

# **Assessing the Innovation Competence of a Third-Party Logistics Service Provider: A Survey Approach**

**Shong-lee Ivan Su**  
Soochow University, Taiwan

**Jian-yu Fisher Ke**  
University of Wisconsin-Eau Claire

**Lianguang Cui**  
Nankai University, China

*Due to its nature as a complex service process with the intensive capital requirements, many firms outsource the logistics function to third-party logistics service providers (3PLs). How a 3PL firm innovates as an organization is still a white space in logistics research literature. This paper proposes a 3PL innovation competence model and designs a 23-item diagnostic instrument to assess the innovation competence of a 3PL firm. The model and the instrument allow managers and researchers to assess the degree of importance and the current status of six core innovation capabilities of a 3PL firm for further innovation efforts. The assessment results of two U.S. 3PL firms are analyzed and discussed. The findings from this study have provided insightful information on the nature of the innovation competence of 3PL firms.*

## **INTRODUCTION**

A competence (or competency) is a persistent pattern of behavior resulting from a cluster of knowledge, skills, abilities, and motivations. A core competence is the result of a specific set of skills or production techniques that deliver value to the customer (Prahalad & Hamel, 1990; Kandampully, 2002). Such competences enable an organization to access a wide variety of markets. Bettis & Prahalad (1995) claim that core competences contribute to the formulation of an organization's dominant logic and help to define the route a firm chooses and its future positions in the market.

Innovation is the key to the advancement of society, the economy, and the growth of enterprises (UK DTI, 2003; Gaynor, et al., 2009; Linden, Dedrick, & Kraemer, 2011). The 3PL industry has evolved during the past three decades into a sophisticated service industry with many innovative players, such as DHL, UPS, FedEx, and C.H. Robinson, who are constantly seeking new ways to serve customers better by creating new value in their supply chains (Burnson, 2011; Langley & Capgemini, 2010; Su, Hertz, & Cui, 2011). For third-party logistics providers (3PLs) seeking high value service opportunities in the increasingly competitive 3PL outsourcing markets, developing innovation competence has become a very important, however, challenging strategic goal (Halldorsson & Skjott-Larsen, 2004).

UPS, a highly recognized global 3PL, has been very successful in developing its logistics innovation competence by formulating a formal organizational mechanism for innovation and creating high-impact and value-added new services (Mullen, 2004). We believe it is the key reason for its continuing record-breaking profit achievement (economicsnewspaper.com, 2011; Berman, 2013). It is clear that innovation has evolved as a core competency of many 3PL firms.

The purpose of this paper is to introduce an innovation competence model for 3PL firms and develop a diagnostic instrument for them to assess their innovation competence levels. The innovation competence model prescribes the ideal organizational patterns and formalizes the organizational behaviors needed for exceptional 3PL innovation performance. The diagnostic instrument helps a 3PL firm to assess its key capability gaps and develop strategies to enhance its innovation competence.

## LITERATURE REVIEW

Logistics is an essential business function. This function has increased its importance in the past two decades due to factors such as customer requirements, pressure to reduce costs while still maintaining service levels, and globalization. The focus of logistics management has also changed from the operational to the strategic arena and also from the internal integration to the external collaboration emphasis (Mentzer, et al., 2008). A firm's logistics distinctive capability has been considered a valuable strategic resource that provides sustainable competitive advantage and eventually superior performance. Firms' implementation of process innovation is increasingly relying on logistics-oriented solutions (Olavarrieta & Ellinger, 1997).

The 3PL service industry is developing as a result of the emerging demand on logistics services. Specialization and outsourcing, logistics as a strategic component, globalization, lead time reductions, and customer orientation are some of the major changes contributing to this interest in logistics. Integration of the supply chain has become an important way for industrial firms to gain competitive advantage (Bowersox, Daugherty, Dröge, Rogers, & Wardlaw, 1989; CLM, 1995; Mentzer, Stank, & Esper, 2008). Furthermore, due to its nature as a complex service process with the intensive capital requirements, many firms outsource the logistics function to 3PLs that possess the expertise in the supply chain logistics integration and execution.

The U.S. 3PL industry has experienced explosive growth in the last two decades (Knemeyer & Murphy, 2005), and the trend is expected to continue (Lieb, 2008). However, extensive outsourcing of logistical needs is not limited to the U.S. market. The rationale for choosing to outsource is somewhat universal. As Lau and Zhang (2006) noted, economic, strategic, and environmental factors are the main drivers that motivate organizations to outsource in both developed and developing countries. Managers also realize they can develop logistics competencies through third-party relationships, rather than by trying to develop the necessary expertise internally (Halldorsson & Skjott-Larsen, 2004). Armstrong & Associates (2013) has been calculating the global 3PL market for more than 10 years. In 2011, the global 3PL industry was estimated to create \$616 billion in revenues. Asia was the largest (\$191.1 billion), Europe came next (\$160.4 billion), North America was third (\$159.9 billion), and all other countries (\$104.7 billion) took up the rest.

Wagner & Franklin (2008) claimed that logistics innovation has a unique nature since it often arises not because of a formal plan or process but as an ad hoc response to a customer request. However, there is not a common and consistent understanding of the meaning of logistics innovation across the organization (Oke, 2008). According to Oke (2008), logistics innovation should include service product innovations and technological developments. In contrast, Wagner & Busse (2008) define innovation as "a subjective novelty which is the result of a conscious management process and which aims at economic exploitation" (p.2). They concluded that logistics innovation should be manageable and serves exploitation purpose (Wagner & Busse, 2008).

Flint, Larsson, Gammelgaard, and Mentzer (2005) treat logistics innovation as "any logistics related service from the basic to the complex that is seen as new and helpful to a particular focal audience" (p.114). How do firms and organizations organize processes for logistics innovation? Flint et al. (2005)

argue that the focus for successful firms is not on the innovations themselves, but on the processes they use to be innovative. They focused their study on the social aspects of logistics innovation highlighting interactions and reflexivity among the innovating actors (i.e., executives, managers, and frontline personnel in a logistics innovation project).

