

## RESEARCH ARTICLE

# The Factors Impacting Horizontal Collaboration Performance of Logistics Service Providers in a Global Network

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## Abstract

The aim of the article is to develop a conceptual model of horizontal collaboration between logistics service providers in a global network operated by a network administrative organization. A qualitative pilot study with the semi-structured interviews were conducted with ten chief executive officers of logistics service providers in the G7 logistics network which is one network with 148 small-and-medium-size logistics service providers locating over the world during two weeks of June 2021. The content analysis method was conducted to conclude the results of interviews. The findings indicate that it is difficult to evaluate the growth of horizontal logistics collaboration. Consequently, overall satisfaction and

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network continuity were employed to assess collaboration performance. The present study theoretically contributes the conceptual model of horizontal collaboration between logistics service providers in a global network operated by a network administrative organization. Practically, the study recommends that the logistics service providers can use the model to foster the collaboration performance with partners in the network.

**Keywords:** Horizontal Logistics Collaboration, Global Network of Logistics Service Provider, Interorganizational Relations, Horizontal Business Network

## บทความวิจัย

# ปัจจัยที่ส่งผลต่อการดำเนินงานร่วมกันในแนวนอนของผู้ให้บริการโลจิสติกส์ในเครือข่ายทั่วโลก

Quang Duy Nguyen<sup>1</sup>

ทิพวรรณ หล่อสุวรรณรัตน์<sup>2</sup>

## บทคัดย่อ

บทความวิจัยนี้มีวัตถุประสงค์เพื่อพัฒนาตัวแบบแนวคิดของความร่วมมือกันในแนวนอนระหว่างผู้ให้บริการโลจิสติกส์ในเครือข่ายระดับโลก ซึ่งดำเนินการโดยองค์การบริหารเครือข่าย การวิจัยนี้ใช้วิธีเชิงคุณภาพเป็นการศึกษานำร่องโดยใช้แบบสัมภาษณ์กึ่งโครงสร้างกับประธานบริหาร 10 คนของบริษัทผู้ให้บริการโลจิสติกส์ในเครือข่ายโลจิสติกส์ G7 ซึ่งเป็นหนึ่งใน 148 ของผู้ให้บริการด้านโลจิสติกส์ขนาดเล็กและขนาดกลางที่ตั้งอยู่ทั่วโลก การสัมภาษณ์ใช้ระยะเวลา 2 สัปดาห์ในเดือนมิถุนายน พ.ศ. 2564 การวิเคราะห์เนื้อหาถูกใช้ในการสรุปผลการสัมภาษณ์ ผลการวิจัยพบว่า เป็นการยากที่จะประเมินความเติบโตของความร่วมมือด้านโลจิสติกส์ในแนวนอน ดังนั้น จึงใช้ความพึงพอใจโดยรวมและความต่อเนื่องของเครือข่ายเพื่อประเมินการดำเนินงานร่วมกัน ในทางทฤษฎี การวิจัยนี้มีประโยชน์ในเชิงตัวแบบของการดำเนินงานร่วมกันในแนวนอนระหว่างผู้ให้บริการด้านโลจิสติกส์ในเครือข่ายระดับโลก ซึ่งดำเนินการโดยองค์การบริหารเครือข่าย ในทางปฏิบัติ การวิจัยนี้เสนอแนะว่า ผู้ให้บริการด้านโลจิสติกส์สามารถใช้ตัวแบบนี้เพื่อส่งเสริมการดำเนินงานร่วมกันกับหุ้นส่วนในเครือข่ายได้

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**คำสำคัญ:** ความร่วมมือทางโลจิสติกส์ในแนวนอน เครือข่ายผู้ให้บริการโลจิสติกส์  
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## Introduction

The global cargo flows are transported by many kinds of relating parties, which logistics service providers (LSPs) are crucial parties for the movements from departure points to destinations. Worldwide LSPs connect with altogether by interorganizational relations (IORs), which are the cooperative transactions, and linkages between or among firms. Necessity, legitimacy, reciprocity, efficiency, and stability can be core contingencies to motivate LSPs joining into the global network operated by a network administrative network (Lemoine & Dagnæs, 2003). The horizontal logistics collaboration (HLC) occurs between independent LSPs, who are at a same level in the logistics service chains (Wegner & Padula, 2010).

