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Comparison of Financing Modes of E-commerce Supply Chain Finance

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Abstract

Based on practical experience, this paper classifies and discusses the current common operation modes of e-commerce supply chain finance, selects some representative e-commerce supply chain finance modes to analyze their financing process, and discusses the advantages, differences and characteristics between e-commerce supply chain finance and traditional supply chain finance.

Keywords

Supply Chain Finance; E-commerce Platform; Financing Modes; Commercial Bank.

1. Introduction

Supply chain finance is a new financial model that has emerged in recent decades. It fully integrates the capital flow, logistics and information flow of upstream and downstream enterprises in the supply chain. From the perspective of supply chain optimization management, the inventory, capital and information of supply chain enterprises are coordinated and distributed, which significantly improves the market competitiveness and financing ability of supply chain enterprises. In addition, through information sharing and cost sharing, supply chain finance effectively alleviates the information asymmetry between banks and enterprises, improves the operation efficiency of funds, and reduces the financing costs of SMEs. In recent years, with the continuous acceleration of e-commerce development, supply chain finance began to try to simplify business processes by introducing information technology in the process of development. For example, the e-commerce supply chain finance project in Amazon and JD Mall helps commercial banks to complete the credit review of small and medium-sized enterprises by making reasonable use of enterprise transaction information and transaction data, so as to make the risk identification and risk monitoring of supply chain finance business more effective.

Throughout the development process of supply chain finance, it can be divided into three main stages: (1) The initial stage of logistics finance and trade finance. At this stage, the academic community put forward a variety of different logistics financial models, and discussed the concept and source of supply chain finance. (2) The intermediate stage of providing financial services for core enterprises and their upstream and downstream SMEs with financial institutions as the core. At this stage, the academic community pays more attention to the relationship between banks and enterprises under different supply chain financial models. (3) The advanced stage of multi-agent after the application of big data, cloud computing, artificial intelligence and other Internet technologies. At this stage, the academic community pays more attention to the impact of the application of Internet technology on the supply chain financial process. At present, more and more researchers believe that supply chain finance is transiting from the intermediate stage to the advanced stage, internet technologies such as e-commerce and big data are also more used in supply chain finance. So in the latest stage of supply chain finance, what are the differences between it and the traditional model in terms of financing mode and financing process? What are the advantages of e-commerce supply chain finance compared with traditional supply chain finance? Therefore, this paper will introduce several typical operation modes of e-commerce supply chain finance, compare and analyze their advantages and characteristics, and provide help for the theoretical development of e-commerce supply chain finance.

2. Relevant Literature on E-commerce Supply Chain Finance

The research literature related to this paper mainly includes two parts. The first part is the research on traditional supply chain finance, and the second part is the research on e-commerce supply chain finance. The first part of the literature mainly studies the operation mode and coordination strategy of the traditional supply chain. At the initial stage of supply chain finance research, scholars have not summarized the main characteristics of supply chain finance. At this time, the main research object is trade financing between upstream and downstream enterprises in the supply chain[1,2]. With the deepening of research, scholars put forward the concept of supply chain finance, and believed that the supply chain finance model is to integrate the information and funds of supply chain participants through financial management, and help the supply chain to achieve win-win new business through the loan assistance of external financial institutions[3-5]. Since then, scholars have proposed several different supply chain financing models and studied the operation methods of different models. Yan (2016) studied the impact of credit guarantee coefficient in credit guarantee financing on the income of all participants in the supply chain, and the results showed that setting appropriate credit guarantee coefficient can make the supply chain achieve coordination[6]. Kouvelis and Zhao (2011, 2016) studied the supply chain coordination problem based on the bankruptcy risk of inventory pledge. They explained that the buy-back guarantee contract can enable suppliers and retailers to share the inventory risk, so as to improve the order quantity and revenue of products[7,8]. Xiao and Zhang (2018) built a prepayment discount model considering the simultaneous existence of bank credit and prepayment discount, and solved the supplier's optimal prepayment discount proportion according to the loan interest[9]. Qin (2019) and Aljazzar (2017) discusses the impact of different financing modes on supply chain coordination by studying price reduction subsidies under trade credit and bank loan strategies. The results show that price reduction subsidies under trade credit financing strategies can achieve supply chain coordination[10,11]. In addition, some scholars have studied the optimal strategy selection when there are multiple financing strategies in the supply chain at the same time, which provides a research basis for maximizing the overall profit of the supply chain[12-14].

