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The Emerging Role of the Third-Party Logistics Provider (3PL) as an Orchestrator

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The connectivity and communication requirements of leading supply chains have created the emergence of a more advanced role for third-party logistics providers 3PLs. They have evolved from providing logistics capabilities to becoming orchestrators of supply chains that create and sustain a competitive advantage. This article uses a theoretical perspective based on resource-based theory, network theory and transaction cost economics, and a thorough literature review, to develop a model with seven propositions. Finally, using structured interviews of industry executives from a leading 3PL, we offer empirical support for the model and propositions that can be used to define the orchestrator role of a 3PL.

Keywords: logistics; orchestrator; outsourcing; supply chain management; third-party logistics provider (3PL)

INTRODUCTION

The focus on supply chain management (SCM) has forced companies to rethink their competitive strategies. Inherent within the definition of SCM is a need to coordinate, communicate, and collaborate with other companies within the supply chain. Many of the companies identified as having mastered SCM, such as Walmart, Toyota, and Cisco, are large companies that dominate their supply chains. Due to sheer size, they can insist on their suppliers sharing information, reducing inventory, and investing in new technology. However, many companies participate in supply chains that lack a dominant company that serves a leadership role, yet these companies also need to utilize SCM best practices, share information, reduce inventory, and invest in new technology. Our research suggests third-party logistics firms (3PLs)[1] have evolved into such a leadership role, serving as a unique "orchestrator" within the supply chain to help facilitate SCM best practices. To remain competitive and deliver value to customers, companies have increasingly had to create efficiencies in all business processes, focus on core competencies, and outsource functions that can be performed more efficiently by third-parties (Christopher 1998; Lambert et al. 1999). Logistics has been identified as a primary function that can enable firms to cut costs and improve responsiveness through outsourcing (Christopher 1998, 2005). The result has been a high demand for outsourcing of logistics services and a proliferation in the number of 3PLs that provide such offerings over the past decade (Lewis and Talalayevsky 2000; Maltz and Ellram 2000; Mahnke et al. 2005; Sanders et al. 2007).

Traditional logistics management activities, such as transportation, warehousing, order processing, and related information technology (IT) support, are deemed as noncore functions for many firms. In addition, logistics activities have significant asset requirements and offer the potential for large cost savings, making it a primary candidate for outsourcing. Historically, 3PLs provided traditional logistics services, such as transportation and warehouse management. However, the increased volume and scope of services demanded from 3PLs have given rise to their changing role, where today they are engaged in strategic coordination of their customers' supply chain activities. Consider that United Parcel Service, Inc. (UPS) evolved from a provider of simple delivery services to offering complete distribution management and network design. UPS claim that for their customers they will "act as eyes and ears around the world" (http://www.ups.com). As entities that connect members of the supply chain, 3PLs serve a critical role responsible for achieving effective logistics integration by which inter- and intrafirm activities are integrated to enhance customer satisfaction and provide a competitive advantage (Murphy and Poist 2000; Knemeyer et al. 2003). As a result, there has been a surge of academic and practitioner interest in the area of 3PLs and their impact on the supply chain (Leahy et al. 1995).

In this article, we argue that the role of 3PLs has evolved from a provider of logistics services to that of an orchestrator within the supply chain. Orchestration can be defined as the activity of managing, coordinating, and focusing the value-creating network (Christopher 2005), and has received a great deal of attention in the literature (Schweitzer 2005; Fung et al. 2009). The type of "hub" firm that emerges as an orchestrator varies based on the select market of the supply chain (Stubbs 2004).

We develop our theoretical argument using three social economic theories, transaction cost economics (TCE), resource-based theory (RBT), and network theory (NT). On the basis of existing literature, we identify four factors that characterize

[1]Even though some researchers have distinguished between 3PL and 4PL or lead logistics provider, we use the more generic term 3PL to include both asset-based providers and non–asset-based providers and those 3PLs that manage other 3PL firms.

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a 3PL as an orchestrator, formulate a representational model, and develop supporting propositions. We then offer further empirical evidence gathered from structured interviews of eight senior managers involved in the 3PL industry to validate our model. Our results indeed support the concept that 3PL firms can become orchestrators who can facilitate SCM within the supply chain. These findings provide important implications for researchers as they study SCM, as well as practitioners regarding their use and expectations of 3PLs.

THEORETICAL SUPPORT FOR THE ROLE OF 3PL

The heightened competitive pressure of today's global business environment has forced companies to focus on their core competencies and increasingly outsource business tasks perceived as noncore. There is considerable support in the social science literature for logistics outsourcing as a strategy and the role of the 3PL as the orchestrator of the supply chain as summarized in Table 1. The three theories we rely on are TCE, RBT, and NT (Figure 1). In the next section, we describe each of these theories and discuss the theoretical implications for the role of the 3PL as facilitating SCM best practices, as an orchestrator.

Transaction cost economics

TCE theory states that a firm's ownership decision is based on minimizing the sum of its transaction and production costs (Coase 1937; Williamson 1985). TCE provides a well-accepted foundation for analyzing logistics and outsourcing decisions (Hobbs 1996; Andersson 1997). The premise is that outsourcing to 3PLs will occur when there is an opportunity to reduce transaction costs. Outsourcing logistics activities typically reduces transaction costs that include centralized order processing, efficient use of assets, and consolidation of overhead by a third-party. It is useful to note that the relationship between the firm and a 3PL will also incur transaction costs. However, dealing with one relationship requires fewer resources than managing multiple relationships without a 3PL. These transaction costs are further reduced through standardization of processes as well as improvements in coordination offered by the 3PL. In fact, there is substantial evidence to support that the greater the consolidation of tasks provided by the 3PL, the lower the transaction cost (Ellram 1991; Ellram and Maltz 1995; Hobbs 1996). Furthermore, Andersson (1997) has used TCE to provide support for third-party partnerships; Skjoett-Larsen (2000) to support the role of third-party logistics; Steensma and Corley (2002) to support technology sourcing; and Mahnke et al. (2005) to support outsourcing IT services.

With great demand for outsourcing logistics services, 3PLs have increasingly grown the number of services they offer. As the role of the 3PL has increased, it has been able to acquire assets and create synergies by serving multiple clients, and has further been able to reduce firm transaction costs. TCE seems to imply that as long as there are cost advantages, it makes economic sense to outsource more activities to 3PLs which enable 3PLs to orchestrate more activities in the supply chain.

