

# Supply Chain Collaboration in Tourism: A Transaction Cost Economics Analysis

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**Abstract** - This paper explores inter-firm collaboration in a tourism supply chain via transaction cost economics using a single case-study method. We focus on supply chain collaboration between a hotel and its food and beverage suppliers. The transaction costs were found to consist of the search cost and cost of quality checking. Search cost exists due to bounded rationality of the firm. This is influenced by asymmetric information. The quality assurance cost is incurred because the firm perceives that its suppliers may behave opportunistically. We reveal that trust could reduce transaction cost of the tourist operators. The main contribution of this paper is to explain phenomenon in the supply chain collaboration through the lens of transaction costs economics.

**Keywords**— *Supply Chain Collaborations, Transaction Cost Economics, Hotel Management, Thailand*

## 1. Introduction

Adversarial relationships are common practice in the tourism industry [1]. Supply chain management (SCM) often advocate a collaborative approach; as it is at the supply chain level that competition acts, not at the firm level [2]. However, collaboration between firms in the Tourism Supply Chain (TSC) is considered more complex than those in the manufacturing and retail supply chains due to its disparate suppliers and short product life [3]. Moreover, to deliver tourism products, dealing with customer's emotions and feelings is inevitable [4]. Because of this complexity, managing collaboration in the tourism supply chain is challenging. Even though there is a trend of supply chain collaboration in the tourism industry such as in the Hilton Hotels Cooperation [5], it was found that academic research does not keep pace with this trend [3, 6].

## 2. The Tourism Supply Chains

A TSC is a complex system [7]. There are four main parts in a generic TSC, three compulsory and one optional. Three main parts are tourism service providers or first-tier suppliers (e.g., accommodation or passenger transport), input providers or second-tier suppliers (e.g., food and beverage suppliers) and the tourists or customers. The optional party of TSC are the intermediaries i.e., travel agencies and tour operators [8]. Tourists can purchase combined tourism products directly from tour operators or via travel agencies. However, tourists also have an option to arrange their trips themselves by separately purchasing tourism products such as airline tickets and hotel rooms. Therefore, TSC could also be viewed as a combination of various supply chains e.g., accommodation, passenger transport or food and beverage supply chains.

Furthermore, another special characteristic of TSC is the customer flow. Unlike manufacturing or retail supply chains, final products of TSC are produced and delivered to the customers continuously along their trip [6]. Figure 1 illustrates the supply chain components of a generic TSC, where the input providers supply the tourism service providers the raw materials or intermediate goods, so that tourism services can be delivered to tourists. Furthermore, activities in TSC can also be divided into three distinct phrases; the period before, during and after the trip.

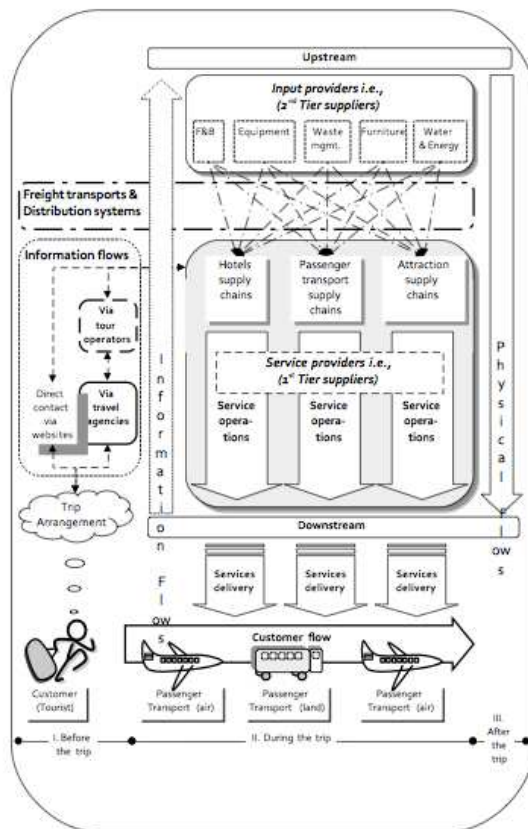


Figure 1. A Generic Tourism Supply Chain [35]

### 3. Supply Chain Collaboration in Tourism

This section reviews the nature of supply chain collaboration in general as well as both costs and benefits. Also we discuss different types of supply chain collaboration in tourism.

