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The Role of An Orchestrator of 3PLs In Supply Chain Finance: A Conceptual Framework

Xiaohong Liu
Business School
Central University of Finance and Economics, Beijing, China
Email: xliu@cufe.edu.cn (*Corresponding Author*)

Liguo Zhou
Business School
Central University of Finance and Economics, Beijing, China
Email: prozlg@163.com

ABSTRACT

This study aims to investigate the role of an orchestrator of third-party logistics service providers (3PLs) in the context of supply chain finance (SCF). SCF is the latest phenomenon to have emerged in the field of supply chain management (SCM). It is concerned with the optimization of financial flows and the integration of financing processes with all participating companies within the supply chains. By leveraging supply chain financing, small and middle - size enterprises (SMEs) are able to obtain funds from banks from which they could not borrow in conventional loaning systems. However, to perform a SCF model successfully, the role of 3PLs cannot be ignored. Drawing upon the discussions in the literature on supply chain orchestration of 3PLs, this study conceptualizes the orchestrator role of 3PLs in SCF. Three forms of 3PLs as an orchestrator in SCF are articulated accordingly.

Key words: *third - party logistics service providers, supply chain orchestrator, supply chain finance, supply chain management*

1. INTRODUCTION

With the ever-changing competitive environment, in particular, the transition of competition from companies to supply chains (Christopher, 1992), the third-party logistics service providers (3PLs) are facing huge challenges with their service provision (Liu *et al.,* 2010; Marchet *et al.,* 2009). As reported by some 3PL surveys (e.g. Mayer, 2013; Capgemini Consulting, 2016), the profit margin generated from traditional logistics operations is decreasing. How to maximize the value creation of 3PLs has received an increase in attention by practitioners and academics.

The emergence of logistics financing, or rather, inventory financing, has however provided 3PLs with such an opportunity. Logistics financing is a business model with active financial services in addition to logistics services by 3PLs, in which firms' current assets are used as collateral for short-term loans (Hofmann, 2009; Hofmann and Belin, 2011; Pfohl and Gomm, 2009).

The demand for this service arises from the difficulty that some manufacturing and commercial enterprises, in particular, small and middle - size enterprises (SMEs), have in obtaining loans from banks. For example, it is generally recognised that SMEs find it hard to borrow funds from banks owing to inadequate fixed assets and limited capacity of credit rating (Hong and Zhou, 2013; Wu *et al.,* 2008). Nevertheless, by embracing logistics financing, they are able to borrow against the inventory held in the warehouses of 3PLs (Varangis and Larson, 1996; Lacroix and Varangis, 1996). This, however, is what they could not achieve in the conventional loaning system. This service has not only helped SMEs obtain the loans for business, but also brought 3PLs much more added value. On the one hand, 3PLs have increased their capabilities in the field of value-added services. On the other hand, as the third party trusted by both banks and borrowers, 3PLs have successfully permeated the supply chain of borrowers and strengthened the relationship with banks. In addition, compared with other logistics services, this business has generated a relatively high profit margin as a result of the relatively high risk undertaken. Thus, provided risk is controlled, this business could bring better benefits for 3PLs.

However, in view of the current circumstance, most logistics financing services deal with financing demands in isolation. The borrowers are treated as individual entities; the dynamic relationship between these borrowers and the supply chains with which they are involved is ignored. On this occasion, the services that 3PLs provide are very limited. This is not only unfavorable for 3PLs striving to create value fully, but also inhibits the exploitation of the potential value of this innovative model.

From this starting point, it is intended that this paper explores the role of 3PLs in the context of supply chain finance (SCF). In the following sections, we discuss an orchestrator role of 3PLs first. After that, we describe the role of 3PLs in logistics financing. Further, we outline an illustration of the orchestrator role of 3PLs by introducing three different forms in SCF for capital-constrained supply chains. Finally, we form a conclusion and suggest future direction.

2. THE ROLE OF AN ORCHESTRATOR OF 3PLs

According to Longman's Dictionary of Contemporary English, to "orchestrate" is defined thus: "to arrange (music) so that it can be performed by an orchestra". In addition, the dictionary has noted another meaning: "to plan (something with many parts) for the best effect". In recent years, the terms "Orchestration" and "Orchestrator" have been applied more frequently in the supply chain management (SCM) community. Stubbs (2004) stated that an orchestrator is a "hub" firm in the selected market of the supply chain. Christopher (2005) considered orchestration to be the activity of managing, coordinating, and focusing on the value-creating network. Fung *et al.* (2009) emphasized that orchestration is imperative for supply chains to remain competitive in today's business environment.