The actions of firms to reorganize their operations to outsource more activities to 3PL and remain competitive cannot be explained by TCE alone and minimizing transaction costs. Another factor in these decisions is the ability of firms to focus on their core competencies and engage outside firms to carry out other organizational operations which leads to the RBT perspective.

Resource-based theory

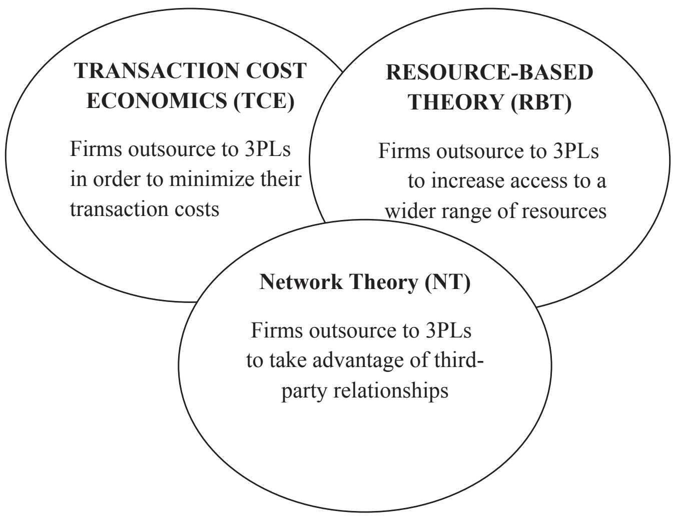
According to the RBT perspective (Penrose 1959; Rumelt 1984; Wernerfelt 1984; Barney 1991; Nelson 1991; Peteraf 1993; Eisenhardt and Martin 2000), the firm can be viewed as a bundle of resources that are heterogeneously distributed across firms, with differences between them that persist over time. The term "resources" is broad in nature, in that it refers to not only physical (tangible) assets, such as equipment, plants, and location, but also to intangible assets, such as expertise, knowledge, and organizational assets.

RBT principles suggest that an organization must secure an efficient bundle and flow of the right type of resources from its environment to survive and improve its operational performance (Olavarrieta and Ellinger 1997; Rungtusanatham et al.

Table 1: Underpinnings of social science theories relative to the role of 3PLs

Social science theory	Theory foundation	Support for outsourcing to a 3PL
Transaction cost economics (TCE)	Firms exist to maximize profit by reducing their transaction costs	Minimizes a firm's transaction costs; as 3PLs grow in capability they offer services at lower costs further supporting their use
Resource-based theory (RBT)	Firms are comprised of bundles of resources that gives them a competitive advantage	Maximizes a firm's ability to access a range of resources; as 3PLs grow they can increasingly offer a wider range of resources
Network theory (NT)	Firms seek efficiency of an entire network through interactions with other firms	Maximizes a firm's ability to leverage relationships; as 3PLs become responsible for a larger number of supply chain members their ability to offer greater network interactions increases

Figure 1: Theoretical support for the role of 3PLs.



2003). Competitive advantage can result from having ownership of, or access to, an inimitable asset (Rumelt 1987), innovations (Conner 1991), and barriers to resources (Wernerfelt 1989). These resources, in turn, enable the firm to maintain competitiveness in the marketplace. Such resources and capabilities are core competencies (Prahalad and Hamel 1990). Competency in logistics is critical for most firms, but it requires large resources and a significant capital investment. Competency in logistics has often been seen as a source of sustainable competitive advantage that firms can accumulate over time. Furthermore, all logistics functions can be outsourced, permitting the firm to have access to a full range of resources it does not own. In fact, the ability to implement a strategy of logistics outsourcing effectively can in itself be regarded as an intangible asset and a resource-providing activity (Hobbs 1996; Teece et al. 1997).

As such, RBT is especially useful to support outsourcing and the role of 3PLs. Firms rely on outsourcing to gain access to other firms' valuable resources in the competitive marketplace (Madhok 1997; Ramanathan et al. 1997). As the need for such resources evolves over time, firms seeking and providing such services become mutually adapted toward one another and more value-dependent (Teece 1987; Madhok 1997). As firms have increasingly outsourced larger portions of their logistics function, 3PLs have grown in their scope of responsibility accordingly. RBT suggests that the use of 3PLs has enabled firms to gain access to complementary resources and create much more competitive resource bundles, providing them with a competitive advantage. However, just providing access to complementary resources does not fully explain the reason why companies are increasingly outsourcing functions to 3PLs which leads to the third theory, NT.

Network theory

According to the NT perspective, outsourcing enables the firm to manage its supply chain as a single entity through the application of relationship building (Ellram 1990) and network coordination (Hakansson and Snehota 1995; Ford 1997). This is a view that is compatible with SCM as it views the entire distribution channel versus each organization as a separate entity (Stern et al. 1989; Scott and Westbrook 1991). This view assumes that it is a necessity for organizations to exchange resources and that those organizational relationships are the foundation of this process (Hakansson and Snehota 1995). NT provides an explanation for the growth of 3PL services and their multiclient relationships that can span the supply chain.

NT assumes that various collaborations occur between organizations based on economic motivations (similar to TCE), as well as power and trust (Uzzi 1997). Furthermore, like RBT, NT recognizes that firms need resources that are often controlled by other firms. According to NT, these resources can be obtained only by creating relationships and interacting with these firms. As a result, networks develop across the value chain (Johanson and Lars-Gunnar 1987; Ford 1990). The firms that enter such networks invest in building medium to long-term relationships that may evolve over time.

As it relates to the role of 3PLs, NT focuses on the formation of relationships, organizational structures, and alliances (Ellram and Cooper 1990; Ellram 1995; Ford 1997; Christopher 1998). Within the NT perspective, the firm seeks the efficiency of the entire network through reciprocating and influencing interactions with other firms in the environment within which it operates. An organization that has the ability to coordinate well with other entities in the network has created for itself a basis for achieving a strong competitive advantage, which provides another theoretical motivation for the need for 3PLs. NT suggests that 3PLs not only provide a network-wide efficiency but associating with a 3PL enables firms to take advantage of network relationships. The mutuality of the need and offering, as supported by NT, has given rise to the role of the 3PL as the entity that has the ability to orchestrate activities within the supply chain.