#### 3.1 Supply Chain Collaboration

Supply chain collaboration could be defined as at least two firms in the same supply chain working together to achieve their mutual goals [9, 10]. It is believed that collaboration in supply chains could yield tremendous benefits as an enabler of the seamless supply chain [11]. The seamless supply chain is the stage where there is no boundary between firms and is suggested to be the goal of supply chain management [12]. There are several ways to collaborate in supply chains e.g., information sharing, incentive alignment and decision synchronization [13, 14, 15, 16, 17]. Furthermore, the performance of the supply chain is heavily reliant upon accurate and timely information [16, 17]. Supply chain collaboration can be employed by various type of programmes such as vendor managed inventory, continuous replenishment

programmes or more advanced forms of collaborative planning forecasting and replenishment [18, 19].

#### 3.2 Cost and Benefits Supply Chain Collaboration

Firms expect a better level of responsiveness and service level improvements from their supply-chain collaborative programmes [20]. Another expected benefit is a reduction of supply chain cost covering costs of process, inventory and production. Furthermore, collaboration could also reduce gaming and rationing in the supply chains. This is one of the main causes of bullwhip effect [21, 20]. Moreover, there are also benefits that can only be obtained via a higher level of collaboration. They are the elimination of bullwhip effect, inventory reduction, better transport capacity utilization, and risk mitigation [20]. However, to achieve a high level of supply chain collaboration, there are costs of making collaborative actions including both direct and indirect costs [22]. Information and communication technology such as Internet and software for integrating operating system and sharing information along the supply chains is considered to be a direct cost. However, there are indirect costs such as labor cost and opportunity cost that firm may not obviously perceive as their own expense. However, costs and benefits of supply chain collaboration may vary to depending upon circumstances. Firstly, geographical dispersion and location of the firm and its supply chain partners may affect the needs for collaboration and the benefits from implementing the collaborative activities. Collaboration between supply chain partners that are geographically close to each other may be easier than collaboration between supply chain partners that have a longer distance. Secondly, demand patterns, especially seasonality, could determine the proper type and level of inter-firm collaboration.

#### 3.3 Types of Supply Chain Collaboration

There are several ways to categorize supply chain collaborations [10]. Ref. [20] classified supply chain collaboration into four types based on inventory and planning coordination. However, in this study we classify collaborations into two taxa, vertical and horizontal collaboration [19, 23]. Each of the collaboration taxon can also be further categorized [24].

##### 3.3.1 Horizontal Collaboration

Horizontal collaboration refers to the collaboration between firms in the same level of the tourism supply chain. Although firms in the same sector may be recognised as the major business rivals that offer similar

products, they could nevertheless make a collaborative action to increase their bargaining power with a common supplier or obtain benefit from economies of scale. We could also classify horizontal collaboration into intra-sector and inter-sector collaboration based on the sectors of the collaborative partners. *Intra-sector collaborations* are the collaboration between the firms in the same sector or industry. In this case, it means the collaboration between the hotel and another hotel or accommodation providers. *Inter-sector collaborations* are the collaboration between firm in the different sectors but the same tier such as the collaboration between firms in “the accommodation” sector and “tourist attraction” sector. These two sectors are in the tier of service provider.

### 3.3.2 Vertical Collaboration

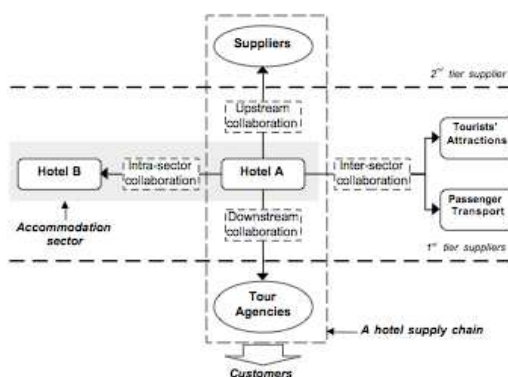
Vertical collaborations in the supply chains refer to the collaborations between firms and their partners that supply them the inputs (upstream collaboration) or the partners that they sell their products to (downstream collaboration).

