and logistics enterprise personnel in Shandong Province as the research objects, total 250 copies of questionnaire are distributed, and 207 valid copies are retrieved, with the retrieval rate 83%. The research results indicate: (1) "business management" as the most emphasized evaluation dimension, followed by "business prospects" and "financial conditions" and (2) top five evaluation indicators, among 15 indicators, as responsible person credit, revenue trend, guarantor credit, industry prosperity, and financial structure. According to the results, suggestions are proposed, expecting to assist logistics industry, through the support and guidance of supply chain finance, in implementing structural adjustment and promote the continuously healthy development.

*Keywords*: logistics industry, supply chain finance, loans and credit, financing, key factor.

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## Introduction

A financial institution, as the medium of loans and credit, absorbs capitals with the trust of people and engage in credit or investment businesses in consideration of clients' credit, as the bridge of capital supply and demand, to make profits and take risks. Credit businesses have been an important part of bank management, as the primary source of bank revenue and satisfying industrial & commercial enterprises and individual financing demands. The firm management of credit check allows a bank effectively allocating and applying resources to activate the market and accelerate economic development. For this reason, the quality of credit is closely related to bank management and the security of social resources. To ensure the security and profitability of the sustained-yield management of a bank, the establishment of sound credit evaluation mechanism is critical. Improper loans would result in a bank bearing the risk of excessive loans and even threats the business security and the rights of depositors to further affect the national financial policy. To enhance the quality of credit and ensure the creditor's rights, a bank has to carefully make decisions on the credit of an enterprise and control the correctness of judgment about the client credit. The judgment contents contain the measurement of financial statements and inventory ratio as well as the evaluation of non-inventory ratio analysis data, such as the future prospect of the credit enterprise, the business management, business industry, loan use, collateral percentage, guarantor, credit history, and the banking period.

Small and medium enterprises play primary roles in economic development. Nevertheless, small and medium enterprises often appear operation problems due to short liquidity for financing. Small and medium enterprises therefore have to utilize current financing channels offered by financial institutions for short- and medium-term financing loans. Small and medium enterprise financing refers to small and medium enterprises precede fund-raising in the production management or commodity transaction process to satisfy the short-term current asset demands. The common short- and medium-term financing of small and medium enterprises includes discount, export negotiations, account receivable, and commercial paper. Logistics industry connects thousands of businesses and maintains national economy with a primary status; however, financing has been a bottleneck of the industrial development. Lots of small and medium logistics enterprises emerge, but the few fixed assets, bad risk resistance capability, and limited collateral (pledge) guarantee financing cause the financing difficulty and restrict the development. For this reason, aiming at key factors in supply chain financial credit in logistics industry, this study expects to assist logistics industry, through the support and guidance of supply chain finance, in implementing structural adjustment and promoting the continuously healthy development.

## Literature review

### *Supply chain finance*

Cavenaghi (2018) defined supply chain finance that, with account receivable factoring as the core, order financing, financing after examination of cargo, account receivable financing, and future-dated payment financing were integrated into the orders, examination of cargo, invoice, and payment advice of upstream/downstream trading to form a supply chain financing platform. Herath (2015) described supply chain finance as a bank connecting a core enterprise with the upstream and downstream enterprises for flexibly applying financial products and service. Atta-Krah (2016) pointed out the major characteristic of supply chain finance as finding out a core enterprise, as the center, in the supply chain and providing financial support for the supply chain. King (2015) explained to effectively provide capitals for relatively weak upstream and downstream supporting small and medium enterprises for solving the financing difficulty and supply chain imbalance problems. On the other hand, Gelsomino *et al.* (2016) proposed to integrate band credit into the trading behaviors of upstream and downstream enterprises to strengthen the mercantile credit, enhance small and medium enterprises establishing long-term strategic collaboration relationship with the core enterprise, and promote the competitiveness of the supply chain.

### *Credit*

Jones (2018) mentioned that banking played the role of credit in the overall economic activity. Based on the credit, idle funds were absorbed from the government, enterprises, family, and individuals for capital demanders enhancing the economic development. Buterin (2013) pointed out the direct effect of healthy credit businesses on the soundness of bank management. The major functions of credit were to maintain the normal benefit of a bank and ensure depositors' rights that the following principles should be grasped for undertaking credit businesses.

(1) Borrower (people): The evaluation of borrowers could be analyzed with the responsibility, business performance, and banking situation. The key in a borrower equally treating banking reflected on the borrower's willingness and ability of credit repayment, attitude towards proper credit information sharing, and maintenance of reasonable deposit to establish good banking relationship (Lawlor, 2017).