The role of an orchestrator of 3PLs in SCM has been recognized by both practitioners and academics. From a practical point of view, for example, John and his colleagues initiated a survey report on 3PLs and their users since 1996. The survey was initiated in the USA, but has gradually extended worldwide. During their longitudinal investigation, Langley and his team found that 3PLs had evolved to supply chain orchestrators from traditional transport and warehousing services providers (Capgemini Consulting, 2009). A 3PL attributed to be an orchestrator, as they reinforced in the survey report, has not only coordinated with other supply chain members for its customer's supply chains, but has also proactively formulated strategy and managed the value-added activities for supply chains. Given this strategic evolution, 3PLs have taken more control and responsibility for customers' supply chains (Capgemini Consulting, 2009). Their findings are in accordance with the observation by Christopher (2005).

From an academic point of view, the strategic involvement of 3PLs, in particular, the provision of supply chain services is highlighted in the 3PL literature. For example, Forslund (2012) found that 3PLs provide for the traditional logistics services of their customers such as transportation and warehousing, and supplementary services such as order administration and track-and-trace services. Similarly, Jayant (2013) noted that many 3PLs are now providing a variety of services. Based on this observation, he evaluated SC 3PL in competitive business environment. Jayaram and Tan (2010) understood that the term 3PL today encompasses a wide range of SCM services, such as a firm's sourcing, materials management and distribution responsibilities. From this starting point, they suggested that the service offerings by 3PLs have been expanded and value-added functions, such as after-sales support, customer service and reverse logistics, have been included. Likewise, Fabbe-Costes *et al.* (2009) delineated that today's firms have outsourced not only traditional functions, such as transportation and warehousing operations, but also managerial functions associated with the flow of goods and certain production activities to 3PLs as well. They further noted that, in order to meet the needs arising from specific customers, 3PLs provide both service offerings and solutions for clients.

Of the studies, the supply chain role of 3PLs is also highlighted. Bolumole (2001) asserted that, as the synchronization of dispersed supply resources becomes a critical requirement, 3PLs can act as "logistics coordinators in the supply chain" for clients. By taking a similar stand, Chen and Tang (2014) stressed that 3PLs can serve as a coordination mechanism to the improvement of supply chain performance. Jayaram and Tan (2010) reinforced the point that 3PLs are playing ever increasing roles in extended supply chains transforming from movers of goods to strategic value-added entities. In some cases, as they corroborated, 3PLs even manage entire supply chains. Bitran *et al.* (2007) affirmed that 3PLs have moved further into the value chain rather than remaining as a peripheral player, and have been in a unique position to assume the new role of facilitator.

By drawing on three theories, i.e. transaction-cost economics (TCE), resource-based view (RBV) and network theory (NT), Zacharia *et al.* (2011) explained the phenomenon of the evolving role of 3PLs theoretically. They argued that the orchestrator role of 3PLs is contingent with logistics outsourcing, in which firms outsource 3PLs in order to 1) minimize their transaction costs; 2) increase access to a wider range of resources; and 3) take advantage of third party relationships. By nature, the work by Zacharia *et al.* (2011) provides further support, affirming that 3PLs have evolved from a provider of logistics services to that of an orchestrator within the supply chain. The orchestrator role that 3PLs play can facilitate SCM best practices.

Overall, as Bolumole (2001) asserted, the shift from traditional, functional third-party logistics to a more comprehensive, mutually beneficial and supply-chain focused relationship has tremendous implications for the supply chain role of 3PLs. In order to move the parameters and create a new value, 3PLs must develop and leverage logistics and supply chain expertise, and build strategic partnerships with their clients (Fabbe-Costes *et al.,* 2009).

3. 3PLs IN LOGISTICS FINANCING

As noted at the outset, to a large extent, logistics financing is pertinent to the financing demand from borrowers, which have difficulties in obtaining loans from banks as a result of the lack of fixed assets. By leveraging logistics financing, borrowers are able to receive loans from banks against the stored goods pledged by the third-party agency.