We have thus far provided support for the role of the 3PL from the view of TCE, RBT, and NT. Each theory provides its own perspective regarding the factors that influence the current position of the 3PL in the supply chain. Although each of these three theories provides insights into the current role of the 3PL in the supply chain, none of the three theories is fully sufficient by itself to offer a complete explanation. Rather, the three theories are complementary to one another and collectively provide full support for 3PLs. Combining perspectives illustrates a more complete view of firm motivation in using 3PLs—reduction in costs, access to resources, and relationship exploitation. All three motivations have been critical in enabling the rise of the 3PL as firm competitive pressures have mounted and businesses have placed greater focus on SCM best practices. In turn, the 3PL has been able to acquire specific assets and build a wide range of capabilities it can offer at a lower cost. The next section focuses on how the role of 3PLs has evolved into that of facilitating SCM best practices as an orchestrator.

Evolving role of the 3PL

In the 1980s, 3PL services were relatively limited in scope (Maloni and Carter 2006). Over time, however, 3PLs began increasingly offering an integrated set of logistics activities with the demand for such services. Furthermore, as outsourcing logistics services grew, the role of the 3PL within the supply chain began changing accordingly. The role has changed from initially offering transportation services, to offering a broad array of bundled services that also includes warehousing, inventory management, packaging, cross docking, and technology management. More recently, however, the 3PL has taken on a more comprehensive strategic role (Vaidyanathan 2005) as supply chain activities become more critical to the business.

Fueled by the growth of the SCM paradigm and the understanding of the importance of relationship building, numerous frameworks have been presented discussing partnership development within the outsourcing context (Lambert et al. 1996, 1999, 2004; Knemeyer et al. 2003; Moberg and Speh 2003). These frameworks provide in-depth understanding of the respective issues they focus on and show that the extent of the functions being outsourced has become comprehensive which provides general support to 3PLs facilitating SCM best practices and becoming an orchestrator.

A framework for outsourcing engagements

A more recent framework identifies two key dimensions that differentiate outsourcing engagements (Sanders et al. 2007). The first is the *scope* of the outsourcing engagement and the second is *criticality* of tasks outsourced. Scope can be defined as the breadth or degree of responsibility assigned to the 3PL. At one extreme, outsourcing can involve assigning only one task to the 3PL from many possible tasks that comprise an entire function, such as outsourcing all truckload shipments. At another extreme, outsourcing can involve handing over the management and even strategic direction of an entire operation or process to the 3PL. An example of this would be the comprehensive outsourcing of all aspects of the transportation function to a third-party logistics (3PL) service provider, something that is increasingly seen as companies focus on their own core competencies.

Based on the degree of scope outsourced to the 3PL, four types of outsourcing engagements are identified:

1. *Out-tasking,* which involves outsourcing a specific task, such as inventory management. In addition to cost advantages, this form of outsourcing provides *standardization of repeatable tasks* between supply chain entities. Here, only one aspect of the total function is assigned to the 3PL, rather than responsibility for the entire function.
2. *Co-managed services*. This type of arrangement involves assigning a larger scope of the task or function to the 3PL compared with the previous engagement, however, under direct control of the firm. Here, the firm and the 3PL share responsibility for managing the tasks and assets, and typically work collaboratively.
3. *Managed Services*. The responsibility assigned to the 3PL is larger and broader in scope than that of the previous engagements. In this case, the company engages the 3PL to design, implement, and manage an end-to-end solution for a complete function, such as the complete management of the firm's transportation systems. The 3PL is seen as providing the firm with the ability to tap into the unique talent and skills of the 3PL and be a neutral party that works with other entities of the supply chain on behalf of the firm.
4. *Full Outsourcing*. In this arrangement, the firm assigns total responsibility to the 3PL for the design, implementation, management, and often the strategic direction of the function, operation, or process being outsourced. The services are typically highly customized to the business environment of the firm. The 3PL is charged with not only day-to-day execution but also ongoing development of the tools and staff that support the business process. This type of outsourcing engagement can serve as a source of competitive advantage through process transformation and strategic differentiation and, as a result, can provide many strategic benefits to the firm (Lindner 2004).

The second differentiating dimension for outsourcing engagements—*criticality*—is the importance of the outsourced task or function to the firm. At the one extreme, outtasking typically involves assigning responsibility of a more tactical task or function to the 3PL, rather than a strategic function. The task therefore generally has lower criticality to the organization. Full outsourcing, at the other end of the spectrum, typically involves outsourcing a strategic function and more critical responsibility. Although the degree of criticality is typically correlated with the task scope, this is not always the case. It is certainly possible to outsource an entire function or process with little critical importance, and it is possible to outsource a single highly critical task.

A more comprehensive framework of outsourcing engagements is developed when the two identified dimensions—*task scope* and *criticality* are considered simultaneously. For example, coupling a large scope of outsourcing activity with high criticality leads to more comprehensive outsourcing engagements and to different types of managerial requirements than are necessitated by the outsourcing of smaller scope and a less critical task. This forms the basis of an outsourcing framework that shows differences in the nature of the outsourcing relationship and the responsibilities of the 3PL.

Combining the levels of the two outsourcing dimensions leads to four categories of relationships identified and shown in Figure 2:

1. *Non-Strategic Transactions*. This category involves the outsourcing of low criticality tasks that are small or limited scope. The result is an outsourcing engagement that is primarily transaction-oriented, such as a simple commodity exchange; the outsourced tasks are typically standardized and their low criticality does not necessitate close vendor management.
2. *Contractual Relationships*. In this case, the scope of the outsourced task is higher than with nonstrategic

transactions. However, the function is still of low criticality to the firm and requires moderate levels of communication frequency (Rinehart et al. 2005).

3. *Partnerships*. The characteristic of this relationship is the outsourcing of a critical task or function, albeit low in scope. The term ''partnership'' is used to connote strong and enduring trust between the firm and the 3PL, as well as a strong commitment to the relationship, although the parties may not interact frequently. A variety of specific partnership arrangements are identified by Contractor and Lorange (1988) and Lambert et al. (1996, 1999, 2004).
4. *Strategic Relationships*. This is the most comprehensive outsourcing relationship. It occurs when both scope and criticality of the outsourced task are high. These arrangements are defined as strategic relationships, and reflect high interaction frequency, as well as significant trust and commitment between the firm and 3PL. Strategic relationships require a high level of confidence in the capabilities and integrity of the 3PL, and require significant resource investment in ongoing relationship management (Lambert et al. 2004; Rese 2006).

