

ANALYZING LOGISTICS OUTSOURCING RISKS IN THE VIETNAMESE SEAFOOD SUPPLY CHAIN

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ABSTRACT:

The recent emergence of a series of food scandals and a plethora of product recalls demonstrated the increasing complexity of managing the food supply chain. This leads to a significant attention of practitioners and researchers on risk management of the chain “from farm to fork”. Throughout food supply chains, various types of risk do exist, including quality risk, logistics risk, inventory risk, structural risk, information risk, cooperation risk, market risk, and environmental risk. In which, logistics risk has a significant impact on the integrity, performance and sustainability of food supply chain. Logistics risk in food supply chain stems from unique characteristics of service (such as intangibility and labour intensity) and typical features of food especially perishable products as well as logistics technology and management. In addition, most logistics functions are outsource which leads to the necessity of studying logistics outsourcing risk. This paper aims to investigate logistics outsourcing risk factors in food supply chain in the real case of the Vietnamese seafood supply chain by a by secondary research. The findings present three main types of logistics outsourcing risk in Vietnamese seafood supply chain and analyzes the factors affecting these risks from a combined perspective of both outsourcers and third party logistics service providers.

Keywords: logistics risk, outsourcing, seafood supply chain, risk triggers.

1. Introduction

Third party logistics service (3PL), which involves the outsourcing of part or all of an organization's logistics functions (Lambert, Emmelhainz, & Gardner, 1999), is an emerging trend in global markets. Outsourcing logistics service offers 3PL users various benefits such as cost reduction, improvement of service quality and flexibility to deal with ever-changing demand, as well as spreading the risk of service disruptions (Bourlakis & Weightman, 2004a; Waters, 2011).

However, 3PL providers also have their own challenges and inherent issues that entail risks to their customers' supply chain (Govindan & Chaudhuri, 2016; Korecký, 2012; Waters, 2011). For instance, taking advantage of 3PL can result in a loss of control and too much reliance on external partners, especially when the 3PL provider does not work as well as expected or committed.

According to John, Albright, and Collins (2015), “it would be useful to better understand the roles that 3PLs may play in partnership with their

customers to identify and then mitigate, eliminate or deal with the types of risks that may affect the overall supply chain process.” Therefore, it is essential to investigate risks faced by logistics service providers (LSPs) and their influence on the supply chain of 3PL users as well as the roles of 3PL providers in risk management of the overall supply chain. However, this is a scarce topic in literature, as asserted by Govindan and Chaudhuri (2016).

In a food supply chain context, logistics is one of the most significant risk drivers even when focal companies outsource their logistics functions (Chaudhuri et al., 2016). In fact, 3PL providers who can improve the performance of the food supply chain by moving, storing and managing food, can also become a source of complexity and risk in the food supply chain due to potential physical flow interruption and perishability characteristics, especially to the frozen food chain (Dani, 2015).

In the context of the Vietnamese seafood industry, logistics risk is a major issue (Seafoodsource, 2015) as illustrated in the case of the pangasius supply chain. The poor transportation system, storage and packing conditions, and high logistics costs, result in about 35% of seafood being lost during harvesting, processing, storage and transportation (Talkvietnam, 2016). In addition, outsourcing several logistics services such as international transportation is obligatory, not a choice, for all Vietnamese seafood processing and exporting companies. This study aims to identify logistics outsourcing risks in the Vietnamese

seafood supply chain, and especially their risk triggers, and then establish a conceptual framework to analyze the significance and interrelationship between them.

2. Literature review

2.1 Outsourcing logistics

According to the Council of Supply Chain Management Professionals (CSCMP) the term logistics is defined as “the process of planning, implementing, and controlling procedures for the efficient and effective transport and storage of goods including services and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirement. This definition includes inbound, outbound, internal, and external movements” (Cscmp, 2013).

Recently, logistics outsourcing, “the use of a third-party provider for all, or part of an organization’s logistics operations” (Lambert et al., 1999), is a practice more and more applied within logistics and SCM (Anderson & Norrman, 2004) because of a number of benefits (Bourlakis & Weightman, 2004b), namely:

- outsourcing ensures that outsourcers focus and maintain their management expertise in the field,
- outsourcing spreads the risk of service disruption (possibly as a result of labor disputes),
- outsourcing permits benchmarking of efficiency and service standards.