Several international, multiple case, comparison studies on the innovation of 3PLs in Northern Europe and Greater China (mainland China, Hong Kong, Macau, and Taiwan) have revealed new insights into the innovation of 3PLs. In their earlier work, Cui, Hertz, and Su (2008; 2009), found that 3PLs possess strong intention to innovate to deliver high value to their customers in many business dimensions and thus create their own value. Cui, Hertz, and Su (2010a) also utilized the case data collected from the 3PL innovation study to examine a case firm from the perspective of a strategic management process. They recognized that 3PL innovation can be a critical strategic management process, including communicating, identifying needs, generating ideas, analyzing, developing, transferring, and creating atmosphere. In their later studies (Cui, Hertz, & Su, 2010b; Cui, Su, & Hertz, 2012; Su, Cui, & Hertz, 2012), they looked at factors that drive or deter 3PLs from innovation and the performance of 3PL innovations. The findings showed that successful 3PL innovations could bring substantial tangible and intangible advantages to supply chain partners.

## METHODOLOGY

### Development of 3PL Innovation Competence Model

Following on the work of Su et al. (2012), a 3PL innovation competence model is developed. Figure 1 shows a 3PL innovation competence model composed of six key innovation capabilities (or constructs in the original paper, Su, et al., 2012). Their relationships are represented by the linked arrows and corresponding propositions.

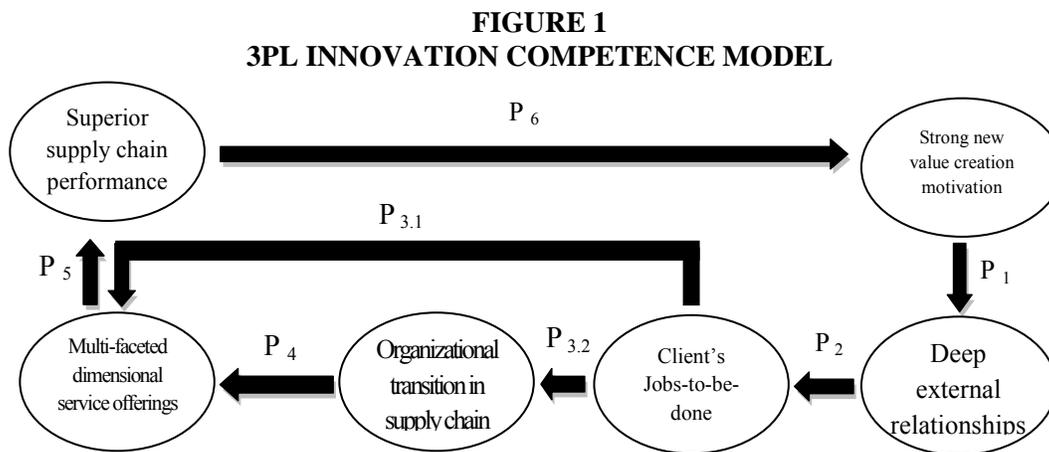


Table 1 lists the definitions and codes for the six innovation capabilities shown in Figure 1. The strong motivation to create substantial new value for its supply chain has led a 3PL to develop deep relationships with external supply chain partners, particularly its key clients. Deep external relationships with key clients or potential clients create more opportunities for a 3PL to investigate the logistics demands that are needed but are not yet satisfied; in other words, the logistics jobs-to-be-done of its clients. With the knowledge of the clients' jobs-to-be-done, a 3PL can design the most appropriate service offerings and related supporting business dimensions to satisfy clients' unmet needs. Furthermore, organizational transition in the 3PL will need to be in place to cope with all the changes required for the new service offerings. Finally, a 3PL must collaborate closely and intensely with its clients and supply chain partners to deliver superior supply chain performance; that is, they must create substantial new value for the 3PL, its clients, and its supply chain partners.

**TABLE 1**  
**DEFINITIONS OF SIX KEY INNOVATION CAPABILITIES OF A 3PL**

<b>Capability</b>	<b>Definition</b>	<b>Code</b>
New value creation	New values of business of a 3PL firm are created by service innovation in the supply chain. They are mainly driven by those controllable factors to look for substantial new value creation opportunities in their supply chains.	NVC
External relationships	In order to find the new value creation opportunities, an innovative 3PL firm tries hard to develop deep relationships with their supply chain partners, especially focusing on the core clients.	ER
Jobs-to-be-done	An innovative 3PL interacts with their key clients proactively and develop intelligence capability to monitor key industry trends to identify important but unsatisfied clients' problems, or "jobs" with the goal to design new service offerings to help clients more effectively, reliably, conveniently, and affordably solve these important problems at a given price.	JOB
Organizational transition	An innovative 3PL owns reliable, flexible and economic service capability to effectively interact with its clients and supply chain partners to support its transition from the current organizational format to that needed by the innovative solution provisions for clients.	OT
Multi-faceted dimensional service offerings	An innovative 3PL designs, tests, launches and improves the innovative service offerings supported by multi-facet business dimensions for its clients in need and collaborate effectively with its clients. Other supply chain partners may often join to bring in their capabilities that are required to deliver the innovative service offerings.	MSO
Supply chain performance	The tangible benefits and the intangible effects in supply chain are created from the superior supply chain performance when 3PL innovative service offerings supported by multi-faceted business dimensions are successfully implemented. Tangible benefits are related to the operational and financial performances and can be measured quantitatively. Intangible effects are related to competence and relational performances and are normally measured qualitatively.	SCP

To be more specific, the proposed relationships between the six capabilities in the 3PL innovation competence model are described in Table 2.