In general, less comprehensive outsourcing engagements, as exemplified by nonstrategic transactions and contractual relationships, primarily require monitoring of performance rather than investment in full relationship management. However, as the outsourcing engagement becomes more comprehensive, the 3PL management requirements become more significant (Hofer et al. 2009). Many companies do not have the internal infrastructure or time required for ongoing relationship management, which can be significant. As such, they have even outsourced this aspect of the function and 3PLs, in turn, are increasingly providing this role. In the next section, we discuss the growth of 3PLs and their evolutionary change leading to a new role of facilitating SCM.

Contemporary 3PL arrangements are based on formal contractual relations, both long term and short term, as opposed to spot purchases of logistics services. They also involve the 3PL taking on a more strategic role that involves coordinating activities of the supply chain. The contemporary role of the 3PL has moved from out-tasking to full outsourcing, or from the lower-left quadrant to the top-right quadrant of Figure 2.

One factor that has significantly helped to change this new role of the 3PL is IT. Advances in IT capability have enabled integration with the logistics providers and their customers. IT is a critical factor for enabling 3PL performance (Sanders and Premus 2005). First, it automates some elements of the logistics workload, such as order processing, order status inquiries, inventory management, or shipment tracking. Second, it links members of a supply chain, such as manufacturers, distributors, transportation firms, and retailers. IT capability has provided the necessary tools to make collaboration feasible. This includes real-time data transfer and automated communication. Furthermore, IT supports collaborative interorganizational relationships by reducing transaction costs and risks associated with automated processes. Finally, as such, it has provided the realistic opportunity for outsourcing core logistics processes to 3PLs. Given this IT capability, 3PLs have been able to collect critical supply chain information and coordinate activities to add significant value and improve performance for their supply chain partners.

Orchestration

The notion of orchestration within the supply chain has been thematic in the recent literature (Stubbs 2004; Schweitzer 2005; Fung et al. 2009). The concept is that successful supply chains, or supply networks, are governed by an aggregate player—a ''hub'' firm—whose role is to provide the required services and assume control of a part of the supply network (Bitran et al. 2006). Fung et al. (2009) state that orchestration is imperative for supply chains to remain competitive in today's global environment. Bitran et al. (2006) hypothesize that supply chains can only sustain themselves if governed by an orchestrator. Furthermore, Stubbs (2004) argues that the type of ''hub'' firm that emerges as an orchestrator varies and is based on the select market of the supply chain and that in logistics-dominant supply chains 3PLs have emerged to play that role.

Different definitions exist for an orchestrator. Dhanaraj and Parkhe (2006) define network orchestration as the set of deliberate, purposeful actions undertaken by the hub firm as it seeks to create value in the network, and the orchestrator to be the coordinator without a hierarchical authority. Other definitions include a neutral third-party who focuses on developing a system architecture (Bitran et al. 2006); one who organizes collaborations of companies and markets the capabilities to end customers (Stubbs 2004); a manager who focuses on the value-creating network; developer of a common agenda for all chain members (Christopher 2005); a coordinator of the supply network (Schweitzer 2005); an entity with an organizational and strategic focus on creating value (Hinterhuber 2002); one who leverages partner resources effectively to enhance activities of the value chain (Hacki and Lighton 2001); and a firm engaged in the activity of managing, coordinating, and focusing on the value-creating network (Christopher 2005).

Although different definitions exist, researchers agree that an orchestration role is critical for efficient supply chain functioning (Hacki and Lighton 2001; Christopher 2005; Lee 2006). Within the context of logistics-dominant supply chains, the literature points to 3PLs emerging in that governance role (Stubbs 2004). For example, after years of research conducted with UPS, Bitran et al. (2007) document the governance role 3PLs can play in complex supply chains. Furthermore, Fulconis et al. (2006) document the rise of 3PLs and the undeniable trend that 3PLs have become brokers organizing supply chain networks. Through this process of organizing networks, sharing information, managing assets, and reducing inventory, 3PLs facilitate SCM best practices and become an orchestrator.

MODEL AND PROPOSITION DEVELOPMENT

Fulconis et al. (2006) propose that the characteristics of a 3PL orchestrator firm include being a change leader, a

Figure 2: Outsourcing relationships.

OUTSOURCING RELATIONSHIPS

	Low Criticality	High Criticality
High Scope	• Managed Services • Contractual Relationships	• Full Outsourcing • Strategic Relationships
Low Scope	• Out-Tasking • Non-Strategic Transactions	• Co-Managed Services • Partnerships

Note: Adapted from Sanders et al. (2007).

decision maker that manages multiple companies, and possesses physical assets that enable conducting coordination between multiple firms. In this section, we take the characteristics proposed by Fulconis et al. (2006) and refine them into specific orchestration constructs that are formulated into a model and propositions that define their interrelationships.

As 3PLs work simultaneously with multiple supply chain partners, they can standardize data and processes across firms and provide supply chain visibility beyond the individual firm. In addition to providing standardization and visibility, they can be neutral arbitrators between entities because they are typically unbiased third-parties. 3PLs can serve as change agents, especially in the case of full outsourcing. Finally, because 3PLs can see opportunities for improvement through standardization and visibility and pursue them without being perceived as driving their own agenda, they can often facilitate collaboration much more effectively than a customer, supplier, or competitor within the supply chain.

Therefore, we propose four interrelated constructs that define the 3PL role of a supply chain orchestrator. They are: *standardization*, *visibility*, *neutral arbitrator*, and *collaborator*. Figure 3 illustrates the relationship of these constructs to the value creation process of the 3PL and to being an orchestrator. Each of these constructs are additive. Standardized processes enhance visibility and visibility makes it easier for a 3PL to be a neutral arbitrator. Figure 3 also illustrates that the orchestration role of the 3PL is impacted by network characteristics such as membership (size and diversity) and as well as structure (density and autonomy). We do not detail these in this article as they have been discussed elsewhere, but note their impact (Ahuja 2000). The definitions of our constructs, their contribution to the role of an orchestrator, and the developed propositions are described next.