With the continuous development of information technology, the combination of traditional supply chain finance model and e-commerce technology has produced a new e-commerce supply chain finance financing model, which applies Internet technology to the financing process, making the credit process and risk prevention more efficient. Scholars have also noticed and studied the new processes, risks and problems brought by e-commerce supply chain[15]. The initial focus of the study was more on the concept and model assumption of e-commerce supply chain finance. Some scholars have designed the operation mode and financing process of e-commerce supply chain finance for individuals and enterprises based on the differences of e-commerce transaction objects[16]. Evaluating the dynamic credit line of enterprises by reviewing the trade records of financing enterprises on the e-commerce platform can enable enterprises to obtain loans in time, and the platform can benefit from interest rate differences, and the transaction speed and scale of financing will be significantly improved[17]. With the continuous progress of the research, the focus of the research has gradually shifted to the revenue distribution and coordination strategy of e-commerce supply chain. Tunca and Zhu (2018) took Jingdong Mall as an actual case, analyzed the guarantee role of e-commerce platform when commercial banks could not distinguish between high and low product quality through the construction of game model, and the research results showed that e-commerce platform could reduce the loan interest rate of financing enterprises[18]. Some scholars divide e-commerce platforms into conservative and active ones. The loan interest rate of conservative e-commerce platforms is an exogenous variable, and the loan interest rate of active e-commerce platforms is a decision variable. The study found that active e-commerce platforms can achieve coordination of e-commerce supply chain by adjusting the loan interest rate[19,20]. Gong (2019) regarded e-commerce platforms and online retailers with financial constraints as a sharing economy system, and proved that both retailers and e-commerce platforms can benefit from the sharing economy system through e-commerce supply chain finance[21]. Some scholars also compared and analyzed the optimal loan interest rate under various financing modes, such as e-commerce loan financing, bank loan financing and retailer prepayment financing[22]. Obtained the optimal loan interest rate of e-commerce platform under different circumstances[23].

3. Financial Financing Mode of E-commerce Supply Chain

In this section, three different types of e-commerce supply chain financing models are introduced to discuss the impact of e-commerce platform participation on the supply chain financing process, and then compared with the traditional supply chain financing model.

3.1. E-order Financing Mode

When the enterprises that conduct transactions based on the e-commerce platform have financial constraints, they can use the credit of the e-commerce platform and the transaction information confirmed by the e-commerce platform to obtain loans from commercial banks to complete the financing. E-order financing can be divided into two modes according to the different financing enterprises. When the upstream enterprises of the supply chain have financial constraints, they are called "buyer financing", while when the downstream enterprises of the supply chain have financial constraints, they are called "seller financing". Electronic order financing can advance payment of suppliers' accounts receivable by using the credit of e-commerce platforms to obtain commercial bank loans, which relieves the financial pressure of upstream enterprises in the supply chain to carry out production investment, and also provides financial support for downstream manufacturers to order in advance, which can effectively improve the capital turnover rate of supply chain enterprises. At this stage, the financing practices adopting the electronic order model include Alibaba's "accounts receivable loan" model, JD's "Jingbaobei" model, and Suning's "account quick financing" model.