#### (a) Upstream Collaborations

In order to ensure the sufficient inputs and material for internal production, collaborative activities with upstream partners may be needed. For instance, a hotel may collaborate with its foods and beverage producers/providers. They may develop an annual plan together. The planning process may be conducted by the food and beverage department.

#### (b) Downstream Collaborations

A hotel may not always have directly contact their customers, especially those who purchase package tours. Therefore, hotels may need to collaborate with the intermediaries, such as tour agencies or tour operators, in order to cope with the incoming demand and prepare for future production.



**Figure 2:** Collaboration Activities of a Hotel in the Tourism Supply Chain [35]

## 4. Transaction Cost Economics

Transaction cost economics (TCE) was first coined by Coase in ‘*The nature of the firm*’ that then served him the Nobel Prize in 1991 [25]. Coase has successfully described the existence of the firm using the TCE. He explained that, in the real world, there is not only production cost but also a transaction cost. For instance, the costs of transactions are such as those of communication with business partners and quality checking for outsourced activities. Therefore, a firm exists because the transaction costs are higher than the marginal benefits from outsourcing [26]. At that time, the conventional economic theory could not explain the existence of the firm. TCE has been subsequently applied to various disciplines e.g., business management and has also originated the new discipline called ‘laws and economics’ [27].

### 4.1 Underlying Assumptions

Drawing from the theory of TCE, there should be no zero-transaction-cost situation in any supply chain. This is because of the bounded rationality and opportunistic behaviour assumptions [28].

#### 4.1.1 Bounded Rationality

Based on the classical economics theory, it is assumed that humans behave perfectly rationally. However, according to neurophysiological and the natural limits of individuals, there are the constraints of human abilities to receive, process and analyse information without any error [29, 30]. Therefore, bounded rationality is viewed as a source of transaction cost because all factors cannot be considered in the decision making process.

#### 4.1.2 Opportunistic Behaviours

It is expected that suppliers may deliver inferior goods if they know that their clients cannot detect the difference. This opportunistic behaviour leads to the cost of monitoring the outsourced production process and the delivered products. Even if the firm has never found any opportunistic behaviour of its suppliers, quality checking may still be necessary if the expectation on the opportunistic behaviour still exists.

TCE has been applied to SCM scenarios to explain the decision process of whether to implement in-house operations or outsource the operations instead. It has been shown that lower transaction costs favour outsourcing and higher transaction cost favour in-house operations [28].

In a supply chain collaboration context, firms also have the option to closely collaborate with their partners or just to deal with them at “arm length”. Therefore, in order to have a high level of collaboration, there are associated costs e.g., information and communication technology, effort, and risk from opportunistic behaviour of collaborative partners [31]. Nevertheless, firms may prefer to collaborate since they anticipate greater benefits such as inventory and transport cost reduction as well as customer service level or customer satisfaction improvement. Not only are there internal factors that affect collaboration but external drivers such as the number of available suppliers and the distance between the firm and suppliers also drive the need for collaboration.

## 5. Methodology

In order to undertake our exploratory investigation on transaction costs of collaboration in the tourism supply chain, we use a case study method suggested by [32] and [33]. By studying a single supply chain, we can explore the selected case in depth [34, 35]. We then selected a case hotel in Chiang Mai, Thailand for accessibility reasons. We conducted semi-structured interviews with hotel managers to obtain insights concerning the collaboration between the hotel and its food and beverage suppliers [36].