Primarily, the business model is composed of three participants: borrowers, commercial banks and 3PLs (Hofmann and Belin, 2011; Pfohl, 2009). Borrowers are normally referred to the SMEs, which need funds to develop business. Differing from traditional commercial loans that rely on fixed assets as security, SMEs leave their liquid assets as collateral to commercial banks. Banks make business loans to SMEs in turn, based upon their movable assets (collateral). 3PLs are entrusted by banks responsible for monitoring the movable assets and providing some other related services. The three entities collaborate and coordinate on the monetization of collateral. **Figure 1** shows a typical model of logistics financing.

The involvement of 3PLs in the business not only shapes traditional commercial loans, but also grants 3PLs a new role which differs from their traditional function. Entrusted by banks, 3PLs provide services relevant to financing apart from logistics services, such as collateral assesment and monitoring the store goods. For example, building upon a case analysis, Hofmann (2009) found the value and effect of 3PLs in inventory financing. Likewise, with a case study of six European firms, Wuttke *et al.* (2013) confirmed the significance of 3PLs in providing logistics and financing services for borrowing companies. This role renders 3PLs an effective approach to attaining competitive advantage.

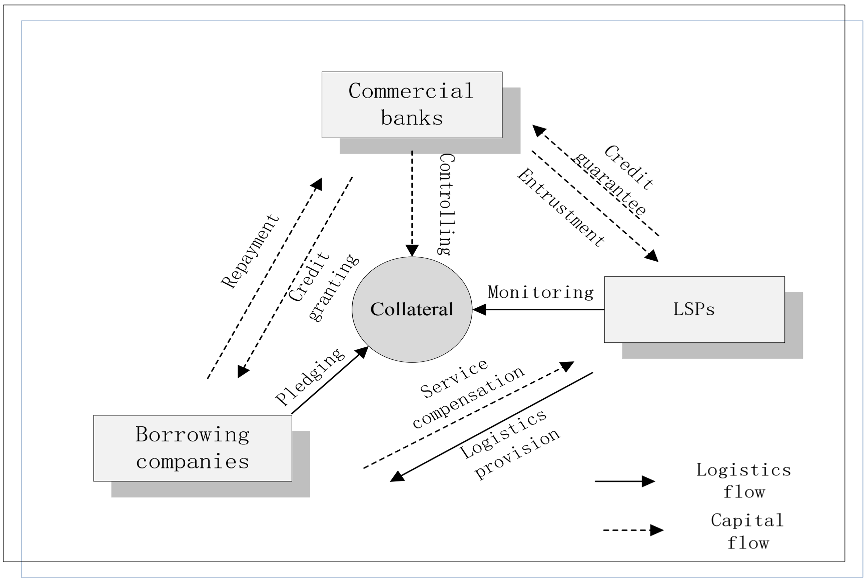

Figure 1 A Typical Model of Logistics/Inventory Financing

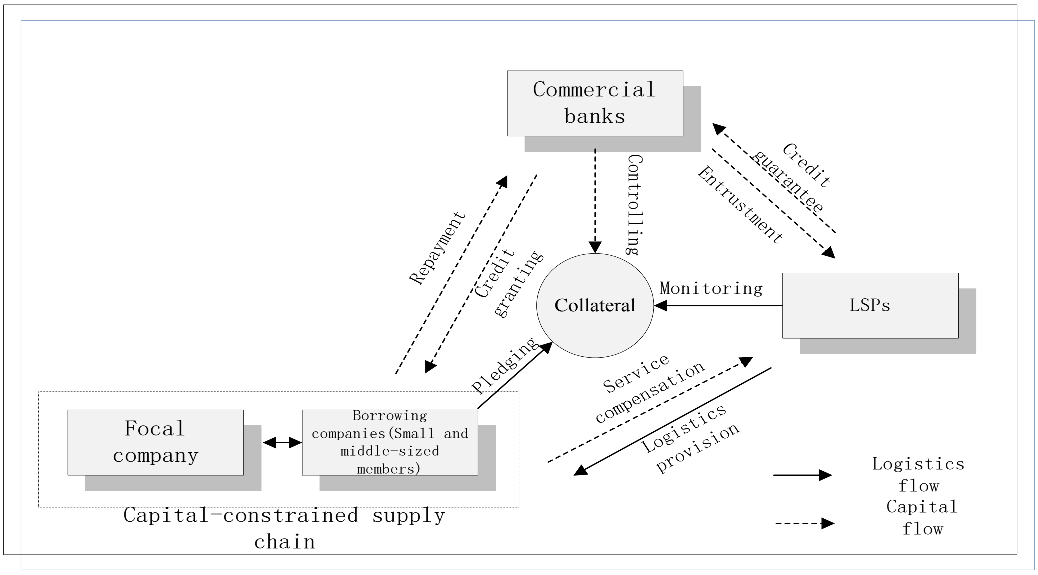

Figure 2 A Typical Model of Supply Chain Finance

However, in practice, what 3PLs face in offering logistics financing is not a single borrower; rather, it is the whole supply chain in which the borrower serves, as shown in **Figure 2**. In this chain, the focal company can easily access the loans from banks, relying on its own capital strength and good reputation. Nevertheless, many of its suppliers or retail traders/distributors find it hard to obtain loans because of insufficient fixed capital. As a result, the chain will be constrained by capital, unable to operate effectively and efficiently. Under this circumstance, from the perspective of the bank, "client financing" has turned into the mode of "one to many" from the previous "one to one". On the 3PL side, offering logistics financing for a single borrower can certainly solve the lender's financing problem, but it is not sufficient for the whole supply chain. There is a need to see that this change enables banks to obtain more financial clients. As far as 3PLs are concerned, as the value and quantity of collateral are the most important profit making sources for 3PLs (Gomm, 2010 ; Pfohl & Gomm, 2009), this change can bring 3PLs greater value-added space from serving more financing customers. An orchestrator role of 3PLs is, however, able to facilitate this implementation.