Several aspects of HLC have been studied previously, such as definitions, motives, opportunities, and impediments (Schmoltzi & Wallenburg, 2011); typology of HLC (Cruijssen, Dullaert, & Fleuren, 2007); formation, procedure, governance, and performance (Martin, Verdonck, Caris, & Depaire, 2018; Wallenburg & Schäffler, 2016). Steinicke, Wallenburg, and Schmoltzi (2012) found that the option of governance facilitates to improve the innovation of service collaboration among LSPs. The logistics partner evaluation and selection are important activities in order to gain the logistics performance (Abidi, Dullaert, De Leeuw, Lysko, & Klumpp, 2019). The internationalization of HLC by joining networks is a popular tendency of LSPs (Carbone & Stone, 2005). Moreover, many frameworks have been proposed, such as a dynamic framework in order to manage HLC (Verstrepen, Cools, Cruijssen, & Dullaert, 2009); a framework to implement HLC efficiently (Audy, Lehoux, D'Amours, & Rönnqvist, 2012); a model in relation to conflict governance in

HLC of LSPs (Wallenburg & Raue, 2011); a model illustrating the similarity of LSPs to effect the collaboration performance (Raue & Wallenburg, 2013); a framework of decisions for HLC (Martin et al., 2018); a conceptual model consisting of elements to enable a success of HLC among LSPs (Palmieri, Pomponi, & Russo, 2019); and a conceptual model of HLC for the supply chain of agricultural products in Morocco (Badraoui, Van der Vorst, & Boulaksil, 2020). Nonetheless, there is no model for HLC of LSPs in one global network operated by a network administrative organization (NAO).

Many theories and perspectives have been used to explain HLC among LSPs, such as resource dependence, transaction cost economics, social exchange, game theory, the resource-based view, and marketing theory. Yet, selecting the appropriate theories for HLC is a big challenge for researchers. Noticeably, researchers have demonstrated that theoretically HLC has several potential benefits for LSPs, such as the cost reduction, an increase in the cargo fulfillment rate, and the development of new markets. Nevertheless, in reality, the performance of LSPs is rarely successful because of issues on establishing the partnership structure, organizing, and enforcing the cooperation, and dealing with the regulations of governments, competing cases, the segments of customers, and particularly behaviors of the partners (Basso, D'Amours, Rönnqvist, & Weintraub, 2019). Further, Schmoltzi and Wallenburg (2012) revealed that HLC of LSPs is not often successful or effective due to the increase of operational conflict, the opportunism of partners, and the complexity of cooperation.

Yet, in order to provide logistics services for clients and agents, LSPs have to cooperate horizontally with other logistics firms globally (Lemoine & Dagnæs, 2003). Thus, there are more than one hundred of global networks of LSPs governed by an NAO (Bernal, Burr, & Johnsen, 2002). In line with this trend, the G7 logistics network has been established in Bangkok Thailand since 2016, which comprises LSPs from over the world. G7N follows an open and volunteer mechanism that introduces and approves forwarders to take part in, but has the limits of 5 members for each country. G7N is an independent organization with LSPs in the network. G7N operated the network by creating the business platform for members to do cooperate altogether. G7N provides several diverse forms of public relations and marketing support, not only through internal member news, social media platforms, but also in various media outlets. This allows each member to reach more inter-network partners and also new external customers. LSPs join G7N due to certain main motives such as cost reduction, productivity increases, tendering larger contracts with large shippers, overcoming regulatory barriers, enhancing marketing activities, and financial protection by G7N. G7N was selected to be an empirical case due to certain reason. First, G7N is one global network of small-and-medium-size LSPs in which is popular as other networks over the world. Second, the average size of networks is approximately 150 membership firms who are locating across five continents. Third, the members are the LSPs supply services, such as warehousing, customs clearance, trucking, international transportation, and multimodal transportation. Currently, G7N is as the same as the LSPs in other global networks, which are facing several aforementioned

obstacles relating to the collaboration performance. Hence, given the literature review and the reality, it raises a need to develop a conceptual model of HLC for LSPs in the global network operated by an NAO in order to foster collaboration performance.