**TABLE 2**  
**PROPOSED RELATIONSHIPS BETWEEN THE SIX CAPABILITIES IN THE 3PL**  
**INNOVATION COMPETENCE MODEL**

P1:	A strong drive to create substantial new value positively affects 3PL firms, leading them to develop deep relationships with current or potential clients, which in turn may lead to opportunities to create substantial supply chain value.
P2:	A deep relationship with current or potential clients positively affects 3PL firms' ability to identify opportunities in the logistics of jobs-to-be-done within clients' supply chains.
P3.1:	Jobs-to-be-done logistics opportunities positively affect 3PL firms' collaboration with clients and/or other supply chain partners, encouraging them to pursue innovative multi-faceted logistics services to realize jobs-to-be-done opportunities.
P3.2:	Jobs-to-be-done logistics opportunities positively affect 3PL firms' efforts to transition their organizations from the current state to the new state meeting the new requirements for pursuing innovative logistics services.
P4:	The speed and effectiveness of organizational transition positively affects the development and implementation of innovative multi-faceted logistics services.
P5:	The innovative logistics service offerings, supported by the multi-faceted business dimensions, positively affect the performance of the supply chain.
P6:	Superior supply chain performance provides supply chain partners with stronger incentive and better knowledge to undertake the next innovation cycle for new value creation.

A supply chain innovation award-winning case (Clabby, 2010) is used to illustrate how a 3PL innovation competence model operates. In the following case illustration, key innovation capabilities are expressed by the innovation activities. The rapid growth of the SUBWAY® franchise has made it even more challenging to ensure available supply while keeping the supply chain lean and product costs competitive in the food service industry. Independent Purchasing Cooperative (IPC) is the SUBWAY® franchisee-owned and operated nonprofit organization that negotiates the lowest cost for purchased goods and services. It does this while at the same time improving quality, enhancing competitiveness, and ensuring the best value to SUBWAY® franchisees and their customers. IPC is the 3PL in this case. Table 3 shows IPC's innovation activities and the identified relationships between these activities. These innovation activities were implemented between 2002 and 2004, in about 3 years. With the success of its supply chain innovation, this knowledge and experience has been utilized continuously for other major supply chain reconfigurations in the SUBWAY supply chains (Clabby, 2010).

### **Diagnostic Instrument**

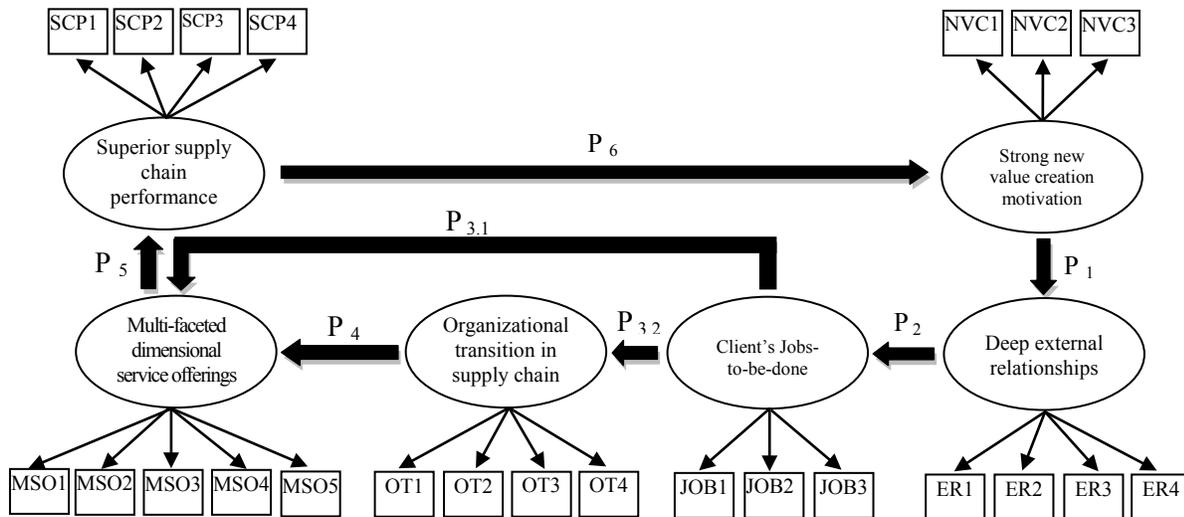
In Su et al.'s research (2012), 23 items were developed to measure the six key innovation capabilities in Figure 1. The validity and reliability of these items were verified through multiple 3PL innovation case studies and an extensive 3PL industry and innovation literature review (Cui, et al., 2009; 2010a; 2010b; 2012; Su, et al., 2011). These items were further examined and modified through the feedback from several 3PL executives and logistics researchers (Su, et al., 2011; 2012).

**TABLE 3**  
**IPC AS A CASE ILLUSTRATION OF 3PL INNOVATION COMPETENCE MODEL**

Innovation activities	Relationship proposition
In an effort to better streamline and improve redistribution of slow-moving dry products, IPC worked with C.H. Robinson and other supply chain partners to consolidate multi-SKU shipments via truckload rather than less than truckload (LTL) shipments.	P1
C.H. Robinson’s network analysis identified a facility owned by Southwest Sanitation (SWS) in Dallas, one of IPC’s existing vendors. Leveraging C.H. Robinson’s technology, business processes, and transportation expertise, IPC gained intelligence on the wider supply chain and identified more opportunities to optimize loads and save.	P2, P3.1, P3.2
Dry co-resident manufacturing and distribution facilities greatly minimized transportation miles and LTL shipments. IPC has built close, highly collaborative relationships with its vendors to ensure continuous improvement at all levels of the supply chain. IPC also created opportunities for vendors to contribute to and benefit from the supply chain. By utilizing technology, implementing best practices, inefficiencies and costs were reduced in the whole supply chain. Although IPC hadn’t formally named their efforts “sustainability,” their improvements were significantly reducing truck miles and greenhouse gases (GHGs).	P4, P5
Subsequently, driven by the success of the SWS redistribution center (RDC), IPC applied the concept of redistribution to faster-moving, refrigerated proteins and also gained outstanding performance results.	P6

Source: summarized from Clabby (2010)

**FIGURE 2**  
**3PL INNOVATION CAPABILITY DIAGNOSTIC ITEMS**



In this paper, we use the 23 items developed in the aforementioned research as diagnostic items for the six innovation capabilities of the 3PL innovation competence model. Items associated with each capability are illustrated in Figure 2 and further described in detail in Table 4.