4. THE ROLE OF AN ORCHESTRATOR OF 3PLs IN SCF

According to the discussion above, we can form an illustration of 3PLs as an orchestrator in SCF into three forms: SCF for capital-constrained industrial supply chains;

SCF for capital-constrained consumer supply chains and logistics financiers.

4.1 The Role of An Orchestrator of 3PLs In SCF for Capital-Constrained Industrial Supply Chains

Industrial goods include intermediate goods as well as final goods, such as raw materials, machine equipments, spare parts and others. In the case of industrial supply chains, the operation of the whole chain is built upon the collaboration and coordination between the focal company, normally recognized as a manufacturer, and other chain members (Nag *et al.,* 2014). In order to produce industrial goods, the manufacturer (focal company) obtains orders from the market and turns to suppliers, requiring them to provide various materials for manufacturing.

As the volume of industrial goods is relatively large, suppliers need enormous capital to purchase various materials and equipment for manufacturing. Compared with the focal company, the strength of suppliers is relatively weak. These suppliers, in particular SME suppliers, cannot afford capital for production by themselves. This leads to the instability of the whole supply chain operation. In order to prevent the break of production caused by the capital chain broken, these suppliers need financing. **Figure 3** presents a diagram of the SCF in the case of capital-constrained industrial supply chains.

As shown in **Figure 3**, the role of an orchestrator of 3PL in SCF for capital-constrained industrial supply chains is shown primarily in the following functions.

1) Strategic planning

Considering the character of financing requirements derived from capital-constrained industrial supply chains, 3PLs propose a strategy of financing services and formulate the design for banks and suppliers from which decisions can be made. On this occasion, the focal company within the supply chain collaborates with banks and 3PLs to solve the problems with respect to the funding shortage resulting from upstream suppliers. In terms of the assessment of the credit of 3PLs and the focal company, banks release the loans for those suppliers with a funding shortage. The suppliers borrowing loans from banks can therefore purchase raw materials and equipment, as well as assemble parts and spare parts for manufacturing.