## 6. Findings

### 6.1 Collaborations of the Hotel in the Tourism Supply Chain

In this case study, we found that only upstream collaboration was used to fulfil the operational needs of the hotel. On the other hand, marketing is often the main objective of collaboration. This could reveal that marketing strategy has a dominant position in the tourism industry. Collaboration between the case hotel and its suppliers are also partly designed to serve marketing purposes such as sales and promotion. Another key player is the tourism business association that bring firms in the tourism industry together. However, most of activities in the association are concerned with marketing. Since we focus on the upstream collaboration which predominantly serves the operations objectives of the hotel, we only provide a summary of main characteristics of four types of collaborations (Table 1).

### 6.2 Collaboration between the Hotel and its Food and Beverage Suppliers

Focusing on upstream collaboration, we will now analyse the relationships between the hotel and its food and

beverage suppliers. In this section, we describe the supplier selection process, the ordering procedure and their associated transaction costs.

#### 6.2.1 Collaboration with Food Suppliers

Although products from nationwide meat providers have a higher level of quality, the hotel tends to select local food and beverage providers because the price offered by the local firms is generally cheaper and they also offer a longer length of credit period (45 days for local firms and 30 days for the nationwide suppliers). For products with a sole supplier, contracts will be signed annually. This kind of products are; (1) ham, bacon and sausages, (2) sirloin steak, (3) coffee, (4) orange juice, and (5) beer. There is no electronic system installed for communication or information sharing. Products are delivered by pick-up trucks. The hotel may obtain information about the price of each item by market research conducted by cooperation between food and beverage department and accounting section. The database is updated monthly prior to the auction.

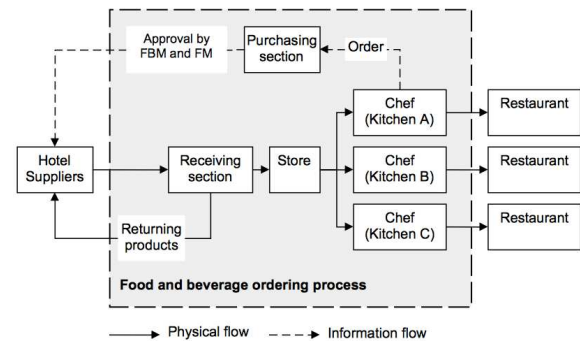
**Table 1. Comparisons of Hotel Collaboration in the Tourism Supply Chain [35]**

	Horizontal Collaboration		Vertical Collaboration	
	Intra-sector Collaboration	Inter-sector Collaboration	Upstream Collaboration	Downstream Collaboration
<b>Main objective</b>	Marketing	Marketing	Operations and marketing	Marketing
<b>Partners</b>	Other accommodation providers e.g., hotels and guesthouse.	Other tourism service providers e.g., tourist attractions and passenger transport.	Input providers (second-tier suppliers e.g., foods and beverage suppliers, energy providers.	Intermediaries i.e., tour operators and tour agencies.
<b>Process</b>	Destination promotion e.g., via road show, travel expo etc.	Combine service and sell as a package e.g. rooms and cultural shows and dinner with a discounted price	- Supplier selection - Order fulfilment and replenishment - Sales and promotion	Meeting, information sharing about room booking and reservation, demand forecasting
<b>Drivers (expected benefit)</b>	Inter-person relations, mutual benefit of promoting the destination	Inter-person relations, customer needs	Inventory control, service level, product availability	Revenue and demand management

<b>Costs</b>	Communication, meeting planning, organising events etc.	Communication, planning and meeting etc.	- Search cost - Cost of Quality assurance	Communication, costs when the hotel host the inspection visit by tour operators
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Food and beverage supplier selection is conducted by auction every month. There are approximately 4-5 suppliers involved in this auction. There are four main types of food and beverage suppliers, (1) fresh vegetables, (2) fruits, (3) dry or fresh foods, and (4) meat such as poultry. Before the hotel implemented the auction system, the purchasing system consisted of simply buying at the fresh food market. Direct purchasing is usually employed in the non-international chain hotels. The auction system was developed by the hotel last year in order to ensure a transparent procurement system. In the morning of 25<sup>th</sup> of every month is the deadline for the suppliers to submit their offer prices via facsimile. The auction committees (consisting of the food and beverage manager, financial manager, executive chef and purchasing manager) will meet in the afternoon to select suppliers. Since there are many items (>100) in the price offering list, some suppliers may offer the best price for some items but not for all items. Then the supplier who has the highest number of cheapest items will be contacted and negotiated to change the prices to equal the lowest offers in the auction.