Standardized processes enable smooth handoff and flow of goods among all members of the supply chain and facilitate planning. It is a prerequisite for the efficient functioning of a 3PL as it consolidates goods and activities across multiple supply chains. With standardized processes, it is much easier to aggregate and analyze data, identify trends and opportunities, and take actions to improve the efficiency of transportation in many different situations. One of the first benefits or value propositions provided by the 3PL orchestrator is the development of standard business rules and practices so that information and data can be easily shared. This leads to our first proposition:

Proposition 1: The higher the degree of standardization provided by the 3PL, the greater the value creation orchestrated by the 3PL.

Visibility refers to the ability to see along the supply chain. Most companies only see their immediate customers and suppliers in their own chain. 3PL firms, however, have the ability to see across multiple firms and echelons of the supply chain. This visibility is a necessary component of orchestration. Furthermore, visibility across the supply chain is supported by standardization. In fact, without standardization, visibility would not be possible. For example, standard data and processes enable visibility to opportunities for load consolidation, improved asset utilization, and exceptions with the potential for disrupting the supply chain. This leads to our next two propositions:

Proposition 2: Standardization will positively impact visibility of the 3PL.

Proposition 3: The higher the degree of visibility provided by the 3PL, the greater the value creation orchestrated by the 3PL.

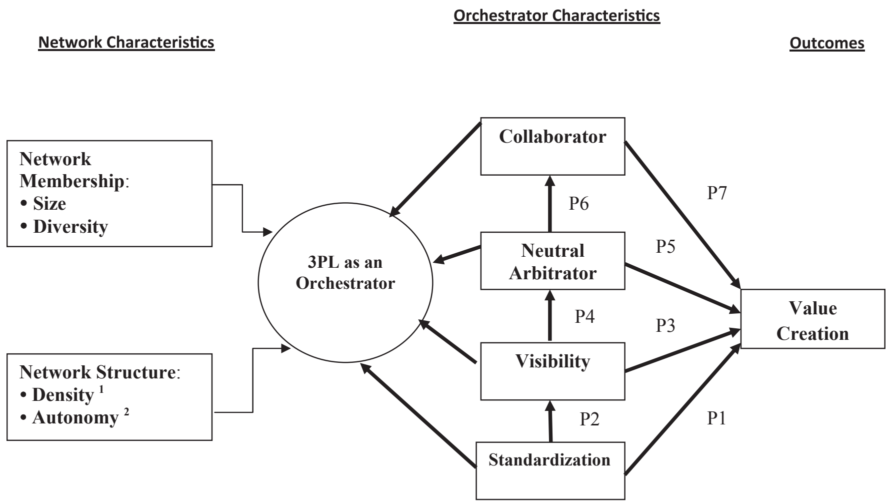
A 3PL company can play a unique role for their customers by enabling change within their organization. When 3PL companies are perceived as neutral, they can advocate change without being concerned about internal politics or being perceived as pursuing their own agenda. By playing a neutral role, competitors are willing to share useful information with the 3PL that they might be unwilling to share with one another. Companies are also more willing to listen to a neutral 3PL who has a wide range of experience and provides a clear benchmark in their particular industry. Furthermore, 3PL firms cannot be neutral arbitrators if they do not have the visibility of the chain. This leads to our next two propositions:

Proposition 4: Visibility will positively impact neutral arbitration by the 3PL.

Proposition 5: The greater the degree of neutral arbitration provided by the 3PL, the greater the value creation orchestrated by the 3PL.

A key capability that 3PL companies provide is the ability to encourage collaboration among their customers and create a collaboration network. Dyer et al. (2004) note that collaboration enables companies to create synergies and that 3PLs are uniquely positioned to find opportunities to create synergies. Collaboration between firms occur to share resources and combine knowledge, skills, and physical assets to create strategic advantage and enhance profits (Ahuja 2000; Jap 2001), but one of the reasons collaboration is difficult for companies is the risk associated with sharing information.

Figure 3: A model of 3PL orchestration.



Notes: [1]Network density is the completeness of ties formed by coordination in a linked supply network (Lee 2006).
[2]Autonomy is the independence and permanence of the network relationships (Dhanaraj and Parkhe 2006).

As a neutral arbitrator with visibility of information from multiple parties in the supply chain, 3PL companies can play a unique facilitating role in collaboration. This leads to our last two propositions:

Proposition 6: Neutral arbitration will positively impact collaboration of the 3PL.

Proposition 7: The greater the degree of collaboration provided by the 3PL, the greater the value creation orchestrated by the 3PL.

To provide additional support to the literature findings and strengthen the presented argument, an in-depth case study of a 3PL firm was conducted. The case study provides a richer understanding of how the role of a 3PL firm has evolved, which is discussed next.

EMPIRICAL SUPPORT

Logistics research can benefit from field observations that provide the underlying logic necessary to justify theory and support literature findings (Mentzer and Kahn 1995). Ellram (1996) notes there are many excellent opportunities to utilize case studies in logistics and purchasing research. Flint and Mentzer (2000) suggest that qualitative research should become more accepted and useful to the field of logistics, and as such should be used more frequently to support theoretical arguments. In this study, we do precisely that, by using interview data to provide empirical support for our model and further illuminate our propositions. Through our interviews with a major 3PL, we developed a deeper and richer understanding of the characteristics required for a 3PL to move from being merely a service provider to an orchestrator. Therefore, the objective of the study was not to survey a large sample of 3PL companies. Rather, our goal was to investigate the changing role of the 3PL highlighted in the literature by developing an in-depth understanding of how one 3PL company has evolved the value they provide to their customers, and their overall role in the supply chain. Qualitative approaches, such as the case method of research, facilitate in-depth analysis of complex, contemporary, and/or underresearched activities and phenomena (Yin 2002). McCracken (1988) noted that in-depth interviews are a good qualitative research tool as they allow the researcher to delve into the respondents' mental world. Given the objectives of this research, the benefits offered by in-depth interviews made them an excellent research tool for this study. To support the theoretical arguments presented, this research followed a single case study approach and purposive sampling procedures, which are described next (Eisenhardt 1989; Ellram 1996; Yin 2002, Esper et al. 2007).

Data collection and analysis

Ellram (1996) noted that an in-depth analysis of a single case is suitable when that case represents a critical example that permits exploration of a well-formulated theory just like a single experiment. In this instance, we use a single-case study design to help understand and explain the role of a 3PL as a supply chain orchestrator. The data collection technique used in this study was in-depth interviews, which were recorded and subsequently transcribed and analyzed (Yin 2002). Using purposive sampling guidelines and the literature review developed in the first section of the article led us to focus on the executives of a large and well-recognized 3PL firm (Firm Z) with a wide range of customers that offered transportation management services in the United States. Interview participants included seven executives from Firm Z and one executive from a large customer firm of Firm Z. This approach enabled in-depth analysis of the firm itself and external validation from the perception of the customer firm.