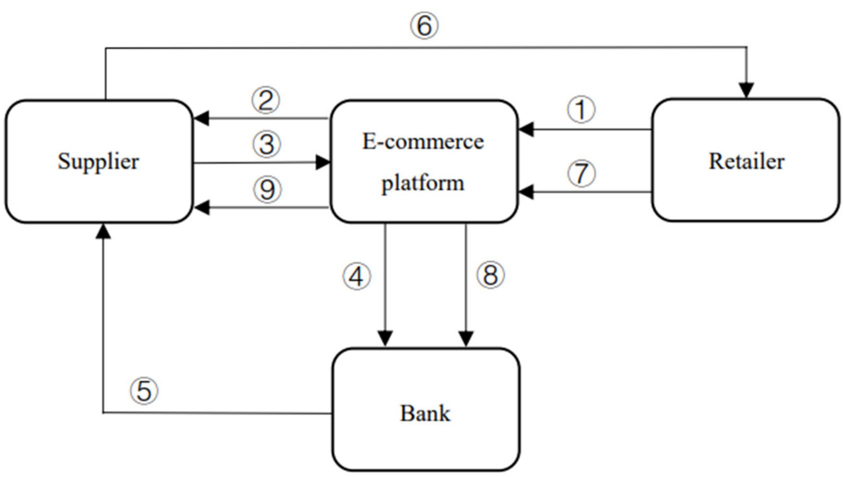

Figure 1. Electronic order (seller) financing flowchart

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The simplified flow chart of electronic order (seller) financing is shown in Figure 1. Its main financing processes include: ①The manufacturer places an order on the e-commerce platform to order goods from the supplier. ②The e-commerce platform transfers the order information to the supplier and generates an electronic order. ③The supplier submits a loan application to the e-commerce platform according to the capital demand, and submits the credit approval materials. ④The e-commerce platform will feed back the above information to the commercial bank after reviewing the supplier's credit. ⑤Commercial banks issue loans to suppliers for production. ⑥The supplier arranges production and delivers the goods to the manufacturer according to the contract. ⑦The manufacturer pays all the payment to the e-commerce platform. ⑧The e-commerce platform repays the loan principal and interest of commercial banks, and distributes income with suppliers.

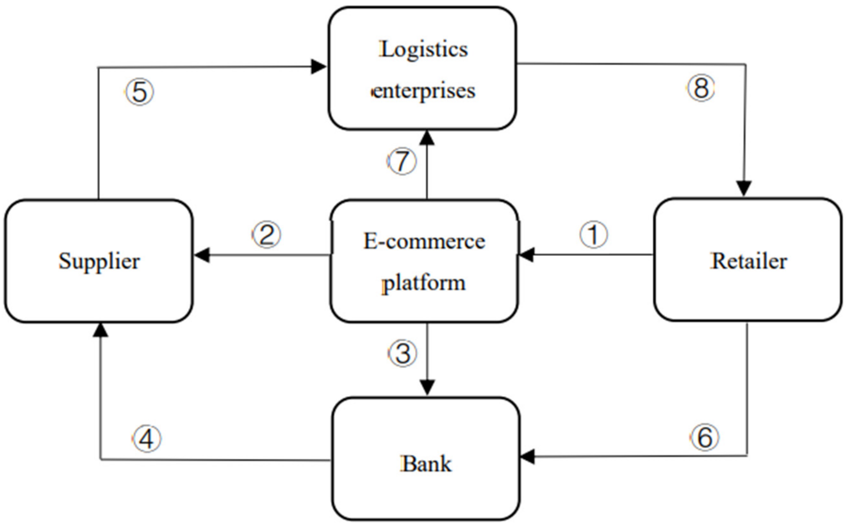

Figure 2. Electronic order (buyer) financing flowchart

The simplified flow chart of electronic order (buyer) financing is shown in Figure 2. Its main financing processes include: ①The manufacturer orders products on the e-commerce platform and submits loan application to the e-commerce platform at the same time. ②The e-commerce platform will transfer the order to the supplier after the manufacturer's credit review. ③The e-commerce platform feeds back the manufacturer's credit review information and the electronic signatures of the buyer and seller to the commercial bank. ④The commercial bank pays the supplier for goods on behalf of the manufacturer. ⑤The manufacturer arranges production and delivers all goods to the logistics company designated by the commercial bank. ⑥The manufacturer repays the principal and interest of all loans. ⑦The e-commerce platform informs the logistics enterprises to unpack the goods. ⑧The logistics enterprise will hand over all goods to the manufacturer.