## Literature review and theoretical foundation

### 1. Literature review

In the paradigm of HCL, several aspects have been researched by scholar, such as definitions; similarity; motives and challenges; typologies; internationalization; partner evaluation and selection; and frameworks.

Crujissen et al. (2007) described that HLC is an active cooperation between two or more LSPs that operate on the same level of the supply chain and perform a comparable logistics function.

Similarity refers to the firm's capabilities and processes are similar or related to those of its alliance partner (Westney, 1988). Raue and Wallenburg (2013) illustrated that competence similarity, geographic similarity and cultural similarity impact positively the horizontal collaboration performance of LSPs. Gao, Yang, Yin, and Ma (2017) emphasized that partner similarity, especially competence similarity and cultural similarity are positively correlated with HLC's stability and performance.

Scholars have discovered many motives and challenges when LSPs join in HLC. According to Bernal et al. (2002), LSPs join a global network to establish business in every part of the world by gaining access to international contacts which would be difficult to develop through individual firm efforts; and to enable opportunities to develop and maintain business connections around the world.



Additionally, LSPs enhance horizontal collaboration to expand their activities on transnational and global levels (Lemoine & Dagnæs, 2003). By doing that, these firms can increase their competitiveness, penetrate their oriented market, access new markets, grow profitability, extend their service portfolio, and improve their service quality (Carbone & Stone, 2005). Verstrepen et al. (2009) illustrated that the internal motives are to increase the company's productivity of its core activities; to reduce the cost of non-core activities; to reduce purchasing costs; and to offer better quality of service at lower costs; and the external motives are that LSPs can specialize while at the same time broadening their services, tender larger contracts with large shippers, and protect market share.

Crujssen et al. (2007) pointed out that certain main impediments in horizontal collaboration relate to four areas; such as partner selection; determining and dividing the gains; negotiation and coordination; information and communication technology. Wallenburg and Raue (2011) added that challenges in horizontal logistics collaboration are conflict and its governance among partners. Schulz and Blecken (2010) concluded that the challenges for LSPs are cultural differences, mutual mistrust, and inadequate relief capacities. Additionally, Schmoltzi and Wallenburg (2012) emphasized that the HLC of LSPs usually fail or is not effective due to the operational conflict development of opportunism and collaboration complexity. Basso et al. (2019) pointed out that from a theoretical perspective, logistics firms gain many benefits from horizontal collaboration, but in practice, it is very difficult for firms to implement collaboration for several reasons: cost allocation, different operational culture, profit allocation, and so on, which can

cause rare horizontal collaboration sustainably. Further, Badraoui et al. (2020) added that it is difficult to implement horizontal logistics collaboration between partners in developing countries due to various operational issues, specific handling conditions, the social environment, the politic situation, and cultural differences.

Scholars classified typologies of HLC, including lobbying group, maintenance group, purchasing group, chartering, warehousing, freight sharing, knowledge center, road assistance, co-branding, tender group, asset pooling, intermodal group, and shared cross-docks (Crujssen, Cools, & Dullaert, 2007). Martin et al. (2018) discussed two key dimensions for categorizing HLC, such as the activity of the scope of the alliance, and the degree of the structural intertwinement among partners.

Bernal et al. (2002) stated that there are a fruitful number of benefits of horizontal collaboration in global networks of high tech forwarders. The creation of a network of firms seems to be one of the best ways to reach the world markets and to offer global services (Lemoine & Dagnæs, 2003).