**TABLE 4**  
**DEFINITIONS OF 3PL INNOVATION DIAGNOSTIC ITEMS**

Code	Item Definition
NVC1	The desire to grow and enhance competitiveness drives a 3PL to look for the new value creation opportunities in its supply chains.
NVC2	The needs to integrate the supply chains and satisfy the requirements of the current and potential customers motivate a 3PL to develop the new service offerings that may create substantial value to the 3PL, its customers and other supply chain partners in stake.
NVC3	The new value creation opportunities are often related to major regulatory changes, emergence of new technologies, market disruptions, and environmental pressures in a 3PL's industry.
ER1	The customer contact personnel play a critical role between a 3PL and its clients because they are at the frontline where the inter-firm interactions occur.
ER2	Good personal relationships from the top to the frontline employees between a 3PL and its clients can facilitate and promote the sharing of proprietary information, as well as joint exploration of market opportunities and joint development of new ideas.
ER3	Favorable interactions between a 3PL's knowledgeable and experienced employees and its key clients influence the willingness of clients to collaborate in new value creation initiatives.
ER4	The positive attitudes and effective communication skills of a 3PL's employees can increase the confidence and trust of the clients with the 3PL.
JOB1	A 3PL has a good and formal mechanism to collect information regarding to the unmet needs or unsolved problems of key clients or in the industry.
JOB2	A 3PL has a dedicated team to make good use of the collected information regarding to the unmet needs or unsolved problems of key clients or in the industry to come up with Customer Value Propositions (CVPs), that is, service offerings that can effectively help clients to solve their unmet needs or unsolved problems at a reasonable price.
JOB3	CVPs are the important premises that guide a 3PL's new value creation efforts.
OT1	A 3PL and its employee are not complacent to what they are providing to the markets now and always ready to make the changes needed to serve customers better.
OT2	The social and political dynamics of logistics innovation is an important issue as a 3PL addresses the energy and commitment that are needed among coalitions of cross-functional groups and supply chain partners to develop the innovation for clients.
OT3	Individuals involved in individual transactions in a 3PL do not lose sight of the whole innovation effort. Rather these individuals see things from a total picture and often become strong advocates to the changes needed. Multiple functions, resources, and disciplines are often needed to transform an innovative opportunity into a concrete reality.
OT4	In a 3PL, innovations not only adapt to existing organizational and industrial arrangements, but they also transform the structure and practices of these environments. The 3PL is able to create an infrastructure that is conducive to innovation.

MSO1	A 3PL designs and tests the innovative service offerings to meet the unmet needs of its clients based on Customer Value Propositions defined by the 3PL. Once tested and passed (or revised), the 3PL will launch the service offerings and improve them overtime.
MSO2	Delivering innovative service offerings often incorporates multiple business dimensions such as customer involvement, channel set-up, enabling technology, supply chain partners, infrastructure adjustment, and organizational redesign.
MSO3	Investing in new systems that will enhance supply chain integration and communication is imperative in a 3PL's innovation process.
MSO4	A 3PL involves the critical decision-makers such as clients and supply chain partners to the logistics innovation process as early as possible to develop a high level of trust required for effective collaboration.
MSO5	A 3PL strives hard to establish commitment and create understanding among members of the supply chain regarding logistics innovation to increase the willingness and ability to collaborate effectively among these members.
SCP1	Successful implementation of innovative service offerings can create very positive operational and financial performances to a 3PL. A 3PL's clients and its supply chain partners would also achieve high operational and financial performances. (Tangible benefits)
SCP2	Successful implementation of innovative service offerings can enhance a 3PL's logistics innovation competence and develop better relationships with its clients and supply chain partners. (Intangible effects)
SCP3	A 3PL has a good way to measure the tangible benefits and intangible effects created by logistics innovation.
SCP4	A 3PL has a good way to leverage the tangible benefits and intangible effects created by logistics innovation to build stronger supply chain advantages.

An executive interview tool with 23 questions is developed from the item definitions in Table 4 and used to assess quantitatively the innovation capabilities of a 3PL. Since 3PL service innovation must be led and driven by senior managers or executives in a 3PL, the interview tool is designed and targeted for the senior managers or executives to gain high quality information regarding the innovation of a 3PL. The interview questions are designed by using a seven-point Likert measurement scale following procedures of Churchill (1979) and Dunn, Seaker, and Waller (1994). Each question contains two types of query. The first type is to ask the interviewed executive to indicate the importance of the diagnostic item stated in the question to his/her company by giving an integer score between one and seven, that is, the higher the score, the greater the importance. The second type asks for his/her assessment of the company's current status regarding the diagnostic item asked in the question, again, by using the same measurement scale.

In Table 5, the third diagnostic item for the supply chain performance capability (SCP3) is used as an illustration of a question and its responses. It shows that the importance score for SCP3 is seven, which is greater than the current status score. In other words, the executive for the assessment deems SCP3 to be very important to the company. However, the current status is subpar at only five. Therefore, SCP3 can be an object for further enhancement on this innovation capability.

**TABLE 5**  
**INTERVIEW QUESTIONS FOR THE DIAGNOSTIC ITEM: SCP3 IN TABLE 4**

<b>SCP3:</b>	<b>Your company has a good way of measuring the tangible benefits and intangible effects created by logistics innovation.</b>						
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
	<i>Not very Important / Strongly Disagree ← Neutral → Very Important / Strongly Agree</i>						
<b>Importance</b>							<b>7</b>
<b>Current status</b>					<b>5</b>		

**RESULTS**

Using the executive interview tool developed in the previous section, this study assesses the innovation competence of two U.S. 3PLs, i.e. C.H. Robinson Worldwide, Inc. (CHRW) and Aeronet. From our survey data, these two firms were delivering very high revenue and profit growth during 2001-2010 period and they have been aggressively developing their services into multiple functions and expanding service coverage to other regions. They have shown the characteristics of an advanced 3PL active in the business innovation.