In addition, Kersten, Koch, and Hohrath (2007) and Kersten, Schröder, Singer, and Feser (2012) explained the reasons why practitioners use logistics outsourcing (see Table 1).

Table 1. Motivations for logistics outsourcing (Kersten et al., 2007; Kersten et al., 2012)

Motivations to outsource logistics services	
■ Cost reduction	■ Access to new information technology
■ Focus on core business/core competencies	■ Increase in speed
■ Improvement of service level/service quality	■ Gaining more cost transparency
■ Changes in cost structure	■ Centralized facilities/distribution systems
■ Gaining flexibility	■ Management and political considerations
■ Know-how transfer/usage	■ Global capabilities
■ Labor considerations	■ Economies of scale
■ Capacity improvement/handling peaks/customer demand	■ Company restructuring/development of SC partnership
■ Decrease in capital employed	■ Change implementation

Transportation is "an important activity as well as a key element in the logistics chain" (Kersten et al., 2012) and also the element most often used by 3PL users (for both domestic and international transportation) (John & Caggemini, 2016). Besides that, there are a great number of popular logistics services, such as warehousing, freight forwarding, reverse logistics, cross-docking, freight bill auditing and payment, transportation planning and management, inventory management, product labeling, packaging, assembly, kitting, order management and fulfillment, service parts logistics, fleet management, and information technology services. Supply chain consultancy, customer service, and 4PL services are other logistics outsourcing services in order of decreasing frequency of use (John & Caggemini, 2016)

2.2 Risk of logistics outsourcing

Logistics itself is a significant risk driver in organizational and supply chain operations. Outsourcing a part or all of the logistics functions can reduce some logistical risks but also create other risks to the focal companies and their supply chains.

2.2.1. Logistical risk

Logistics risk (or logistical risk) is probably the most prevalent type of supply chain risk (Ellegaard, 2008), and relates to inadequate operations or financial strength of the carrier, storage issues, the poor design of the transportation network, the wrong choice of transportation mode, improper packaging and marking details, damage due to accident/improper stacking, and delay in delivery time (Punniyamoorthy, Thamaraiselvan, & Manikandan, 2013).

Chang, Xu, and Song (2015) classified logistical risk into 3 categories as per SCM

thinking, namely information flow, physical flow and financial flow. Each category has its own specific risk trigger, for example, risk in information flow resulting from IT failure or information delay, and risk in the physical flow resulting from transportation delay and cargo damage. (Table 2).

2.2.2 Outsourcing logistics risk from view of outsourcing users

Solakivi, Töyli, and Ojala (2013) studied motives for logistics outsourcing and motives against logistics outsourcing by manufacturing and trading companies. They stated that there some risks from using outsourcing logistics, including:

- Uncertainty of service-level improvement
- Loss of control
- Minimal cost savings as a result of outsourcing
- Insufficient competence of service providers
- Difficulties to following the level of cost
- Difficulties of assessing the level of outsourced services
- Unwillingness to outsource their own core competence
- Loss of company's independence
- Lack of own competence in outsourcing decisions

Tsai, Liao, and Han (2008) and Tsai, Lai, Lloyd, and Lin (2012) took advantage of transaction cost theory (TCT) and resourced based view (RBV) to investigate the dark side/risk of outsourcing logistics services from the view of outsourcers, which includes asset risk, relationship risk, and competence risk. (Table 3).

Firstly, relationship risk relates to potential triggers that can lead to failed relationships between 3PL users and 3PL providers, including (i) vendor opportunism i.e. a 3PL provider unfairly distorts information in the contract in

Table 2. Logistics risks adapted from Chang et al. (2015)

Information flow	Physical flow	Financial flow
• IT failures	• Cargo/Goods damage	• Non payment
• Information delay	• Goods loss	• Transportation delay
• Inaccurate information	• Payment delay	• Currency exchange

Table 3. Logistics outsourcing risks (view from outsourcers) (Tsai et al., 2012)

Relationship risk	Asset risk	Competence risks
• Vendor opportunism	• Information risk	• Deterioration of customer services performance
• Poor communication	• Poor employee utilization	• Loss of control
• Lack of shared goals	• Internal governance cost	• Poor strategic resource development
• Power asymmetry	• Dependence risk	• Poor competence protection

order to gain more benefits from their customers, (ii) poor communication, failures in delivery of correct information on time, especially a lack of discussion when problems occur, (iii) a lack of shared goals, where 3PL users and providers who have different visions may not make an effort to seek common ground in business goals, style and culture, and (iv) power asymmetry, when 3PL providers have stronger power and set a price squeeze and special requirements on outsourcers.