At the end of each day, stock levels are checked and orders are placed to bring the inventory level up to a desired level. Orders are placed each evening and delivered the following morning. Orders in the morning are delivered in the evening of the same day. Every item is checked for quantity and quality according to the contract by the chef or his representative. Products will be immediately returned to the supplier if any failure is found. Buffer stocks are kept in the main store. Each of three kitchens store just enough materials for the current day operations. The ordering and replenishing process of the food and beverage section of the case hotel is illustrated in the Figure 3.



**Figure 3:** Food and beverage operations of the hotel

**Source:** The authors

### 6.2.2 Collaboration with Beverage Suppliers

There are two main types of drinks considered in the hotel; beer and carbonated soft drinks. As the market structure of these suppliers is an oligopoly (two main suppliers offer two major brands of an almost homogenous product) these suppliers tend to avoid the price-war trap by offering incentives such as support, sponsorship, and future cooperation to the hotel. The selection of drink suppliers is also influenced by the interpersonal relationships of decision-makers. The contract will be signed on an annual basis. An ordering process is the same as the fresh food and ingredients (daily ordering and delivery). The hotel has no contract with the whisky supplier, as this is not a high volume seller in the hotel (whisky is usually an important drink for hotels that have a pub or disco). For wine, the supplier will place their products in the hotel and the bill will be settled at the end of the month. In this manner, the hotel does not have to pay for the wine (using consignment stock<sup>1</sup>) Furthermore, the wine supplier usually gives a lump sum of money to the hotel to promote their products.

### 6.3 Transaction Cost of Collaborations

Although there is a low level of collaboration in the case study, there are transaction costs incurred when the case hotel searches for the best suppliers and contacts those who are selected. There are two main sources of transaction costs found in the case study. First, the hotel has to conduct a search in order to find appropriate suppliers. This could be a consequence of asymmetric information in the supply market which contrasts with the assumption of perfect rationality of the hotel. This process

<sup>1</sup> Consignment stock is inventory that is in the possession of the customer, but is still owned by the supplier [37].



not only considers the offer price but also other factors such as inter-organisational trust and inter-personal relationships.

The auction system of the case hotel creates a cost for preparing the list of items and the standard offering form, and a communication cost with the perspective suppliers. The time that four senior staff members have to spend to select the appropriate suppliers is considered to be another search cost that the hotel indirectly pays in term of their salaries. Secondly, the transaction cost for quality checking is also incurred when the hotel receives the products from their suppliers. In the case hotel, the quality checking process requires one officer to check whether the delivered products are the same as what they ordered in terms of quality and quantity. In this case, 100% inspections were conducted to ensure supplier quality. Furthermore, the service quality of suppliers will be considered in the next auction.

## 7. Conclusion

We found that bounded rationality and opportunism exists in the tourism supply chain. Consequently, the various types of transaction costs are incurred in tourism supply chains. These costs are the cost of searching for appropriate suppliers and the cost of product-quality checking. Trust between supply chain partners could lead to a reduction in transaction costs. However, due to the nature of a single case study, this study is only limited in its generalisability. Therefore, there is an opportunity to replicate this study with different types of hotel in order to either generalise the findings or offer different findings.