Alkhatib, Darlington, and Nguyen (2015) reviewed and analyzed 56 articles relating to the partner evaluation and selection methods and criteria for LSPs, and then developed a comprehensive framework of LSP evaluation and selection. Abidi et al. (2019) suggested the usage of the analytical network process (ANP) to test and select partners in the network of LSPs.

Designing, process, governance and performance in HLC have been studied by scholars. Raue and Wieland (2015) proposed a conceptual model that formalization and relational capital impact learning and performance of LSPs. Wallenburg and Schäffler (2016)

examined the performance measurement in order to reduce overall conflict in HLC. Defryn, Sörensen, and Dullaert (2019) presented a general solution framework for optimizing decisions in a horizontal logistics cooperation.

Remarkably, scholars have developed several conceptual frameworks for HLC. Verstrepén et al. (2009) proposed a framework with a stage-wise approach toward HLC among LSPs consisting of four main phases named strategic positioning, design, implementation, and moderation, which a go/no go decision between each of the phases will determine whether the step to the next stage can be safely taken. Leitner, Meizer, Prochazka, and Sihn (2011) suggested a framework of collaboration including individual transport planning, purchasing cooperation, transport cooperation, and lateral supply chain cooperation. Martin et al. (2018) suggested one cyclical decision framework for horizontal collaboration among logistics service firms, comprising five phrases: orientation, partner selection, negotiation, implementation, and management with continuous evaluation as one central position of the framework. Palmieri et al. (2019) created a conceptual framework for enabling the key success factors in horizontal logistics service firms. Badraoui et al. (2020) developed the model of HLC consisting of scenario, the characteristics of the industry, the cultural context, collaborative activities, relational elements, and the performance impacting relationship outcomes.

From the literature review, the authors found the gap of the knowledge that the conceptual model for HLC between LSPs in one global network operated by an NAO has not been developed. The authors based on core contributions of previous studies to develop the model. First, HLC of LSPs refers to the active collaboration

between two or more LSPs that operate at the same level (s) in the logistics service markets in order to provide logistics services for customers. Second, in the similarity of competence and logistics business is the basic characteristic of HLC among LSPs. In the relationship of HLC, LSPs combine both complementary resources and supplementary resources to produce logistics services for customers. Third, Internationalization and network participation are the popular tendencies of LSPs. Fourth, legitimacy and competence of partners in HLC is crucial for effective and successful collaboration. Fifth, the collaborative framework HLC include antecedents, process, and performance.

## 2. Theoretical foundation

The perspective of IORs, the resource-based view, and institutional theory are the theoretical framework of the conceptual model for HLC of LSPs in a global network operated by an NAO.

First, IORs are the ties, flows, linkages, and exchanges that occur among or between organizations (Oliver, 1990). The study employed the perspectives of IORs in order to explain the relationships, the dependence on other parties motivating LSPs to join into the global network. Particularly, perspective of IORs explains the antecedents, contents, patterns, formation, processes, management, and performance of HLC in a global network of LSPs governed by an NAO (Provan, Isett, & Milward, 2004).

Second, as per the resource-based view, in order to create sustained competitive advantages, firms should possess resources with characteristics such as valuable, rare, imperfectly imitable, historically dependent, causal ambiguity, and social organizational complexity (Barney, 1991). The resource-based view explains the

resource complementarity and resource supplementation in HLC. (Dyer, Kale, & Singh, 2001).

Third, according to Institutional theory, organizations have tendencies to conform the rules and regulations of the institutional environments in which external pressure can be the sources of change, and legitimacy becomes the forces of change (DiMaggio & Powell, 1983). In this study, institutional theory explains the organizational legitimacy that a firm join networks to obtain its legitimacy demand (Dacin, Oliver, & Roy, 2007)

### The proposed conceptual model

Given the aforementioned literature review and theoretical framework, the authors proposed the following conceptual model.