The focus of the interviews was to understand the value provided by the 3PL to its customers, and the role they play to deliver that value. To accomplish this objective, our interview protocol borrowed heavily from well-established customer value determination methodologies (Woodruff and Gardial 1996). Open-ended interview questions were designed to gain an in-depth understanding of the 3PL operations and services, the benefits accrued to customers, and the value delivered through the relationship (see Appendix). Each in-depth interview lasted between 60 and 90 min and was tape recorded and subsequently transcribed for analysis. External validity is assured through replication of findings; in this study, using a single case, external validity was assessed based on the use of relevant literature as data sources, standard protocol, common location for data analysis, and review of findings from external reviewers (Esper et al. 2007).

Firm Z is a non–asset-based 3PL that is well known in the industry and handles about $1.3 billion in freight costs per year. They have been ranked as a Top 10 3PL for five consecutive years by *Inbound Logistics* (2007). As noted earlier, the purpose of this case study was not to develop new theory, but to provide empirical support for the concepts found in the literature. McCracken (1988) noted eight interviews are sufficient for many research questions. Therefore, the emphasis was to interview enough respondents to get an understanding of the changing role of this 3PL (Firm Z) and to stop collecting data when the information became redundant (Flint et al. 2002).

Interviews were conducted with seven of the firm Z senior executives and one customer, whose titles and areas of focus can be seen in Table 2. Each of these executives has a different set of responsibilities and as such provided a different perspective on the role of the 3PL and the value provided to customers.

Our research primarily focused on the value a 3PL company offers its customers and firm Z prides itself on their relentless focus on the customer. Using customer value determination research protocol (Woodruff and Gardial 1996), the participants were asked to describe significant attributes, consequences, goals, or value associated with the services provided by the company to their customers. This prevented any unwanted biasing of the respondents, as they were not asked directly about the changing role of a 3PL, but instead about the value they themselves provide to the customer.

An analysis of the interview transcripts pointed to a customer value proposition beyond the traditional 3PL offering. Specifically, this 3PL had evolved from focusing on the bottom line of reducing costs and improving efficiency to adding to the top line and providing strategic benefits. The term used by one of the executives interviewed that best seems to capture this evolving and additive role of a transportation 3PL company is identical to what we found in the literature an "orchestrator."

Table 2: Characteristics of interviewees

Title	Company	Area of focus
Senior Vice President	3PL	Overall strategy and vision
Vice President	3PL	Logistics services
Vice President	3PL	Logistics services
Senior Vice President	3PL	Operations, which is basically the fulfillment of our responsibilities to our customers and the ongoing client management of a customer
Vice President	3PL	Technology development
Vice President	3PL	Business development for our logistics technology tools and software improvements
Vice President	3PL	Operations—manage contract side of our business. These are the long-term relationships with our clients, typically very heavy system integrated a typically three to five year long-term contract
Director	Customer	Director of inbound transportation; I work with the Senior Vice President of logistics on inbound distribution and transportation into our D.C. network

> *We gain a very strong foothold, and at that point, I really feel like we're the orchestrator of their supply chain, not just a supplier, not just a vendor, but they're really coming to us to orchestrate that supply chain. That takes time. I think that there's a lot of value in that.*

Through our research interviews, we gathered support for our model, the constructs used to define an orchestrator, and our set propositions. The constructs of standardization, visibility, neutral arbitrator, and collaborator repeatedly came up in the interviews and are discussed below.

Standardization

Standardization was identified as a requirement to 3PL functioning. The interviewees stated that with multiple carriers they simply could not conduct their business without standardization. One executive noted the benefit of having standardized processes so that information can be shared:

> *It becomes a process standardization; it's a tool for our distribution center so that they can plan their inbound and outbound work; it's a tool for our buyer, so that they have transactional information as a shipment moves within the supply chain. It's a conduit for our vendors, so that they have updated information on routing instructions on a P.O. level.*

In the highly competitive 3PL industry, margins are small such that companies need to focus on efficiency and standardized processes. By specializing in very specific niches in the transportation industry, 3PL companies exploit economies of scope and economies of scale across multiple firms, thereby broadening opportunities to optimize and reduce costs. As 3PL firms deal with a wide range of shippers and carriers from multiple industries that have their own specific rules and processes, being able to standardize data, technology, and processes is essential to capitalize on these opportunities. Without data and technology standardization, there is also no sense of the opportunities for collaboration or ability to recognize an exception that needs extra attention.

Standardization also reduces costs by improving planning, thereby reducing reactive behavior such as expediting. 3PLs are more successful when they can focus on efficiency, where products are shipped and handled under standard procedures in a predictable manner. If the 3PL company had to make adjustments to the freight constantly, their costs would automatically increase. One of the largest costs in shipping products occurs when freight must be expedited. One of the executives interviewed stated the following:

> *Spur-of-the-moment shipments cost everybody the most money. That's why the consumer prices are higher, because somebody decides, Well, I'll just send this out LTL or FedEx or whatever, and what we have found is, we can go in, and the biggest savings that we have provided our companies are LTL consolidation.*

Standardization is enabled by 3PL technology investment. A 3PL company, whose core competency might be logistics, can invest in technology infrastructure and capability that can be shared across multiple customers. This enables the 3PL to provide a common technology platform that helps to standardize data and processes, and enables greater visibility and integration across supply chain entities. As one executive noted:

> *Another benefit of our technology is to bring some commonality across various legacy systems within a shipper order system, a manufacturing system, or whatever you want to call the accounting system. Some of the many internal legacy systems that companies have, and they cannot afford to integrate those, even though there have been many years of push for enterprise resource planning systems.*

Visibility

The interviews underscored the importance of visibility. Standard data and processes enable visibility to opportunities for load consolidation, improved asset utilization, and exceptions with the potential for disrupting the supply chain. As noted by another executive:

> *It gives them visibility to their product, which is probably the quickest thing, the thing that most of the customers I have dealt with say, I don't know where my shipment is. So, those are things that we can bring to the table immediately, and using just our website: Being able to track a shipment or a P.O. number, whatever level that we set up with them that they want to see; having availability on one screen; all of their shipments with all of their carriers, pieces and origin and destinations.*