A senior executive from each firm who possesses the experience and knowledge of the logistics innovation specific to that firm was chosen to fill out the questionnaire. The questionnaire was explained interactively to the interviewee in each case to guarantee a full understanding of all questions and the validity of the survey result. Because the main purpose of this questionnaire instrument is to assess an individual firm’s innovation competence, the profile and the interview results of each company is presented and discussed separately. The details of the interview results are in the appendix.

**C.H. Robinson Worldwide**

CHRW, founded by Charles Henry Robinson at Grand Forks, North Dakota in 1905 and based at Eden Prairie, Minnesota, is one of the largest 3PLs in the world with a 2010 gross margin of \$9.3 billion. As an industry-leading 3PL, CHRW provides not only freight transportation services but also a comprehensive portfolio of transportation, logistics, sourcing, and information services to more than 36,000 customers. The top 200 customers account for approximately 37 percent of total net revenues, and the largest customer was less than three percent of total net revenues. Since it became a publicly-traded company in 1997, CHRW has exceeded its long-term compounded annual growth target at 15 percent for net revenues, income from operations, and earnings per share.

CHRW owns a worldwide network of over 230 offices in North America, South America, Europe, Asia, Australia, and Middle East and access to over 49,000 transportation providers in the world. Its network of motor carrier capacity is considered the largest in North America. North American branches have a common technology platform that they use to match customer needs with supplier capabilities, to collaborate with other branch locations, and to utilize centralized support resources to complete all facets of the transaction. CHRW encourages its approximately 7,600 employees to be more service-oriented and creative through a performance-oriented compensation plan. A customer resource team is formed with many experienced professionals developed in house or hired from outside to focus on the special needs of customers.

A director of supply chain solutions with over 22 years experience was asked to fill out the questionnaire in May of 2011. The result of the innovation competence assessment for CHRW is presented in Table 6. Each capability is measured by the scores of its importance and current status calculated respectively by the average scores of all diagnostic items regarding this capability. The total

scores for importance and current status are first summed up respectively and then an innovation competence ratio (IC ratio) is calculated by dividing the current status sum over the importance sum. This ratio is a percentage between 14% and 100%; the higher the percentage, the more innovative the 3PL under assessment is.

**TABLE 6**  
**RESULTS OF INNOVATION COMPETENCE ASSESSMENT – CHRW**

Capability	Current Status	Importance (Firm Goal)	Gap
NVC	4.67	5.00	-0.33
ER	6.00	6.75	-0.75
JOB	5.67	6.33	-0.67
OT	5.00	6.00	-1.00
MSO	5.60	6.20	-0.60
SCP	5.00	7.00	-2.00
Competence (capability average)	5.35	6.26	-0.91
Total scores	123	144	-21
IC Ratio	85%(123/144)		

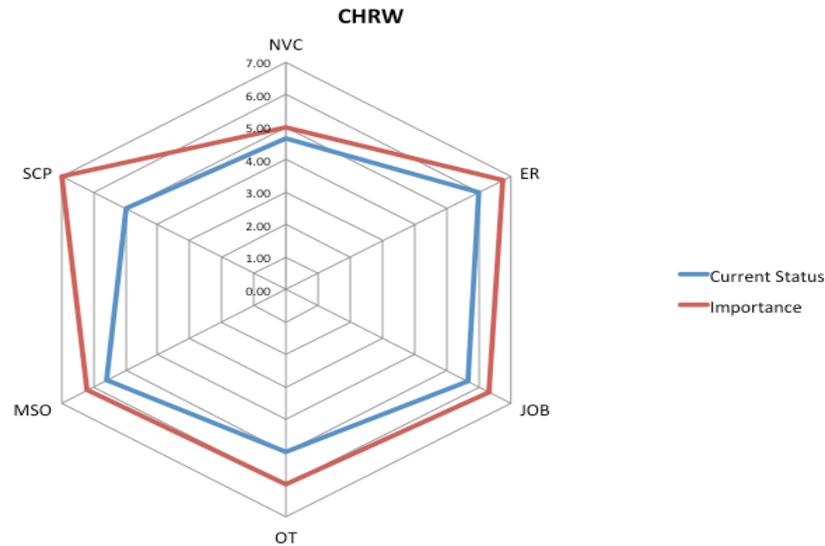
Note: IC Ratio=Total scores of 23 questions on current status÷Total scores of 23 questions on importance

As a whole, CHRW got an IC ratio of 0.85, which implies that CHRW is 15% behind its ideal innovation competence level. The score level actually reveals CHRW's management philosophy. The new value creation (NVC) current status score is the lowest at 4.67, resulting primarily from the low score of NVC3 (the ability to notice the major regulatory changes, emergence of new technologies, market disruptions, and environment pressures) at only two out of seven. It shows that CHRW may pay less attention to changes in the external environment. Instead, CHRW focuses more on customers' current needs and establishes a tight relationship with its supply chain members. Based on CHRW's profile presented above, CHRW is a company with very strong supply chain and customer orientation. It strives to serve customers better with a highly collaborative carrier network and dedicated employees. Thus, it gives ER (external relationships with its supply chain partners) the second highest importance, next to SCP (supply chain performance), the highest importance score among all capabilities. In addition, the strong external relationships help CHRW identify customers' potential needs and develop appropriate service offerings. CHRW has a relatively high achievement in its goals of JOB (client's job-to-be-done) and MSO (multi-faced dimensional service offerings). This result implies that CHRW has sensed the needs for quick response to the dynamics of customers' demand. Looking at Gap statistics, SCP and OT (organizational transition) have lagged behind other capabilities. It probably reveals the common challenge of a large corporation: setting high performance goals but having difficulty positioning the organization for change. Finally, it shows that CHRW considers superior supply chain performance the most important capability and the current situation is approximately 30 percent behind the goal.