Secondly, asset risk is divided into risk coming from human resources (when using an outsourcing service, internal employees may not be used effectively), information (when information from business partners is not updated or only slowly updated to focal companies through LSPs), risk due to the increase of internal governance costs, and dependence risk (trade off of benefits from outsourcing as outsourcers always have to make an effort to monitor or negotiate with 3PL providers).

Finally, using outsourcing logistics services can cause a risk in competence for outsourcers i.e. (i) loss of control, especially for exceptional logistics tasks, (ii) indirectly control of customer service that can entail a deterioration in

performance, and (iii) poor strategic resource development due to failure of the LSP to support 3PL users in developing flexibility and implementing innovation to adapt to changing markets.

2.2.3 Risks faced by 3PL providers

According to John et al. (2015), an effective way to deal with outsourcing logistics risk is identifying and mitigating risks faced by LSPs that can transmit to 3PL users' supply chain. Govindan and Chaudhuri (2016) investigated risk faced by 3PL providers and the interrelationship between them. (Table 4).

The first group of risk faced by 3PL providers stems from their own internal operation failures that impede LSPs in serving their customers, and hence impact on the smooth movement of outsourcers' supply chains. The financial risks of LSPs influence liquidity and the ability to access capital, which may entail bankrupt or dissolution of LSPs and a break of continuity of 3PL users. Customer related risks refer to problems that occur between LSPs and their customers, such as inaccurate customer demand forecasting and planning systems, opportunistic behaviors of outsourcers, and differences or conflicts in national/company culture/language.

Table 4. Risks faced by 3PL providers (Govindan & Chaudhuri, 2016)

Internal operational risks	Financial risks	Customer related risks
• IT, process design & planning	• Exchange rates, taxes and fuel prices	• Planning and forecasting
• Quality, Lead-time	• Risk due to debtors and lack of access to capital	• Opportunism risk
• Breakdown and hazard	• Payment	• Cultural/language risk
• Packaging, storage/inventory		• Intellectual property rights risk

2.3 Logistics outsourcing risks in food supply chain

Logistics services have been outsourced in almost all sectors including the food industry because the core activity and competence of food businesses is production not logistics (Hsiao, van der Vorst, Kemp, & Omta, 2010). Logistics activities and outsourcing logistics services in the food chain also contains a number of risks such as (i) shipping errors, (ii) poor logistics contracts, (iii) obsolete technology or practice, (iv) transportation delays/breakdowns, and (v) temperature abuse, cross-contamination and sabotage and tampering (Chaudhuri et al., 2016; Srivastava, Chaudhuri, & Srivastava, 2015).

Lang and Ding (2008) identified and assessed logistics outsourcing risks in the food supply chain, which included the following risk factors:

(i) technology risks, as food supply chains have to satisfy a large number of strict requirements on food quality and safety, it is difficult for 3PL providers to meet these requirements completely, especially for fresh food and frozen food products (except for non-perishable food products i.e. sugar);

(ii) cooperation risks, refer to disruptions in relationship between 3PL users and providers due to adverse selection, asymmetric information, unstable corporations, or moral failure/opportunism;

(iii) management risks, when using 3PL services, LSP will intervene at almost all stages from procurement, to distribution to after-sales services of outsourcers' operations. As a result, 3PL users may lose direct control over logistics activities, while the LSP can increase their bargaining power. That can entail an increase in logistics cost;

(iv) environmental risks, for example the cultural differences and the increase of uncertainties due to a more complex management system with more stakeholders; and

(v) financial risks, due to difficulties in quantifying the cost and benefits of logistics outsourcing to make effective trade off decisions.