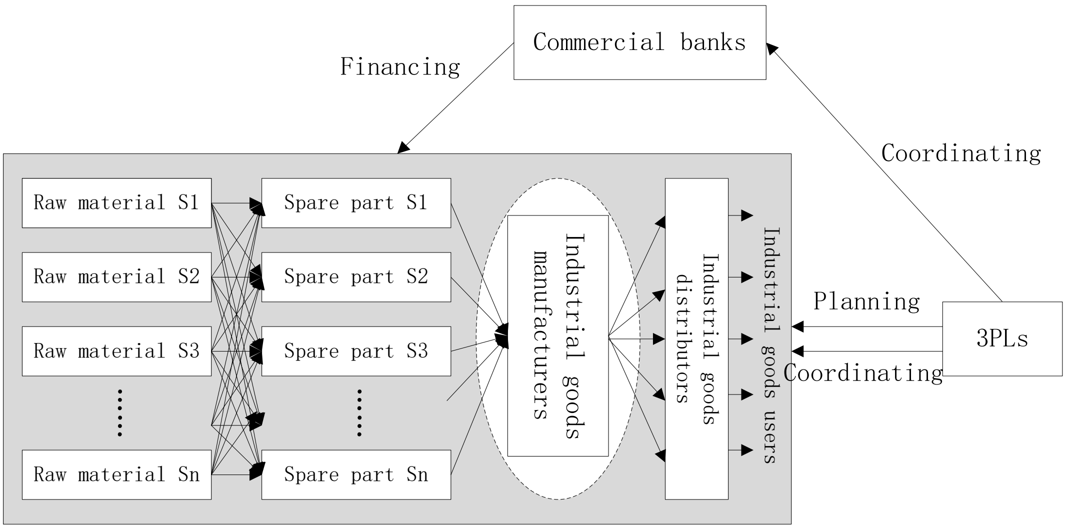

Figure 3 The Role of 3PLs In SCF for Capital-Constrained Industrial Supply Chain

2) Coordination and integration

In the context of SCF, 3PLs need coordinate multiple relationships between banks, focal company and suppliers. From the perspective of the bank, 3PLs provide timely and symmetrical information for banks. From the perspective of the borrower entrusted by banks, on one hand, 3PLs need to handle business relative to the money lending required by banks. On the other hand, 3PLs take the responsibility for monitoring the stored goods pledged by the suppliers, offering effective inventory and distribution services, supervising the inventory changes while also improving the relevant services and quality.

4.2 The Role of An Orchestrator of 3PLs In SCF For Capital-Constrained Consumer Supply Chains

The concept of the consumer supply chain emerged in the 1980s. It is commonly recognized that some large retailers rapidly expand their chain retail stores by embracing capital, information and channels, thus enhancing their business strength. A good example of this is Walmart which is a focal company partnering with numerous suppliers. Consumer supply chains are characterized by continuously changing customer trends (Fōrster *et al.,* 2014).

Likewise, there are many SMEs within consumer supply chains, such as SME suppliers and distributors. Compared with industrial production, the demand for start-up capital for consumer production is relatively small, and the financing scale is not too big. In addition, as the repayment period of loans is not allowed to exceed the settlement for account, this leads to a short-term demand for capital. As a result, the capital turnover is much faster to consumer supply chains. In addition, the characteristics of consumer goods differ greatly. Differing from industrial goods, consumer goods are the goods that are ultimately consumed rather than used in the production of another good. Moreover, they come in a wide variety of product range, including food supplies, household appliances; personal care products, clothing products, fast moving consumer goods (FMCG). In the case of SCF, only durable goods, such as autos,mobiles, household appliances with higher unit value as well as bulk commodities with stable prices, such as rice, wheat, corn and oils, can be used as collateral. This, however, poses higher standards for implementing SCF. **Figure 4** sketches the case of SCF for capital-constrained consumer supply chains.

Correspondingly, an orchestrator role of 3PLs in SCF for capital-constrained consumer supply chains is illustrated as follows.

1) Strategic planning

In line with the financing requirements arising from capital-constrained consumer supply chains, 3PLs propose a financing service strategy and formulate the scheme for commercial banks and borrowers to make decisions. Given the financing specialty of consumer supply chains, in addition to the selection for collateral, banks give more consideration on several aspects: 1) the financial strength of downstream retailers; 2) the authenticity of the contract made by borrowers and the focal company; 3) the repayment ability and transaction risk; 4) the operation conditions. In terms of the strategic planning and management made by 3PLs, banks demand that 3PLs play a greater function in strengthening the guarantee capacity of the capital-constrained consumer supply chains in order to reduce risk. To prevent financing risk, 3PLs need to participate in the credit guarantee to the capital-constrained consumer supply chains based on their own credit.