3.2. Electronic Warehouse Receipt Financing Mode

The electronic warehouse receipt financing mode is evolved from the traditional warehouse receipt pledge financing mode. The borrowing enterprise deposits the movable property in the logistics enterprise designated by the commercial bank as the pledge, and then holds the pledge list issued by the logistics enterprise to apply for the commercial bank loan. Commercial banks set a certain pledge rate to provide loans to enterprises by evaluating the market price of products. The pledge is supervised by the logistics company during the pledge period. When the loan enterprise repays the loan at the end of the loan period, it can regain the ownership of the pledge. If the loan enterprise cannot repay the loan, the pledge will be handled by the commercial bank through proper ways to compensate for the loss. At this stage, the practice of adopting the electronic warehouse receipt mode mainly includes JD's "movable property financing" mode and Suning's "quick financing of goods" mode. The reason why the above two models have developed well is that the e-commerce platform has its own storage and logistics system, so it can collect the information of the pledge more efficiently, and at the same time, it can better supervise and manage the pledge during the pledge period, which can effectively avoid the information asymmetry between commercial banks and logistics enterprises.

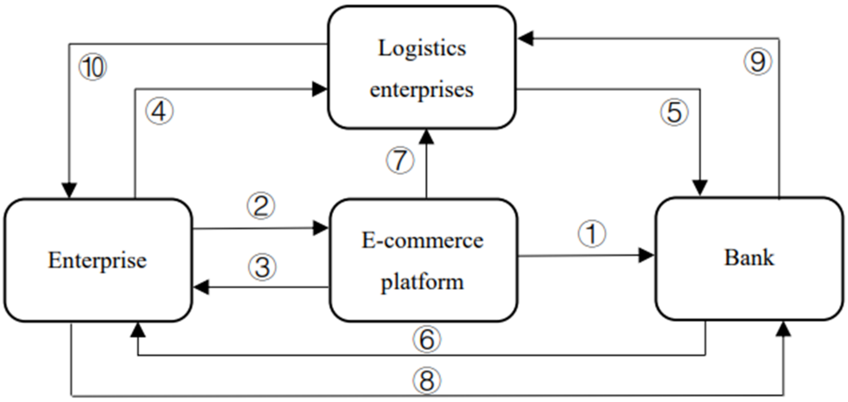

Figure 3. Electronic warehouse receipt financing flowchart

The simplified flow chart of electronic warehouse receipt financing is shown in Figure 3. Its main financing processes include: ①Electronic warehouse receipt financing cooperation agreement between e-commerce platform and commercial banks. ②The loan enterprise submits the loan application to the e-commerce platform. ③The e-commerce platform conducts credit review on loan enterprises and submits the review results to commercial banks. ④The borrower sends the pledged goods to the logistics company designated by the commercial bank, and the goods enter the pledge status. ⑤The logistics enterprise verifies the pledge list and sends the electronic signature to the commercial bank. ⑥Commercial banks issue loans to lending enterprises. ⑦The e-commerce platform connects with the logistics enterprises to realize the dynamic supervision of the pledged goods. ⑧After repaying all the principal and interest of the loan, the borrower shall apply to the commercial bank for the release of the pledge. ⑨Commercial banks notify logistics enterprises to release the pledge. ⑩The borrowing enterprise regains the ownership of the goods and receives the goods from the logistics enterprise.