(2) Use of capital (purpose): Healthy credit should stress on a borrower's collateral and the loan capital application plan being logical, reasonable, and legal. A loan lack of specific and active use of capital would be dull and result in return difficulty. Swan (2015) explained that the loan, after being offered, should be checked the application following the original plan to avoid capital flow. Healthy credit should focus on the appropriate use

of capital in advance and check the application following the original plan after the loan. The use of capital for a credit case could be roughly divided into 1.acquiring assets, 2.repaying existing debts, and 3.replacing equity. "Acquiring assets" was the optimal use of capital, followed by "repaying existing debts" to replace other creditor's rights, while "replacing equity" appeared the worse use, but showed the best benefits. Good stock market would be another case.

(3) Repayment source (payment): Repayment source was the premise to ensure the return of creditor's rights. In this case, the analysis of a borrower's capital source for repaying loans was the core of a bank evaluating credit as well as the indicator to assess a credit supervisor's ability.

(4) Guarantee of creditor's rights (protection): Guarantee of creditor's rights could be divided into internal guarantee and external guarantee: (a) Internal guarantee: referring to the direct relationship between a bank and a borrower; (b) External guarantee: referring to the third party's credit responsibility for the borrower to the bank. For the external guarantee of creditor's rights, a bank generally allowed guarantee and endorsement that the key in external guarantee lied in the credit and capitals of the guarantor and endorser.

(5) Credit perspective (perspective): Credit personnel, during the credit businesses, should pre-estimate the basic risks and the expected benefits. The basic risks of credit contained capital block (overdue) and principal loss. The expected benefits covered interests and handling fee after deducting the credit cost as well as the growth of derivative deposit and foreign exchange businesses (Narayanan *et al.*, 2016).

*Key success factor*

Chang *et al.* (2015) mentioned that key success factor was first proposed by Commons (1943), who applied the idea of "limiting factor" to the operation of management and negotiation. Danial, D. W., a management scholar, mentioned in the published "Management Information Crisis" in 1961 that most industries would present 3-6 key success factors. Key success factor was then broadly applied to various research domains (Masudin & Saputro, 2016). Ashok, Tashneem, & Vincent (2016) stated that an enterprise, in face of competitors, should present competitiveness or competitive assets as the key success factor. An unsuccessful enterprise normally was lack of certain or some key success factors in developing the competitive advantage. Beskese *et al.* (2015) explained key success factor as the technology or assets to successfully compete with other competitors in specific industries. The competitiveness of an enterprise could be judged by analyzing the advantage and key success factors; when the strength appeared on the key success factor, the enterprise could acquire competitive advantage. Prakasan *et al.* (2015) proposed to first examine the resource conditions and, with the unique resource conditions as the niche, design the competitive strategy which could not be imitated by competitors. Hosseini & Keshavarz (2017) indicated that key success factors were dynamic, would change with business objectives, and were the essential conditions for business success.

## Research design and method

### *Delphi method*

The AHP dimensions in this study are established according to Delphi method. Delphi method, also called expert survey, applies communications to separately deliver problems to experts, ask for the opinions, and collect all experts' opinions to organize the comprehensive opinions. Such comprehensive opinions and predicted problems are further feedback to the experts for further opinions. The experts, according to the comprehensive opinions, revise the original opinions, which are then collected and organized. Repeating for several times, the comparatively consistent prediction is acquired step by step.

According to the system program in Delphi method, anonymous opinions are given, i.e. no mutual discussion among experts, but merely the contact with researchers. With several runs of expert survey about the questionnaire, through repeated inquiry, generalization, and revision, the basically consistent opinions of the experts are organized as the prediction result. Such a method presents broad representativeness and is more reliable.

### *Analytic Network Process*

Since Saaty proposed AHP, it has been developed for 3 decades and broadly applied. The application coverage, applied domains, and process to deal with complicated problems of AHP are discussed in this section. AHP is mainly applied to decision-making problems. Analytic Network Process (ANP) is extended from Analytic Hierarchy Process (AHP). Chang *et al.* (2015) explained that a lot of decision-making problems could not be presented with structural AHP because there were net-like mutual relationship among upper, middle, and lower hierarchies in real situations, rather than top-down linear relationship; Saaty proposed ANP by adding feedback to AHP to replace the hierarchy network proposed in The Analytic Hierarchy Process, McGraw-Hill, in 1980; such two methods systematically achieved the decision making. Furthermore, the major difference of AHP from ANP was the linear hierarchy structure. ANP presented dependency and feedback and calculated weights with supermatrix. From the literature review, most affairs or principles related to people were mutually dependent. Accordingly, the application of ANP to the analysis is more appropriate and better conforms to practical needs than AHP in this study.