2) Coordination and integration

3PLs evaluate the collateral provided by borrowers and provide relevant warehousing scheme according to the assessment. At the same time, 3PLs deliver commitments to banks, guaranteeing the lowest damage for the stored goods. As consumer goods have different charters, this places greater standards for the storage of collateral. In this case, 3PLs need to coordinate each side in order to provide favorable conditions for consumer goods based collateral.

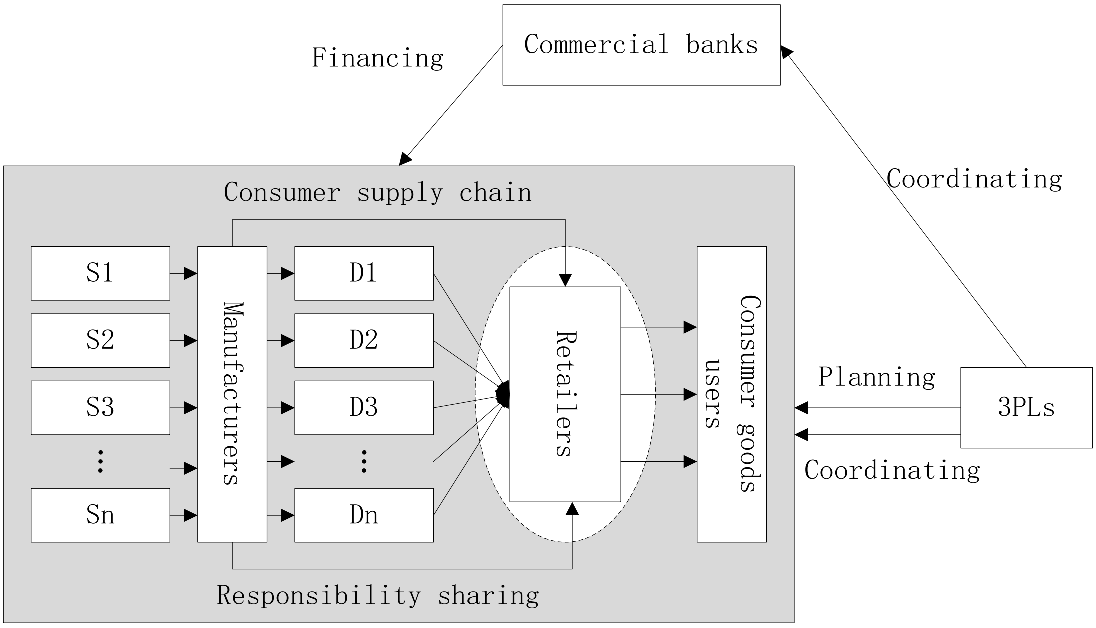

Figure 4 The Role of 3PLs In SCF for Capital-Constrained Consumer Supply Chains
Notes: S: supplier; D: distributor

4.3 Logistics Financiers

Concerning the two forms indicated above, 3PLs and commercial banks are two independent entities. Under such circumstance, although the supply chain orientated financing service is of potential, banks and SMEs encounter serious information asymmetry. This gives rise to transaction costs increasing substantially (Hofmann and Belin, 2011; Pfohl and Gomm, 2009). In addition, the situation makes against solving the conflicts between chain members. For example, in order to define the loan rate, banks need to know the information with reference to collateral on type, quantity, price change, etc. Conversely, borrowers wish to obtain lower loan rates and therefore prevent banks from acquiring more information about collateral. A form of logistics financier can however solve this problem, as the best practices given by DHL, UPS. From a pragmatic point of view, logistics financiers can understand that 3PLs offer both business loans and logistics services (Biederman, 2004). 3PLs and banks are integrated into one entity. Figure 5 shows the functions of 3PLs as logistics financiers.

1) Strategic planning

The advantage that 3PLs possess is professional logistics expertise and operation experience. With regard to 3PLs, by implementing or collaborating with financial organizations for logistics-led financing business, 3PLs can provide a comprehensive package of services integrating logistics and finances, realizing the seamless connection between logistics, information flow and capital flow, hence improving the efficiency of the supply chain.