3.3. E-commerce Credit Financing Mode

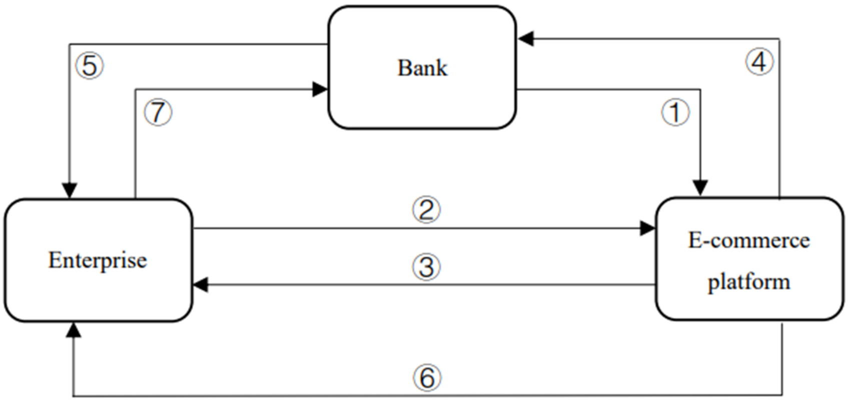

Figure 4. E-commerce credit financing flowchart

E-commerce credit financing mode refers to the financing mode in which sellers in the platform use their accumulated transaction records on the e-commerce platform to obtain the credit guarantee of the e-commerce platform, thus obtaining loans from commercial banks. The e-commerce platform's credit rating criteria for platform sellers mainly come from the transaction data accumulated during the transaction process. The e-commerce platform finally obtains the platform sellers' credit rating by introducing customer transaction data, behavior data and credit data into the credit rating model. The amount of financing that the platform seller can obtain will depend on the credit rating given by the e-commerce platform. The platform seller with a good credit rating will also be able to obtain a higher credit line. At this stage, the financing practice of e-commerce credit financing mode mainly includes JD's "small loan in Beijing" mode and Suning's "credit quick financing" mode.

The simplified flow chart of e-commerce credit financing is shown in Figure 4. The main processes include: ①E-commerce platform and commercial banks reached e-commerce credit financing cooperation agreement. ②The platform seller submits a loan application to the e-commerce platform based on the accumulated transaction data. ③The e-commerce platform collects transaction data, behavior data and credit data to obtain the credit rating of the platform seller, and determines the loan limit according to the credit rating. ④The e-commerce platform guarantees the platform sellers to apply for loans from commercial banks. ⑤Commercial banks issue loans to platform sellers that meet the credit review. ⑥The e-commerce platform connects with the platform sellers and implements supervision and management. ⑦The platform seller repays the loan principal and interest.

3.4. Comparative Analysis

By comparing and analyzing the financing process of e-commerce supply chain finance and traditional supply chain finance, it can be found that there is a certain bias between the two in many aspects. For example, e-commerce supply chain mostly uses network credit, the amount of financing is small, but the audit speed and frequency of financing are very fast, while traditional supply chain finance mostly needs to carry out field investigation on enterprises. Although the amount of financing is large, the credit audit is more strict, Loan issuance is also slower. Based on the contents given in Table 2-1, we can find that the e-commerce supply chain finance model is more suitable for small and micro enterprises that lack collateral and have frequent loans.

Table 1. Comparison of e-commerce supply chain finance and traditional supply chain finance

index	E-commerce supply chain finance	Traditional supply chain finance
Participants	Supply chain enterprises, commercial banks, e-commerce platforms, logistics enterprises	Supply chain enterprises, commercial banks, logistics enterprises
Credit review	"Big data" credit	"Subject+debt" credit
amount	Small amount of single financing	Large amount of single financing
frequency	High financing frequency	Low financing frequency
efficiency	Convenient and efficient	Low efficiency
information	Information sharing to reduce information asymmetry	Low efficiency of information transmission and information asymmetry
service object	Enterprises associated with e-commerce platform	Single supply chain enterprise
monitor	High monitoring efficiency	Low monitoring efficiency

4. Conclusion

Through comparative analysis of e-commerce supply chain finance and traditional supply chain finance models, the following research conclusions can be obtained: 1. The cooperation between commercial banks and e-commerce platforms to carry out supply chain finance business can break the geographical restrictions of the original business and expand the types of financing business. Traditional supply chain finance generally takes commercial banks as the center. Supply chain enterprises often need mortgage guarantee or guarantee from upstream and downstream core enterprises to realize financing. The financing business has great geographical constraints and the financing process is also relatively complex. The emergence of e-commerce supply chain financial products has broken the geographical restrictions. The financing business can be carried out nationwide through e-commerce platform websites. The financing process is simple and generally does not require collateral. 2. The big data audit system provided by the e-commerce platform can provide a good supplementary basis for the credit of commercial banks, and the reasonable use of big data, blockchain, cloud computing and other financial technology means can make the supply chain financial risk more controllable. Because the third-party financial institutions do not participate in the daily business activities of the enterprise, it is difficult to obtain the true business information of the enterprise at the first time, and it is easy to generate risk loopholes under the deliberate concealment of the enterprise. Compared with third-party financial institutions, e-commerce platforms will directly participate in the transaction process of the supply chain and have a lot of real information about financing enterprises, which can better complete the credit evaluation of financing enterprises.