Visibility enables better planning for both carriers and shippers in that, carriers can see what other freight is available in need of transport and shippers can benefit by seeing what carrier capacity is available:

> *We have improved freight visibility and improved carrier visibility to where carrier capacity is how we can mix and match and coordinate shipments and carriers to create efficiency and improved service. A shipper has their own environment. But, what they don't know is what other freight is around them that they can link up with, because they're concerned about themselves. We bring the ability for them to have visibility to other freight networks through (our) platform.*

Visibility is a tool that enables 3PL companies to coordinate or orchestrate the supply chain by providing information they can act on to identify opportunities for consolidation or collaboration that are beneficial to carriers, shippers, and their customers. This leads to greater efficiency for both the carrier and shipper as pointed out by another executive:

> *We can bring visibility to that network more efficiently and quicker than shippers can do themselves. Because we can do that, because we can tell a carrier that they're going to go from a location A to a location B, and that they are going to get a load out of location B that gets them back home or gets them back to location A or another destination. That improves the carrier's efficiency.*

Neutral arbitrator

A 3PL plays a unique role for their customers by enabling change within their organization. As the interviewees stated, it is because 3PL companies are perceived as neutral, they can advocate change without being concerned about internal politics. They are seen as making a case for change objectively, with a focus on business results that benefit everyone, rather than protecting turf. Some of the executive comments include:

> *We are an advocate of the shipper; we're an advocate of the carrier. We happened to figure out on both sides, what makes both of you more efficient?*

> *So, we provide information to those customers that say, Here's an opportunity. Here's some objective information about this opportunity, so you can make an enlightened decision as to whether or not you want to participate. In other words, dollars and cents—if you can participate in this program with some other customers, here are some savings that can be achieved. These are hard dollars; this will happen if we can get these certain orders in the system at this certain time, etc. That may cause that particular shipper, if he wants to take advantage of those savings and efficiencies, we may ask him to change his processes somewhat, sometimes greatly, sometimes not so greatly.*

Another advantage of playing a neutral role is that competitors are willing to share useful information with the 3PL that they might be unwilling to share with one another. For example, the 3PL involved in this case study was able to see the benefit of mixing the freight between two competitors, both of whom were clients, which resulted in significant costs savings. As noted by another executive:

> *They don't get a hundred percent of those savings. They split it amongst the group, but it's savings they couldn't get any other way, because they wouldn't have the ability to collaborate across those lines like we can. Then, we become a neutral spot for companies to collaborate, and they don't have too much of the heavy lifting; we do it for them.*

Companies are also more willing to listen to a neutral 3PL who has a wide range of experience and provides a clear benchmark in their particular industry:

> *We use our people somewhat to be, in essence, the neutral arbitrator, because they can go back and say, Hey, look, based on the analysis and the shipment size, and where you're shipping from, and their market-based knowledge of the transportation thing, this is the range we think you're probably operating in. Look, we have a customer base of several other large retailers, and based on our experience, we think that this is part of where these rates should be falling.*

A critical part of being able to bring change to an organization is credibility and objectivity. Shippers and carriers are much more likely to listen to credible sources. 3PL companies, as neutral agents with a wide range of experience, are more likely to be viewed as credible and objective.

> *The objectivity that we can bring to that is looking across industries, we're looking across clients, and really in a role where we're not centered on any specific clients' perceived needs. We're able to digest different clients' needs and make some determinations about [whether] that is a reasonable consideration.*

The executive from the customer firm highlighted the benefits resulting from the neutral position of the 3PL in their search for reducing costs:

> *They become a neutral, third-party that maybe could facilitate some other cross company opportunity. We're at a very high level having a few discussions with another one of their customers. From somebody's conversations, we said, Hey you got a need, I got a need, maybe we've got a match.*

3PL companies are also able to provide a benefit to the customer in terms of initiating change. The 3PL company might not directly cause companies to change, but they are a stimulant that gets the discussion going. One of the benefits for the customer is that it is much easier to promote change when it comes from outside the company. As stated:

> *I would say a [benefit a 3PL brings] is acting as, a change stimulant. Sometimes, it's easier when you have an outside spin with a third-party, and management sees that, sometimes it's easier to sell that and say, Guys, this is why we have to be using this process and following the process.*

The customer also discussed the 3PLs role as change agent in terms of their ability to drive change in inefficient processes entrenched in the organization to a more proactive process:

> *The biggest part is changing both our internal culture and our external vendor relations from some very entrenched behavior, from some very established processes, or I should say some very informal processes and really trying to change that into a more proactive way of running the supply chain.*

Collaborator

Another capability that 3PL companies provide is the ability to encourage collaboration among their customers, but one of the reasons why collaboration is difficult for companies is the risk associated with sharing information. As a neutral party with visibility of information from multiple parties in the supply chain, 3PL companies can play a unique facilitating role in to collaboration, as seen in the following quote:

> *Shipper A normally has twenty loads a day, and that's what they plan for, and that's what they make arrangements for with their carriers, or we do on their behalf. But, today they only ship eighteen loads. Logically, that means that they're not going to use two loads*

from a carrier that they've make pre-arrangements for. So, that carrier has a decision. Do I go find another load, or do I just let those trailers sit for another day? Now, on the other side of the question, we have another shipper that normally ships twenty a day, but today they're shipping twenty-two. Well, because we manage both those networks, we know that this one is two under and we know that this one is two over. So, we're able to mix and match that capacity at a moment's notice. We know where that truck is, and we know that there's a truck available, and we know when it's available.

It is also important to note that a 3PL cannot force companies to collaborate, but rather can facilitate collaboration by presenting the opportunity, encouraging companies to act, and providing tools and processes to execute.

What we don't know, when we say those things to customers, when we present these opportunities, we don't know the cost of change internal to a particular customer. So, what we ask them is, Here's a savings amount that can be achieved in a collaborative environment. If there's a five hundred thousand dollar savings, is the cost of change less than five hundred thousand dollars? If it is, the customer should make the changes. Or, if there's something that the time is not right, but if you can ever change that process, Mr. Customer, it might be next year, next month, next quarter, whatever. But, if you could change it at some point in the future, please get back to us, because this same savings still might exist. So, it's a very iterative relationship, and it's always evolving.