2) Coordination and integration

Given an integration of logistics and financing, some complicated processes, such as sending instructions, checking documents and information delivery between banks and 3PLs, are eliminated. This benefits the capital-constrained supply chain operation. Compared with other SCF services, that of the logistics financier is more efficient.

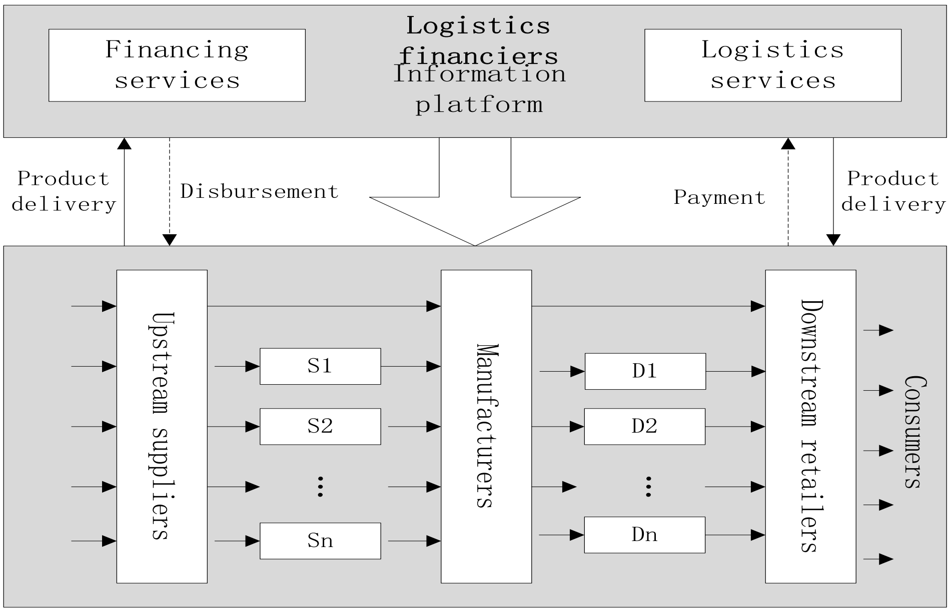

Figure 5 Logistics Financiers
Notes: S: supplier; D: distributor

4.4 A Comparison of Three Forms

Three forms, i.e. 3PLs as an orchestrator in SCF for capital-constrained industrial supply chains, capital-constrained consumer supply chains and logistics financiers, have been illustrated above. A comparison of the differences between these three patterns can thus be made primarily from three angles: organizational structure, service provision and collateral.

From the perspective of organizational structure, the former two, i.e. SCF for capital-constrained industrial supply chains, capital-constrained consumer supply chains, are a multilateral alliance, while the latter one, logistics financiers, is a unified body. The dissimilarity on organizational structure poses different needs for 3PLs when playing an orchestrated function. Specifically, in the case of a multilateral alliance, 3PLs deal with logistics services and relative financing services on behalf of the banks. Or rather, only with the involvements of banks can the orchestration of 3PLs be deployed in the SCF business model. On the contrary, as unified logistics financiers, 3PLs are exempt from this restriction and can offer SCF services on their business needs. Therefore, the role of an orchestrator of 3PLs can be fully exerted.

Thanks to the distinction of the organizational structure, the service offerings provided by 3PLs in the three models differ in degree. In the case of SCF for capital-constrained industrial/consumer supply chains, 3PLs are responsible for logistics services with some subsidiary services of financing, such as credit guarantee. As financing agencies, banks take responsibility for the core business of financing, such as providing deposits and loans. However, as logistics financiers, 3PLs need to take all the required financing services apart from logistics services. This also suggests that, to be a qualified “logistics financier”, a typical 3PL needs to be well equipped with professional expertise in financing.

Thirdly, the collaterals in the three models need concern, in particular, in SCF for capital-constrained consumer supply chains. As mentioned previously, the goods with low unit value and unstable prices, such as FMCG, are unfit for use as collateral. 3PLs should be cautious of the security when performing SCF.