References

[1] Sutkowski E F. Inventory financing under the UCC,the secured creditor's dream [J]. Commercial Lending Journal, 1963, 68(4):90-95.

[2] Wessman M B. Purchase money inventory financing: The case for limited cross-collateralization [J]. The Ohio State Law Journal, 1990, 51(3)1283-1447.

[3] Timme S. Williamstimme C. The financial-SCM connection [J]. Supply Chain Management Review, 2000, 7(04):30-37.

[4] Hofmann E. Supply chain finance: some conceptual insights [J]. Logistik Management-Innovative Logistikkonzepte, Wiesbaden, 2005S:203-214.

[5] Randall W, S M. Supply chain financing: using cash-to-cash variables to strengthen the supply chain [J]. International Journal of Physical Distribution & Logistics Management, 2009, 39(08):669-689.

[6] Yan N, Sun B, Zhang H, et al. A partial credit guarantee contract in a capital-constrained supply chain: Financing equilibrium and coordinating strategy[J]. International Journal of Production Economics, 2016, 173:122-133.

[7] Kouvelis P, Zhao W. The newsvendor problem and price-only contract when bankruptcy costs exist[J].Production and Operations Management, 2011, 20 (6):921-936.

[8] Kouvelis P, Zhao W. Supply chain contract design under financial constraints and bankruptcy costs[J]. Management Science, 2016, 62(8): 2341-2357.

[9] Xiao Y, Zhang J. Preselling to a retailer with cash flow shortage on the manufacturer[J]. Omega, 2018, 80:43-57.

[10] Qin J, Han Y, Wei G, et al. The value of advance payment financing to carbon emission reduction and production in a supply chain with game theory analysis[J]. International Journal of Production Research, 2019:1-20.

[11] Aljazzar S M, Jaber M Y, Moussawi H L. Coordination of a three-level supply chain (supplier-manufacturer-retailer) with permissible delay in payments and price discounts[J]. Applied Mathematical Modelling, 2017, 48:289-302.

[12] Zhao L, Huchzermeier A. Managing supplier financial distress with advance payment discount and purchase order financing[J]. Omega, 2018, 88:77-90.

ISSN: 2688-9323

[13] Ding W, Wan G. Financing and coordinating the supply chain with a capital-constrained supplier under yield uncertainty[J]. International Journal of Production Economics, 2020, 230:107813.

[14] Cao E, Du L, Ruan J. Financing preferences and performance for an emission-dependent supply chain: supplier vs. Bank[J]. International Journal of Production Economics, 2018, 208:383-309.

[15] Kaplan S,Sawhney M. E-hubs: the new B2B marketplaces [J]. Harvard Business Review, 2000, 78 (3): 97-106.

[16] Heng M S H. Implications of e-commerce for banking and finance[J]. Ifip Conference on Towards the E-society: E-commerce, 2001, 74(6):317-328.

[17] He X J, Tang L Y. Exploration on building of visualization platform to innovate business operation pattern of supply chain finance [J] Physics Procedia, 2012, 33:1886-1893.

[18] Tunca T, Zhu W. Buyer Intermediation in Supplier Finance[J]. Management Science, 2018, 64 (12): 5631-5650.

[19] Wang C, Fan X, Yin Z. Financing online retailers: bank vs. electronic business platform, equilibrium, and coordinating strategy[J]. European Journal of Operational Research, 2019, 276:343-356.

[20] Qin J, Fu H, Wang Z, et al. Financing and carbon emission reduction strategies of capital constrained manufacturers in E-commerce supply Chains[J]. International Journal of Production Economics, 2021, 241(8):108271.

[21] Gong D, Liu S, Liu J, et al. Who benefits from online financing? A sharing economy e-tailing platform perspective[J]. International Journal of Production Economics, 2019, 222:107490.

[22] Zhen X, Shi D, Li Y, et al. Manufacturer's financing strategy in a dual-channel supply chain: Third-party platform, bank, and retailer credit financing[J]. Transportation Research Part E: Logistics and Transportation Review, 2020, 133:101820.

[23] Wang Y, Yu Z, Jin M. E-commerce supply chains under capital constraints [J]. Electronic Commerce Research and Applications, 2019, 35:100851.