An innovation competence diagnostic radar diagram is also developed to assist a 3PL innovation team to better capture and discuss the key gaps among its six core capabilities. In Figure 3, C.H. Robinson's radar diagram is shown. It is clear that the importance scores of six capabilities are all higher than their respective current status scores. SCP (supply chain performance capability), a very important capability to C.H. Robinson, presents the largest gap and also the biggest opportunity for this 3PL. The second point to note from the radar diagram is NVC (new value creation capability) showing relative lower score than the

rest. It asserts our previous discussion that C.H. Robinson sticks with customers and does not concern too much on the external environment to drive its value creation efforts.

**FIGURE 3**  
**RADAR CHART FOR THE INNOVATION COMPETENCE MODEL OF CHRW**



### **Aeronet**

Aeronet, an Irvine, CA based company founded in 1982, offers integrated logistics solutions including a full range of domestic and international time-definite shipping, import/export management, total supply chain management, warehousing and distribution. It owns over 600 offices and partners located throughout the U.S. and in 75 countries worldwide. It features urgent logistics solutions and has developed a sophisticated system, using a combination of planning and warehousing, to manage emergency and urgent deliveries throughout the world. Aeronet currently has 150 employees and generated the revenue of \$70 million in 2010 fiscal year. Its revenue comes from Asia (60%), North America (20%), Europe (15%), and the rest of the world (5%) (Aeronet, 2013).

A senior VP of Aeronet with experience over 20 years was interviewed in June, 2011. The results of the innovation competence assessment are presented in Table 7. As a whole, Aeronet evaluates itself as 21% behind the goal of innovation competence based on the IC ratio. Aeronet considers that all innovation competence is of high importance at six or above out of seven, and ER (external relationships), MSO (multi-faceted dimensional service offerings), and OT (organizational transition) are the top three important capabilities. The result shows that Aeronet emphasizes its capability to promptly respond to customers' needs. That is likely so because Aeronet focuses on urgent logistics, which rely heavily on a highly integrated network and agile logistics capability. Except for ER, the gaps between current status and the goal of innovation capabilities are quite large and require further improvement. To shorten the gaps in OT and MSO, Aeronet needs to enhance its capabilities to support customers' needs and offer appropriate service to the customers who need urgent logistics. Aeronet requires collaboration among supply chain partners and team members. In addition, Aeronet should get its customers involved in the process of new service development and collaborate with its customers to deliver innovative service offerings.

Since Aeronet is a relatively small firm, it seems to cultivate a very close relationship with its clients. However, due to its small nature, it is probable that Aeronet does not have enough resources and talents to keep up with the goals of most of the innovation capabilities. It may be the reason the company has

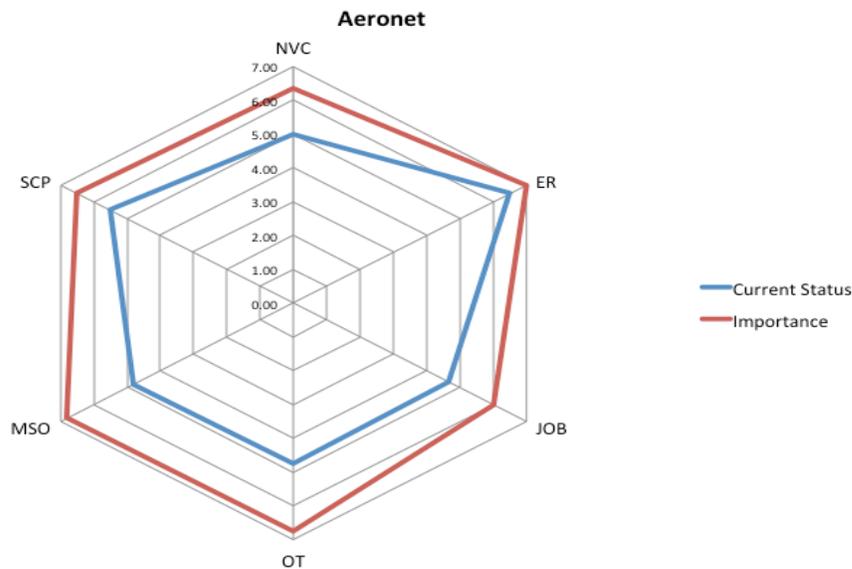
sought alliances in Asia and Europe to extend its service network and increase its global coverage for North American customers.

**TABLE 7**  
**RESULTS OF INNOVATION COMPETENCE ASSESSMENT – AERONET**

Capability	Current Status	Importance (Firm Goal)	Gap
NVC	5.00	6.33	-1.33
ER	6.50	7.00	-0.50
JOB	4.67	6.00	-1.33
OT	4.75	6.75	-2.00
MSO	4.80	6.80	-2.00
SCP	5.50	6.50	-1.00
Competence (capability average)	5.22	6.61	-1.39
Total scores	120	152	-32
IC Ratio	79%		

The innovation competence diagnostic radar diagram for Aeronet is shown in Figure 4. Again, the importance scores of six capabilities are all higher than their respective current status scores. The capability gaps are larger in this case. MSO (multi-faceted dimensional service offerings) and OT (organizational transition) were assessed to have the wider gaps that seem to require immediate management attention.

**FIGURE 4**  
**RADAR CHART FOR THE INNOVATION COMPETENCE MODEL – AERONET**



## DISCUSSION

Logistics in business is growing complex and far reaching. However, logistics has also become more important and strategic to industrial and trading firms. 3PLs meeting the logistics needs of these firms in the 21st century are service intensive and require the ability to adapt quickly to constant changes from their customers or the environments in which they are situated. Innovation is now a core competence that 3PLs are seeking to ensure their roles as logistics experts for their clients, creating new value and fending off risks and uncertainties in an ever changing world.

Developing innovation competence is difficult but not impossible. Based on the research outputs of several recent major 3PL innovation studies (Cui, et al., 2008, 2009, 2010b; Su, et al., 2011, 2012), this paper is able to design an innovation competence assessment tool for 3PLs to aid them to assess their competence status and discover the capability gaps deviating from the firms' goals. This information allows 3PLs to identify key innovation capability(ies) requiring most efforts to improve.