2.4. Research gap and research approach

In brief, as stated above, there are different

approaches to deal with outsourcing logistics risk in the food supply chain. There is a lack of and a necessity for a corporative view of 3PL users and providers in order to identify the root causes of supply chain risks that stem from 3PL providers, especially in food industry.

To fill this gap, this paper proposes to use a corporative view to investigate the outsourcing logistics risks in the case of the Vietnamese seafood supply chain. The investigation process takes advantage of the principal concepts in literature as follows:

Firstly, logistics outsourcing risks will be identified on the basis of three main potential categories including:

(i) risk in information flow (loss of data, visibility and traceability),

(ii) risk in physical flow (transportation delay, food (quality) damage (food loss, food waste, and food contamination, etc.) loss of control) and

(iii) risk in financial flow (risk of hidden cost, liability and related economic lost).

After that, logistics outsourcing risk triggers are explored according to the approach of Govindan and Chaudhuri (2016), which comprises (a) operational failures of the LSP itself, (b) risk from relationship between 3PL users and providers/network risks triggers, and (c) environmental risks.

3. Methodology

In this study, we conducted a desk research to investigate logistics outsourcing risk in the case of the Vietnamese seafood supply chain. This desk research collected data from websites of seafood related governmental organizations, associations, companies, consultants, and academic papers/books. After that, an analysis of gathered information and theories provides a sound base to define critical risk factors and their drivers in outsourcing logistics services in the case of Vietnamese seafood processors and exporters together with their LSPs.

4. Results and discussion

4.1 Logistics outsourcing risks in the Vietnamese seafood supply chain

In the Vietnamese seafood supply chain, logistics activities between farmers and capturers

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In the Vietnamese seafood supply chain, logistics activities between farmers and capturers

with processors and exporters, which have the participation of many middlemen, are mostly done by themselves (in-house logistics). Therefore, this research examined outbound logistics of processors and exporters and ignores inbound logistics between farmers/captors and processors. Most of Vietnam's export seafood products are frozen and operate by a cold logistics chain. The major outsourced logistics services are international transportation, cold warehousing, and customs clearance (Tien Thi Ngoc & Loan Thi Tieu, 2019). There are a number of logistics outsourcing risks in this chain as follows:

4.1.1 Risk in physical flow

It is undeniable that the outsourcers will lose control of their flow of goods due to interruptions by LSPs. As a result, the quality of customer service can be deficient and transportation (time) can be delayed (for example, when Hanjin filed for bankruptcy, many Vietnamese seafood shipments were stuck at ports and could not reach the consignee on time). In addition, the innovative capability of the logistics part of the organization is reduced, and notably the power to choose LSPs for international transportation for processors and exporters is very limited because all global ocean transportation routes from Vietnam to markets are operated by foreign shipping corporations while domestic logistics companies only operate in some internal logistics activities (Vietnam Economic Times, 2015).

One other significant risk in logistics and logistics outsourcing is that of seafood quality, which can be damaged due to long haul ocean transportation with low quality transporting and storage conditions, thus making the seafood product either unfrozen or contaminated with other substances. In addition, food waste is also a considerable issue. According to Vietnam Advisors (2015), there is an annual loss of at least US\$2.5 billion (25%) in the distribution of farming products and seafood in Vietnam due to the increasing demand for frozen products and weakness of cold storage systems of Vietnam's LSPs.

4.1.2 Risk in information flow

When outsourcing logistics services, a number of risks can occur in the information flow of the

supply chain, such as loss of visibility, distortion, inconsistency of the traceability system, the potential leaking of data and sensitive information, and loss resulting from unavailable, incomplete, inaccurate, inconsistent, and unsecured business information through outsourcing.

4.1.3 Risk in financial flow

There are about 1,200 domestic logistics companies in Vietnam, most of which are very new (the average age is 5 years) and operate at a small scale (the average registered capital is $\frac{1}{3}$ 75,000). These domestic firms can serve only 20% of the demand for logistics service, and the rest of the demand is fulfilled by foreign logistics companies. As a result, Vietnamese seafood exporters have to face a heavy dependence on foreign 3PL providers, high logistics cost, and unreasonable fare policies, as well as being passive in seeking new customers.