In the role of neutral change agent, the 3PL can help reduce risk or eliminate barriers to collaboration, both real and perceived.

A very large CPG manufacturer knew that we had a relationship with their top competitor; this is a company that the existing client can barely say their name without turning their head and spitting, that's how hard they compete against each other. We would never enter a network that had that company in it, because of our competitive posture with them. This was an interesting statement that we got to talking about, when you get down to it, you can't afford to not be in this network. It's because of your competitor, not in spite of him, because he's going to drive savings in our network that you're not going to be able to touch unless you participate. He's going to get a competitive advantage if you don't participate and level the playing field and so they jumped in.

As the interviews demonstrated, 3PLs have evolved from their focus on reducing cost through economies of scale. 3PLs now encourage standardized processes, improved visibility along the supply chain, become a catalyst to encourage change from a neutral position and facilitate the process of collaboration. All these capabilities can be summed up in the concept of being an orchestrator. Just as a conductor improves the sound of an orchestra by clearly providing a standard beat or rhythm so does a 3PL in facilitating more effective SCM through standardized processes and clear visibility. 3PLs provide added strategic value to the bottom line through their role as a neutral arbitrator and collaborator.

RESEARCH IMPLICATIONS

While our study reveals the evolving role of 3PLs to become orchestrators and enhance SCM best practices, many additional questions remain open. Our findings suggest a number of directions for future research, some stemming directly from the limitations of this study.

The first limitation is the use of case study methodology; even though it did provide support to the propositions, the model is not necessarily generalizable. Therefore, this research would benefit from conducting a large scale survey of 3PL firms to provide additional empirical support to each of the propositions.

One of the major assumptions of the model is that the components of the model are additive, suggesting that without all four components (standardization, visibility, neutral arbitrator, collaborator), a 3PL would not be an orchestrator. Is it possible that not all four components are additive in the same manner? In the same sense can just having two of the components lead you to being a partial orchestrator? Clearly, the interrelationships between the components of an orchestrator would be very interesting to understand.

Another assumption in this research is that the need for a 3PL to be an orchestrator can be moderated by the presence of a firm that dominates its suppliers. In other words, some firms can demand their suppliers to share information, provide visibility, adopt technology standards, and collaborate. Can 3PLs still be successful as an orchestrator within supply chains that include large dominant firms?

Future research should also test if the type of industry affects the 3PL orchestrator role. Are 3PLs more likely to be an orchestrator in some industries than others? This research specifically looked at a 3PL that was focused on transportation capabilities. Does being an orchestrator only apply to 3PLs that focus on transportation or can it apply to other 3PL functions such as warehousing? Does this model only apply to industries where transportation issues are critical? Another area of future research would be to evaluate 3PL firms that are already involved in a complex partnership or strategic relationship. Understanding this new role of a 3PL in terms of facilitating SCM best practices and orchestrating within the supply chain would provide a deep insight into finding new ways to improve the effectiveness and efficiency of supply chains.

Addressing the research questions as outlined about would provide additional new areas of research that would significantly advance the state of knowledge in the SCM discipline. Implementing SCM best practices is always difficult especially when being conducted over multiple companies and this research provides another option to consider.

MANAGERIAL IMPLICATIONS

The emerging role of the 3PL as an orchestrator has significant managerial implications. In a time when companies are outsourcing noncore competencies, managers should recognize the potential contribution of 3PL firms and take advantage of opportunities to address organizational needs. Companies should be aware that 3PLs provide an opportunity for an increased competitive advantage. Through their unique position and evolving capabilities, 3PLs can be seen as strategic players in a supply chain as opposed to mere vendors of a given organization. Managers should be aware of the additive roles a 3PL can play and take advantage of or even demand them from their 3PL. Those additive roles include standardizing data, technology, and/or processes across the supply chain; providing visibility to manage exceptions, enable effective planning, and improve performance; acting as a neutral arbitrator to help drive and implement change; collaborating with other members of the supply chain; and ultimately orchestrating the supply chain to the benefit of its members. Managers should also consider the implications of these roles in selecting, evaluating, and managing relationships with 3PL partners.

These findings also have implications for 3PLs. The role of an orchestrator is an emerging role for 3PLs without clear expectation and definition. Many 3PLs may find themselves evolving in terms of scope and responsibility, but may not have a clear vision of the potential role they can play. Others may be asked to play such a role without having developed the resources and capabilities required to be successful. 3PLs need to understand how important they can be to the effectiveness and efficiency of the supply chain and develop their business plans and processes accordingly. This means specifically focusing on efficient standardization across organizations, using visibility as valuable information to provide to supply chain members, as well as considering how to institute effectively change across the supply chain, increase collaboration, and manage the relationships for greatest value to the firm and the supply chain.

CONCLUSION

In this article, we have documented the evolving role of 3PLs as an orchestrator, relying on support from social science theories, the logistics literature, and empirical support from in-depth field interviews. We have shown that 3PLs have evolved from the traditional role of providing logistics services to becoming orchestrators that create and sustain a competitive advantage. Interrelated constructs of standardization, visibility, neutral arbitration, and collaboration have been shown to define the orchestrator role. Through their unique position and evolving capabilities, 3PLs are moving beyond the traditional role of being a vendor of services and can now be considered as strategic partners in an integrated supply chain, enabling collaboration and providing value to customers, suppliers, and competitors.

APPENDIX: INTERVIEW GUIDE

Customer value associated with the use of third-party logistics service providers setting the stage

The researcher will be taping the interviews so that they can be transcribed for analysis. This is to ensure that interviewee responses are appropriately represented in the analysis. Confidentiality agreements will be signed by the interviewer, transcriber and analysts, the researcher will treat all data confidentially, and, if desired, anonymity will be maintained in subsequent publication of results.

Background information

Name ______________________________
Company ______________________________
Job Title ______________________________

1. How would you describe your business and service offering(s)?
2. What are the most important attributes of your service offering?
3. For each individual attribute, what are the consequences or benefits to the customer associated with that attribute?*
4. Are there any negative consequences for customers associated with individual attributes? If so, what are they?*
5. For each consequence (positive or negative) what is the end-state goal or value associated with that consequence?*

*Consequences and goals or values will be explored by asking the interviewee "Why is that (attribute or consequence) important to you or your company?" This line of questioning will continue until the highest-order goal or value is identified.

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