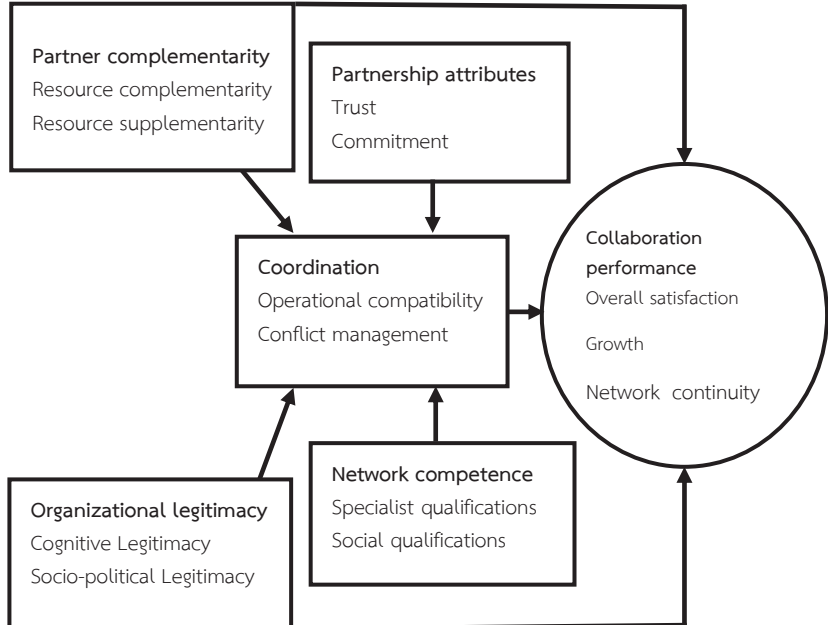


Figure 1. The proposed conceptual model

The model consists of independent variable (partner complementarity, organizational legitimacy, partnership attributes, network competence), mediating variable (coordination), and dependent variable (collaboration performance).

Organizational legitimacy refers the congruence between the social values associated with or implied by organizational activities and the norms or acceptable behavior in the larger social system (Dowling & Pfeffer, 1975). Organizational legitimacy includes two sub-constructs: cognitive legitimacy and socio-political legitimacy. Cognitive legitimacy is based on the extent to which an organization is seen to provide a service that is needed by society (Scott, 1995). Socio-political legitimacy reflects the process of normative evaluation, justification, and acceptance of the organization, its practices and outcomes as appropriate and right, given existing norms and laws (Aldrich & Fiol, 1994).

Partnership attributes in the proposed model are behavioral characteristics of collaboration consisting of trust and commitment. Trust refers to the degree to which the focal firm believes the partner firm is reliable and possesses integrity (Morgan & Hunt, 1994). Commitment is defined as an exchange partner believing that an ongoing relationship with another is so important as to warrant maximum efforts at maintaining it; that is, the committed party believes that the relationship is worth working on to ensure that it endures indefinitely (Morgan & Hunt, 1994).

Network competence refers to the degree of network management qualifications possessed by the people handling the company's relationship (Ritter, 1999). Specialist qualifications are the degree to which a person has technical skills to understand

partners in terms of their technical needs, requirements, and capabilities. Social qualifications are the extent to which a person is able to exhibit autonomous, prudent, and useful behavior in social settings (Ritter, 1999).

Coordination is defined as the process by which participants in the partnership seek to work together in a joint effort based on a set of tasks that each partner expects the other to perform (Morgan & Hunt, 1994). Operational compatibility refers to the extent to which each partner has similar competencies and consistent procedural capabilities on a day-to-day working basis and in the context of a working relationship (Sarkar, Echambadi, Tamer Cavusgil, & Aulakh, 2001). Conflict management refers to the extent to which each partner joins in solving the conflict happening while collaborating (Kale, Singh, & Perlmutter, 2000).

Partner complementarity exists between two sets of resources when a joint use of the partner can potentially yield a higher total return than the sum of the returns that can be earned if each set of resources are used independently of the other (Chi, 1994). Resource complementarity is defined as a joint use of distinctive resources by each partner in the relationship, in such a way that it collectively generates greater outputs than those each party could obtain separately (Huang, Lai, & Huang, 2015). Resource supplementarity refers the extent to which firms contribute the similar resources in the partnership (Das & Teng, 2000).