*Establishment of evaluation indicator*

The questionnaire is sent to the experts through email. The first-time feedback is organized for the considerations of supply chain financial credit in logistics industry. The considerations with similar properties are further classified into a category and sent back to the experts for opinions. Through several times of email inquiry, the final consistency is achieved. An expert meeting is then held to draw the key factors in supply chain financial credit for logistics industry, including financial conditions, business management, and business prospects. Such key factors are further regarded as the ANP dimensions for the ANP questionnaire. The research principles, after the revision with Delphi method, contain: (1) Financial conditions: debt-paying ability, financial structure, profitability, cash flow, growth power; (2) Business management: economics of scale, responsible person credit, average growth, collateral quality, guarantor credit; (3) Business prospects: equipment and technology, industry environment, market competition, revenue trend, industry prosperity.

*Research object*

Banking credit personnel and logistics enterprise personnel in Shandong Province are selected for the questionnaire analysis objects. Total 250 copies of questionnaire are distributed, and 207 valid copies are retrieved, with the retrieval rate 83%.

## Results

After completing all hierarchy weights, the allocation is preceded according to the relative importance of indicators to show the importance of indicators in the overall evaluation system. The overall weight of key factors in supply chain financial credit in logistics industry is further organized, *Table 1*.

*Table 1:* Overall weights of key factors in supply chain financial credit in logistics industry

| dimension | hierarchy 2 weight | hierarchy 2 order | indicator | overall weight | overall sequence |
|---|---|---|---|---|---|
| financial conditions | 0.308 | 3 | debt-paying ability | 0.049 | 11 |
| | | | financial structure | 0.081 | 5 |
| | | | profitability | 0.070 | 7 |
| | | | cash flow | 0.038 | 13 |
| | | | growth power | 0.061 | 9 |
| business management | 0.355 | 1 | economics of scale | 0.045 | 12 |
| | | | responsible person credit | 0.111 | 1 |
| | | | average growth | 0.078 | 6 |
| | | | collateral quality | 0.057 | 10 |
| | | | guarantor credit | 0.092 | 3 |
| business prospects | 0.337 | 2 | equipment and technology | 0.068 | 8 |
| | | | industry environment | 0.028 | 15 |
| | | | market competition | 0.036 | 14 |
| | | | revenue trend | 0.100 | 2 |
| | | | industry prosperity | 0.086 | 4 |

## Conclusion

According to the empirical result, the following conclusion is acquired.

Among the evaluation dimensions in hierarchy 2, "business management", weighted 0.355 and showing 35.5% of the overall weight, is mostly emphasized, followed by "business prospects" (weighted 0.337) and "financial conditions" (weighted 0.308). Accordingly, business management is the most emphasized supply chain financial credit dimension in logistics industry.

Among evaluation indicators in hierarchy 3, the hierarchy weights of indicators are ordered as below: (1) Under financial conditions, the evaluation indicators are ordered financial structure, profitability, growth power, debt-paying ability, and cash flow; (2) Under business management, the evaluation indicators are ordered responsible person credit, guarantor credit, average growth, collateral quality, and economics of scale; (3) Under business prospects, the evaluation indicators are ordered revenue trend, industry prosperity, equipment and technology, market competition, and industry environment.

From the overall weight of evaluation indicators, top five indicator emphasized by supply chain financial credit in logistics industry are ordered responsible person credit, revenue trend, guarantor credit, industry prosperity, and financial structure.

*Suggestions*

According to the conclusion, the following suggestions are proposed in this study, expecting to provide definite guidance and directions for the promotion of supply chain financial credit in logistics industry.

(1) When preceding supply chain finance, a bank should control the operation risk with the implementation of order financing, financing after examination of cargo, account receivable financing, and future-dated payment financing to offer the correspondent percentage of 30%, 50%, 70%, or 90%. Such stage control allows a bank immediately stopping the capital employment when any abnormal behaviors appear between both parties in order to avoid more loan loss and effectively control and reduce operation risks.

(2) When undertaking supply chain finance, the bank system could immediately retrieve the financing history of a logistics business and rapidly check the re-financing with the same invoice so as to avoid repeat financing from written data. Besides, it could reduce the operation cost of a bank undertaking supply chain finance businesses.

(3) A logistics business should provide better conditions and differentiated service from competitors to enhance the international competitive advantage. For instance, applying dealer model to financing channel is an opportunity for a logistics business opening the business. The all-round service of a logistics business to the supply chain to extend the good credit to the upstream/downstream members would be the innovative technology for risk management.

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