Outsourcing also creates changes in the financing methods of logistical activities, especially where there exists a large amount of hidden cost that is not covered in contract i.e. cost for selecting 3PL providers, negotiating, drafting contracts, as well as transition costs from in-house logistics to outsourcing or changing LSPs.

The proportion of logistics cost per unit cost of the Vietnamese seafood product is quite high (about 20-25% (VietnamNet, 2016)). As a result, it is hard for processors and exporters when they want to reduce cost to gain competitiveness on price.

4.2 Risk triggers

4.2.1 Operational failures faced by 3PL providers in the Vietnamese seafood supply chain

The seafood sector is one of the most important clients of the logistics industry in Vietnam. However, providing logistics services for seafood products also creates various challenges for 3PL providers due to strict requirements in terms of controlled-temperature warehousing and transportation systems. Therefore, seafood exporters need to understand the risks faced by their 3PL providers, one of the most significant risk triggers of logistics outsourcing risks in their seafood supply chain, in order to solve the

problem from the root cause.

In the recent decades, the global logistics sector has expanded rapidly, and global supply capacity now exceeds demand. As a result, there have been bankruptcies and M&A of shipping corporations. As an example, the bankruptcy of Hanjin Shipping in 2016 disrupted various activities and supply chains in global trade. Vietnamese seafood exporters also worry about how and when their cargoes will reach their customers. In addition, a number of other LSPs took the chance to increase international transportation fares by around 20-30%.

Domestic logistics companies are in their infancy, with limited financial and human resources (VietnamNet, 2016) as well as lacking information systems to ensure visibility and traceability for 3PL users. According to the Vietnam Economic Times (2015), only 10% of Vietnam's logistics enterprises were being equipped with an Enterprise Resource Planning (ERP) system, just 17% used Electronic Data Interchange (EDI), 19% of transportation service providers used transportation management systems and 29% used GPS; and only 17% of warehousing service providers used bar code systems and warehouse management software. These difficulties entail challenges in maintaining an effective traceability system as well as efficient seafood product flow.

In addition, being a service organization, 3PL providers have to face up to distinctive operational risks in comparison with manufacturers (as stated in paper 4). This requires the understanding of 3PL users in order to collaborate in risk management process.

4.2.2 Risks from relationship between 3PL users and providers

A good relationship between the 3PL user and provider is a prerequisite for smoothness of product, information, and finance flows in outsourcing. There are a number of risk factors in this relationship as follows:

Lack of trust and information sharing between 3PL users and providers results from the fact that many seafood processors have not been aware of the important role of LSPs and still operate a

traditional culture in terms of keeping secret every item of business information, in addition to an additional lack of trust between Vietnamese processors and foreign LSPs.

Power asymmetry between logistics outsourcers and foreign logistics companies results from the weakness of Vietnam domestic logistics companies and cooperation between multinational shipping firms and importers, especially importers of high-end consumer markets in appointing LSPs.

Lack of sharing goals and cooperation as the export seafood industry has just developed in recent decades and there is the chance for opportunism by both sides, 3PL users and providers, in an unclear legal framework of Vietnam.

4.2.3 Business environmental risk drivers

Uncertainties and challenges from the environment not only affect the activities of 3PL providers but also have direct impact on the supply chain of 3PL users.

a) Infrastructure

Infrastructure is the first and the most significant issue of the business environment that has created risks to logistics activities in the Vietnamese seafood supply chain. For instance, there is a lack of good cold storage and climate controlled warehousing systems (Nguyen, 2016) in both releasing market and custom organizations. That causes considerable risk in terms of seafood quality when waiting for customs clearance procedures or for gathering and loading freight to container shipping. In addition, the capacity and technology of loading equipment at container ports and logistics centers is still limited.