Collaboration performance is the degree of accomplishment of the partner' goals which can be common or private, initial or emergent (Ariño, 2003). Based on the literature, the authors suggested the collaboration performance of LSPs in the global

network operated by an NAO consisting of overall satisfaction, growth, and network continuity. Overall satisfaction refers to the degree to which it has met the goals of the partner, and its contributions to the partner's core competencies (Gao et al., 2017). Growth refers to the increase of sales volume, market share, and service portfolio after joining the global logistics service provider network (Gao et al., 2017). Network continuity relates to the degree to which network members are willing to participate continuously in the network (Bradford, Stringfellow, & Weitz, 2004).

## Research methodology

### 1. Data collection

The qualitative pilot test was conducted using the semi-structured interviews with ten selected chief executive officers of LSPs in the G7 logistics network which is a global non-exclusive network. G7N follows an open and volunteer mechanism that introduces and approves forwarders to take part in, but has the limits of 5 members for each country. The organizer of G7N is absolutely independent with LSPs in the network. The G7N organizer aims only to create one platform for members to establish relationships and to collaborate their logistics service business. The criteria to select interviewees included: first, each continent has two representatives; second, the firms of the representatives are joining G7N at least two years in order that the interviewees could answer the questions relating to collaboration performance; third, these firms are the small-and-medium-size third-party LSPs that supply various types of logistics services for customers, such as trucking services, consolidating service, customs brokerage services, project-



cargo services, dangerous cargo services, warehousing services, domestics transportation, international transportation, and multimodal transportation. The open-ended questions relating to three proposed sub-constructs (overall satisfaction, growth, and network continuity) of dependent variable (collaboration performance) were generated. The example question is “Please kindly comment about the collaboration performance between members in the G7 logistics network in terms of growth”. The interviews were conducted via online WhatsApp software, and in certain cases, the interviewees used emails to answer the questions in details during two weeks in June, 2021.

## **2. Data analysis**

The content analysis method was employed for the data analysis. The interviewees’ comments about the three sub-constructs (overall satisfaction, growth, and network continuity) of the dependent variable (collaboration performance) was analyzed to make a conclusion about the sub-constructs of collaboration performance. The unit of study analysis is the dyadic relationships between member firms in G7N because HLC takes place between two firms in the network to provide logistics service for customers. Lambe, Spekman, and Hunt (2002) commented that although the data collection from two sides of one dyad is valuable, it is difficult to gather and use the information and data. Hence, data was collected and analyzed from one side of the dyad in G7N

## Findings and discussions

Overall, almost interviewees agreed that partner complementarity plays important roles for collaboration performance in the global network of logistics service firms. For an example, one interviewee as the chief executive officer of one logistics corporate in Australia revealed: “In the industry of logistics service, we usually choose partners whom we can share complementary and supplementary resources to achieve our goals.” In general views of interviewees, organizational legitimacy of firm in local environment can be considered as one complementary factor that firm can support for its members in the network when collaborating to provide services. For an instance, one overseas business manager of one forwarding company in France shared: “Due to international cooperation with our partners over the world to provide logistics services for our customers, our company must join into one prestige network in which legitimacy of members are verified by the network organization.” The interviewees confirmed the important role of coordination between LSPs in the network. For an example, an interviewee from an American member emphasized: “Our company and our partners in the network have similarity of functions that provide our logistics services by combining and integrating our resources together. By doing so, we absolutely understand how to coordinate and proceed services smoothly.” Interviewees shared their opinions about the role of partnership attributes including trust and commitments in coordination with members in the network. For an instance, a general manager of LSP from Turkey shared: “Trust and commitment are vital elements for coordination between members

in the network.” Finally, network competence of logistics firm is very crucial to collaborate horizontally with any other firms. For an example, a chief executive officer from Singapore informed: “our network competence is very crucial for our coordination with our partners in G7N.” The conceptual model was determined as the following figure.