Summarizing from the assessment results of two 3PLs discussed in the section of results, the first observation is that results of the two cases are all unique. Since each 3PL and the executives who filled out the questionnaire are different in many aspects, the results should not be compared and must be considered on a case-by-case basis. Rather, the assessment result of each case reflects the sole condition of that 3PL and ought to be used only by the 3PL to develop its own innovation competence enhancement strategy.

The second observation is that the importance scores are higher than the current status scores in all two cases. Since the interview and survey were conducted by an author with an executive interviewee in each case, this gap reflects the results from an objective assessment tool and a subjective assessment by the executive with the aid of a neutral third party researcher. Without other proper means, this approach is a reasonable way to help a 3PL, with the assistance of its senior executive(s), to systematically identify opportunities to improve its innovation competence.

The third observation finds that the gaps of six innovation capabilities vary in a range for all two cases. Identification of this variance means the assessment tool helps a 3PL to distinguish the innovation capability(ies) most needed for improvement from those less needed. The innovation competence assessment radar can effectively identify the key gaps among the six core innovation capabilities. In a world of limited resources for many businesses, it is quite valuable to prioritize options of strategic importance such as the innovation competence development program in a 3PL for its resource allocation.

Since the 3PL innovation competence assessment tool developed in this paper is derived from academic research, the innovation capabilities, its relationship propositions, and the diagnostic items in questionnaire format are not easy to comprehend fully by the interviewee by simply reading through the questionnaire. Therefore, a limitation of using this tool is that a researcher or consultant familiar with the tool is needed to conduct the interview through a face-to-face discussion or a personal phone call. After the interview and collection of the questionnaire, the basic statistical analysis must first be done and then the results be interpreted together with the executive(s) of the 3PL to identify innovation competence enhancement opportunities. Furthermore, due to the limit of the time and resource, this study only assessed the innovation competence of two U.S. 3PLs. Even though the results indicate the diagnostic instrument is useful as an innovation competence assessment tool, it will create more insights and understanding on the use of the tool by surveying more 3PLs with high financial performance in the future studies.

The purpose of this study is more practically oriented: to design an innovation competence assessment tool that is relatively easy to be applied by practitioners and researchers. Many research issues remain regarding the 3PL innovation competence model developed in this paper. First, each innovation capability by itself can be a profound research area worthy of further research efforts. Researchers should aim to provide more insights to both the practice and the theory regarding future 3PL innovation studies. Second, the proposed relationships between capabilities in Figure 1 are derived from qualitative case studies. They should be examined through a quantitative approach regarding their validity and reliability for theoretical rigor. Third, it would be interesting to work closely with some 3PLs on applying the tool to

enhance its innovation competence using a multiple-year action research approach. The effort may improve the current competence model and produce more theories and practical guidelines for the management and study of 3PL innovation.

## CONCLUSION

Industrial and trading firms have outsourced a broader range of logistics services (e.g., financial services, contract manufacturing, procurement support) and some even desire ‘one-stop shopping’ to ensure a single point of contact. 3PLs that cannot meet such demanding customer requirements might be forced to serve as subcontractors to those who can, thus, incur the risk of lower profit margins, and experience fewer growth opportunities. Through innovation, 3PLs can offer a broader range of services meeting specific customer demands. Furthermore, customers that will be partners for 3PLs’ innovation activities will be those who offer a greater potential for growth and profitability (Wagner & Sutter, 2012).

This paper reports and discusses the application of recently developed 3PL innovation theories on the assessment of 3PL innovation competence and its related findings. The key contribution of this paper is the development of a 3PL innovation competence model and the design of an assessment tool for 3PL innovation competence. This tool was used to assess the innovation competence of two U.S. 3PLs. The assessment results provide useful managerial information to 3PL executives to tap into the innovation capability gaps that hinder 3PLs from being more innovative.

Since there is rare literature in theory or in practice on assessing the innovation competence of 3PLs, the findings in this paper are encouraging regarding the applicability of this new tool developed for assessing 3PL innovation competence. However, we notice that there are still research issues yet to be explored and further studies are needed to advance the knowledge regarding the 3PL innovation competence.

## REFERENCES

- Aeronet (2013). Company website, accessed February 15, 2013, available at <http://www.aeronet.com/corporate/Default.aspx>.
- Armstrong & Associates (2013). Company website, accessed February 15, 2013, available at <http://www.3plogistics.com/3PLmarketGlobal.htm>.
- Berman, J. (2013), UPS reports record fourth quarter 2012 earnings performance. *Logistics Management*, January 31.
- Bettis, R. & Prahalad, C. (1995). The dominant logic: Retrospective and extension. *Strategic Management Journal*, 16, (1), 5–14.
- Bowersox, D. J., Daugherty, P. J., Dröge, C. L., Rogers, D. L. & Wardlaw, D. L. (1989). *Leading edge logistics—competitive positioning for the 1990s*, Oak Brook, IL: CLM.
- Burnson, P. (2011). Top 3PLs: getting the balance right. *Logistics Management Magazine*, June.
- Churchill, G. A., Jr. (1979). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*, 16, (1), 64-73.
- Clabby, D. (2010). *The quick-serve leader’s green supply chain strategy*, CSCMP: Supply Chain Innovation Award Case.
- CLM (Council of Logistics Management) (1995). *The challenge of managing continuous change*, Global Logistics Research Team at Michigan State.
- Cui, L., Hertz, S. & Su, S. I. (2008). How do regional third-party logistics firms innovate? An international study. *Proceedings of International Conference on Greater China Supply Chain and Logistics*, Taipei, Taiwan, E15.1-13.
- Cui, L., Su, S. I. & Hertz, S. (2009). How do regional third party logistics firms innovate? A cross-regional study. *Transportation Journal*, 48, (3), 58-65.
- Cui, L., Hertz, S. & Su, S. I. (2010a). Innovation in an international third party logistics firm: a strategy-as-practice perspective, *Journal of Transport and Supply Chain Management*, 4, (1), 69-88.