5. CONCLUSION, IMPLICATIONS AND FUTURE DIRECTION

Drawing upon prior studies on the orchestrator role of 3PLs, this paper provides a discussion of the role of 3PLs in the context of SCF. From a theoretical perspective, the business model of logistics financing advances the evolving role of 3PLs, but the academic community has not yet given a clear explanation of the role in the case of SCF. The paper, however, enriches the discussion of supply chain orchestrator of 3PLs in the literature by extending the research context to the SCF. From a practical perspective, the proposed theoretical framework can be used as a guide for practical application. It is recognised that logistics financing is facing a “bottleneck”, since this innovative model has not explored the potential of each part for value creating thoroughly. How to solve these problems has become a key to each part. As far as 3PLs are concerned, this service has brought 3PLs much more added value. On the one hand, 3PLs have increased capabilities in the field of value-added services; on the other hand, as the third party trusted by both banks and borrowers, 3PLs have successfully permeated their customers’ supply chain and strengthened the relationship with banks. In addition, compared with other logistics services, this business has generated a relatively high profit margin as a result of the relatively high risk(s) undertaken. The investigation provides insight into how exploiting the strategic potential of 3PLs can help SCF achieve the best performance.

The proposed conceptual framework suggests some lines for future research. First of all, it is necessary to verify the models by conducting empirical studies. Future studies should explore the elements of the role of the orchestrator that 3PLs play in three forms of SCF by selecting a set of capital-constrained supply chains, making empirical examinations on the effect of these elements. The constructs underlying the research models would be developed by employing the existing theories and SCM knowledge. As with the study by Zacharia *et al.* (2011) which uses TCE, RBV and NT to explain the supply chain orchestrator of 3PLs in general, the theories rooted in different disciplines, such as strategy, micro-economics, organization, can be used to explain the phenomenon of the role of an orchestrator of 3PLs in SCF. In addition, making a comparison of the research results obtained from examining different forms is also suggested. This is because developing general or specific constructs of the supply chain orchestrator of 3PLs in SCF may provide a better understanding of the knowledge building.

Another research line is to develop a rigorous methodology, which includes both qualitative and quantitative methods, to perform the empirical studies. This is also one challenge facing logistics and SCM researchers when examining the orchestrator of the supply chain of 3PLs. As noted at the outset, the role of an orchestrator of 3PLs has received more concern in the logistics and supply chain field. Nevertheless, most studies are limited in the conceptualised discussions and case studies, which, however, need further testing; large-scale questionnaire surveys are lacking. This is not conducive to the generalizations of the research results and the knowledge building on the role of orchestrator of 3PLs. Each method has its limitations; a combined qualitative and quantitative approach can overcome the weakness of the single method and is therefore suggested (Golicic *et al.*, 2005; Mangan *et al.*, 2004; Näslund, 2002). A qualitative method may be used to develop the constructs and a quantitative method followed to examine the reliability and validity of the constructs. In addition, given that SCF is a business model that involves multiple parts, a multiple view, rather than unidimensional or dyadic view on the role of an orchestrator of 3PLs, such as the views by banks, borrowers and even 3PLs themselves, is suggested. This would avoid the research bias caused by the single perspective approach. Nevertheless, this multiple angle of view could make the process of data collection time-consuming. Researchers should draw up a careful plan of collecting data for the investigation.

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Xiaohong Liu (Ph.D., Heriot-Watt University, UK) is professor in the Business School at the Central University of Finance and Economics (CUFE), Beijing, China. Her current research focuses on green logistics and supply chain management, the development of supply chain management discipline in emerging economies and supply chain finance. Her papers have appeared in journals such as *International Journal of Physical Distribution & Logistics Management, International Journal of Logistics Research and Applications*). Xiaohong Liu is the corresponding author and can be contacted at: xliu@cufe.edu.cn.

Liguo Zhou (Ph.D., Central University of Finance and Economics, China) is professor in the Business School at the Central University of Finance and Economics (CUFE), Beijing, China. Dr. Zhou's primary research fields include commodity circulation theory and practice, marketing management, logistics management and supply chain finance. Dr. Zhou has made great achievements in his research areas. He has authored over 60 papers in referred journals in China such as Management World. During the last ten years, he has presided over and participated in more than 10 projects granted by Chinese Nature Science Foundation, Chinese Social Science Foundation, ministries and industrial organizations. Many of his research projects have been awarded scientific prizes.