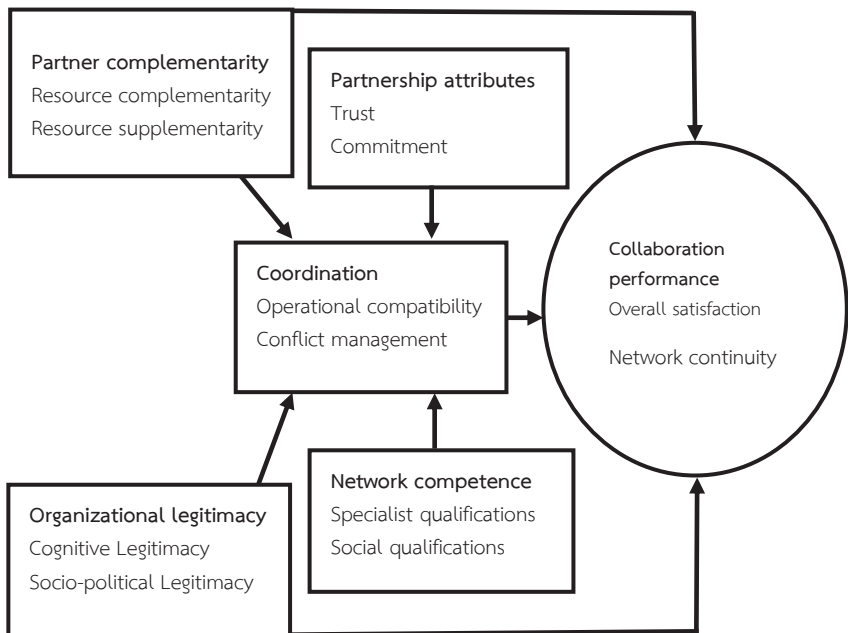


Figure 2. The conceptual model

The results of interviews indicated that almost all of interviewees have their overall satisfaction with the collaboration performance with members in G7N. The respondents consider the network membership as their basic and necessary investments in order to provide global logistics services for their customers. Eighty

percent of representatives agrees to continue the network participation. Yet, sixty percent of the interviewees had no comments or no idea about growth related the market share, sales rates, or shipment increase; thirty percent of them revealed that growth is low; and only one interviewee said that the growth is good.

The interview results are consistent with extant researches. Das and Teng (1998) commented that it is difficult to evaluate collaboration performance of alliances by an appropriate and regular way, especially, evidence and data for assessment are limited. Further, Ariño (2003) illustrated that an optimal method to evaluate partnership performance is not agreed by scholars. In fact, using traditional approaches to evaluate collaboration performance by measuring revenue, sales growth, profit, benefit, and effectiveness is not easy because of essential data limitation. Managerial assessments can be employed to assess the partnership performance. Partners can evaluate collaboration performance by their overall satisfaction or the extent of stated objectives gained (Saxton, 1997). Partnership growth, profitability, adaptability, extent of participation, and network continuity have been employed to measure partnership performance by Hyder and Abraha (2006).

By combining the results of interviews, literature reviews, and theoretical frameworks, the authors determined the conceptual model which the overall satisfaction, and network continuity have been chosen as the measures of collaboration performance in the global network of LSPs governed by an NAO.

## Conclusions

Participation in a global network operated by an NAO is the popular tendency, where LSPs establish horizontal collaboration in order to obtain supplementary and complementary resources, the cost reduction, the productive service, market development, a wide range of services, and expansion of destinations. Theoretically, the present study contributes the conceptual model for HLC between LSPs in the global network operated by an NAO. Practically, the study indicated the significant determinants including partner complementarity, organizational legitimacy, partnership attributes, network competence, and coordination to foster horizontal collaboration performance, which can be essential instructions for LSPs and NAOs. The limitation of the study is the model that was examined by the qualitative pilot test for the sub-constructs of dependent variable. In the future, the model should be tested the relationships between variables by quantitative methods or comparative research methods with different NAOs.

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