- Cui, L., Hertz, S. & Su, S. I. (2010b). Factors Influencing Logistics Innovation at Logistics Firms. *The Nordic Logistics Research Network (NOFOMA) Conference Proceedings*. Kolding, Denmark.
- Cui, L., Su, S. I. & Hertz, S. (2012). Logistics innovation in China. *Transportation Journal*, 51, (1), 98-117.
- Dunn, S. C., Seaker, R. F. & Waller, M. A. (1994). Latent variables in business logistics research: scale development and validation. *Journal of Business Logistics*, 15, (2), 145-172.
- Economicsnewspaper.com (2011). Despite high fuel prices: UPS aiming for record profit, accessed April 26, 2011, available at <http://economicsnewspaper.com/policy/german/despite-high-fuel-prices-ups-aiming-for-record-profit-18835.html>.
- Flint, D. J., Larsson, E., Gammelgaard, B. & Mentzer, J. T. (2005). Logistics innovation: a customer value-oriented social process. *Journal of Business Logistics*, 26, (1), 113-147.
- Gaynor, J., Mackiewicz, A. & Ramaswami, R. (2009), *Entrepreneurship and innovation: the leys to global economic recovery*, UK: Ernst & Yang.
- Halldorsson, A. & Skjott-Larsen, T. (2004). Developing logistics competencies through third party logistics relationships. *International Journal of Operations & Production Management*, 24, (2), 192-206.
- Kandampully, J. (2002). Innovation as the core competency of a service organisation: the role of technology, knowledge and networks. *European Journal of Innovation Management*, 5, (1), 18 – 26.
- Knemeyer, A. M. & Paul, R. M. (2005). Exploring the potential impact of relationship characteristics and customer attributes on the outcomes of third-party logistics arrangements. *Transportation Journal*, 44, (1), 5-19.
- Langley, C. J., Jr. & Capgemini (2010). *2010 third-party logistics -the 15<sup>th</sup> annual survey*, Georgia Institute of Technology and Capgemini.
- Lau, K. H. & Zhang, J. (2006). Drivers and obstacles of outsourcing practices in China. *International Journal of Physical Distribution and Logistics Management*, 36, (10), 776-792.
- Lieb, R. C. (2008). The North American third-party logistics industry in 2007: the provider CEO perspective. *Transportation Journal*, 47, (2), 39-53.
- Linden, G., Dedrick, J. & Kraemer, K. L. (2011). Innovation and job creation in a global economy: the case of Apple's iPod. *Journal of International Commerce and Economics*, 3, (1), 223-240.
- Mentzer, J. T., Stank, T. P. & Esper T. L. (2008). Supply chain management and its relationships to logistics, marketing, production and operations management. *Journal of Business Logistics*, 29, (1), 31-46.
- Mullen, R. (2004). Innovation: the DNA of UPS, *The State of Business magazine*, 17(2).
- Oke, A. (2008). Barriers to innovation management in logistics service providers. In S. Wagner & C. Busse (Eds.), *Managing innovation - the new competitive edge for logistics service providers*. Berne, Switzerland: Haupt, 13-30.
- Olavarrieta, S. & Ellinger, A. (1997). Resource-based theory and strategic logistics research. *International Journal of Physical Distribution & Logistics Management*, 27, (9/10), 559–587.
- Panayides, P. M. & So, M. (2005). Logistics service provider–client relationships. *Transportation Research Part E*, 41, (3), 179-200.
- Prahalad, C. K., & Hamel, G. (1990). The core competence of the corporation. *Harvard Business Review*, 68, (3), 79–91.
- Su, S. I., Hertz, S. & Cui, L. (2011). Developing a conceptual framework for logistics innovation at 3PL firms - a case study approach. *POMS 22<sup>nd</sup> Annual Meeting Proceedings*, Reno, NV.
- Su, S. I., Cui, L. & Hertz, S. (2012). Developing a theoretic framework and propositions for the innovation of the third-party logistics service providers. *POMS 23<sup>rd</sup> Annual Meeting Proceedings*, Chicago, IL.
- UK DTI. (2003). *Competing in the global economy: the innovation challenge*. Department of Trade and Industry, United Kingdom.

- Wagner, S. & Busse, C. (2008). Managing innovation at logistics service providers - an introduction. In S. Wagner, & C. Busse (Eds.), *Managing innovation - the new competitive edge for logistics service providers*, Berne, Switzerland: Haupt, 1-12.
- Wagner, S. & Sutter, R. (2012). Qualitative investigation of innovation between third-party logistics providers and customers. *International Journal of Production Economics*, 140, (2), 944-958.

## APPENDIX

### RESULTS OF INTERVIEWS

	CHRW			Aeronet		
	status	importance	gap	status	importance	gap
1 NVC1	6	6	0	6	6	0
1 NVC2	6	7	-1	5	7	-2
1 NVC3	2	2	0	4	6	-2
2 ER1	5	7	-2	7	7	0
2 ER2	5	7	-2	6	7	-1
2 ER3	7	7	0	6	7	-1
2 ER4	7	6	1	7	7	0
3 JOB1	5	6	-1	4	6	-2
3 JOB2	6	6	0	5	6	-1
3 JOB3	6	7	-1	5	6	-1
4 OT1	6	6	0	5	7	-2
4 OT2	5	7	-2	4	6	-2
4 OT3	4	6	-2	5	7	-2
4 OT4	5	5	0	5	7	-2
5 MSO1	7	7	0	4	6	-2
5 MSO2	5	5	0	5	7	-2
5 MSO3	5	6	-1	4	7	-3
5 MSO4	6	6	0	5	7	-2
5 MSO5	5	7	-2	6	7	-1
6 SCP1	5	7	-2	7	7	0
6 SCP2	5	7	-2	5	7	-2
6 SCP3	5	7	-2	5	6	-1
6 SCP4	5	7	-2	5	6	-1