Besides that, there are 266 sea ports in Vietnam: of these, however, only 20 can offer an international transportation service. While the capacity and quality of the road system in Vietnam is too low to enable the transportation of international standardized containers, there is also a lack of transportation connection systems between sea port, airports, traffic routes, production plants, and warehouses. This results in traffic congestion with very high frequency and

high logistics cost (Vietnam Economic Times, 2015) while most cities and provinces lack forwarding centers. In addition, exporting shipments have to be divided into smaller trucks, resulting in multi-loading turns into containers and additional time to transit to international sea ports. It causes loss of time, loss of money, and a threat to the quality of products.

b) Custom procedures

The custom clearance procedures in Vietnam also takes too long a time (Nguyen, 2016) with foggy information technology systems and harassment as well as authoritarian behaviors. That hinders the smooth movement of frozen products, and in some cases contributes to a reduction in the quality of seafood products.

c) Human resources in logistics and cold chain logistics field

Another challenge is the scarcity of skilled human resources as the cold chain logistics system requires not only knowledge about logistics in general but also about profound technological issues.

d) Policy issues

Last but not least, policy issues are a

significant risk driver, i.e. (i) "the legal framework for the operation of logistic services has not been finalized" (Nguyen, 2016), (ii) continuous increases in tax, fees, fares, etc., and (iii) conflict between Vietnamese Government regulation and that of the importing market, i.e. Vietnam limited the highest capacity for a forty feet container to 21 tons of goods while customers require 28 tons of seafood for the same size of container as international practice.

5. Conclusion

This paper tried to take advantage of a corporative view of both processors and 3PL providers in the case of the Vietnamese seafood supply chain to investigate logistics outsourcing risks and their triggers in the seafood chain through a comprehensive desk research. In future, researchers can carry out empirical research which require getting involve of logistics outsourcers and 3PL providers into a focus group. Furthermore, the role of LSPs in SCRM in general and in the Vietnamese seafood supply chain in particular as a future perspective should also be taken into consideration ■

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PHÂN TÍCH RỦI RO THUÊ NGOÀI DỊCH VỤ LOGISTICS TRÊN CHUỖI CUNG ỨNG THỦY SẢN VIỆT NAM

● **TRẦN THỊ HƯƠNG**

Viện Kinh tế và Quản lý,
Trường Đại học Bách khoa Hà Nội

TÓM TẮT:

Gần đây, thế giới đã và đang ghi nhận rất nhiều vụ việc liên quan đến chất lượng vệ sinh an toàn thực phẩm và triệu hồi sản phẩm. Điều này chứng tỏ sự gia tăng tính phức tạp trong quản trị các chuỗi cung ứng thực phẩm và kéo theo sự chú ý ngày càng lớn của các nhà quản trị cũng như nhà nghiên cứu về vấn đề quản trị rủi ro trên toàn bộ chuỗi từ nông trại đến bàn ăn. Xuyên suốt chuỗi cung ứng thực phẩm, có rất nhiều loại rủi ro có thể phát sinh, bao gồm: rủi ro về chất lượng, rủi ro liên quan đến hoạt động logistics, rủi ro trong khâu lưu kho, rủi ro về cấu trúc, rủi ro thông tin, rủi ro trong hợp tác, rủi ro thị trường và rủi ro môi trường. Rủi ro logistics là rủi ro bắt nguồn từ những đặc điểm riêng có của dịch vụ (như tính vô hình và chịu ảnh hưởng nhiều bởi con người) và đặc điểm đặc biệt của hàng hóa thực phẩm, cũng như công nghệ và việc quản lý hoạt động logistics. Thêm vào đó, hầu hết các hoạt động logistics lại là hoạt động thuê ngoài. Do đó cần thiết phải có một nghiên cứu về rủi ro thuê ngoài dịch vụ logistics. Mục đích của bài báo này là nghiên cứu rủi ro và nhân tố tác động tới rủi ro trong hoạt động thuê ngoài dịch vụ logistics trong trường hợp chuỗi cung ứng thủy sản Việt Nam qua một nghiên cứu thứ cấp. Bài báo trình bày 3 nhóm rủi ro chính và phân tích các nhân tố tác động đến rủi ro này dưới cái nhìn kết hợp từ cả bên đi thuê ngoài và bên thực hiện dịch vụ logistics trên chuỗi cung ứng thủy sản Việt Nam.

Từ khóa: Rủi ro, chuỗi cung ứng, thủy sản, thuê ngoài, logistics.