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## References

- [1] Sinclair, M. T., and Stabler, M. "The economics of tourism". London: Routledge, 1997.
- [2] Christopher, M., "Logistics and Supply Chain Management: Creating Value-Adding Network", 3eds, Harlow: Prentice-Hall, 2005.
- [3] Zhang, X., Song, H. and Huang, G.Q. 2009. Tourism supply chain management: a new research agenda, *Tourism Management*, Article in press, pp.1-14, 2009.
- [4] Buckley, P.J. 1987. "Tourism – an economic transaction analysis", *Tourism Management*. Vol. 8, No. 3 pp. 190-194, 1987.
- [5] Hilton Supply. "The Supply Management division of Hilton Hotels Corporation"

- [ONLINE]<http://hiltonsupply.com/default.asp> <Access: 25 June 2009>.
- [6] Piboonrungrroj, P. and Disney, S.M. "Tourism supply chains: a conceptual framework", Proceedings of the PhD Networking Conference, 1-2 July. Nottingham, UK, 2009.
  - [7] Page, S.J. "Tourism Management". 3<sup>rd</sup> eds. London: Elsevier, 2009.
  - [8] Johnston, R. and Clark, G. "Service Operations Management: Improving Service Delivery". London: Prentice Hall, 2008.
  - [9] Mentzer, J.T., De Witt, W., Keebleer, J.S., Min, S., Nix, N.W., Smith, C.D. and Zacharia, Z.G., "Defining supply chain Management", *Journal of business Logistics* Vol. 22, No. 2, pp. 1-25, 2001.
  - [10] Simatupang, T.M. and Sridharan, R. "An integrative framework for supply chain collaboration". *The International Journal of Logistics Management*. Vol. 16, No. 2, pp. 257-274, 2005.
  - [11] Childerhouse, P., Disney, S.M. and Towill, D.R. 2004. "Tailored toolkit to enable seamless supply chains". *International Journal of Production Research*. Vol. 42, No. 17, pp. 3627-3646, 2004.
  - [12] Towill, D.R. 1997. "The seamless supply chain-the predator's strategic advantage." *International Journal of Technology Management*, Vol. 13, No. 1, pp. 37-56, 1997.
  - [13] Spekman, R.E., Kamauff Jr, J.W. and Myhr, N. "An empirical investigation into supply chain management: a perspective on partnerships." *Supply Chain Management*. Vol. 3, No. 2, pp. 55-67, 1998.
  - [14] Akintoye, A, McIntosh, G. and Fitzgerald, E. A survey of supply chain collaboration and management in the UK construction industry. *European Journal of Purchasing & Supply Management* Vol. 6, pp. 159-168, 2000.
  - [15] Skjoet-Larsen, T., Thernøe, C. and Andresen, C. "Supply chain collaboration: Theoretical perspectives and empirical evidence." *International Journal of Physical Distribution & Logistics Management* Vol. 33, No. 6, pp. 531-549, 2003.
  - [16] Holweg, M. and Pil, F.K., "Theoretical perspective on the coordination of supply chains." *Journal of Operations Management* Vol. 26, pp. 389-406, 2007.
  - [17] Cachon, G.P. and Lariviere, M.A., "Supply chain coordination with revenue-sharing contract: strengths and limitations." *Management Science* Vol. 51, No. 1, pp. 30-44, 2005.
  - [18] Ireland, R. and Bruce, R., "CPFR: only the beginning of collaboration." *Supply Chain Management Review*. September/ October, pp.80-88, 2000.
  - [19] Barratt, M. "Understanding the meaning of collaboration in the supply chain." *Supply Chain Management: An International Journal* Vol. 9, No. 1, pp. 30-42, 2004.
  - [20] Holweg, M., Disney, S.M., Holström, J. and Småros, J. "Supply chain collaboration: making sense of the strategy continuum." *European Management Journal* Vol. 23, No. 2, pp. 170-181, 2005.

- [21] Lee, H.L., So, K.C., Tang, C.S., “*The value of information sharing in a two-level supply chain.*” *Management Science* Vol. 46, No. 5, pp. 626–643, 2000.
- [22] McLaren, T., Head, M. and Yuan, Y. 2002. “*Supply chain collaboration alternatives: understanding the expected costs and benefits.*” *Internet Research: Electronic Networking application and Technology*, Vol. 12, No. 4, pp. 348-364, 2002.
- [23] Lafferty, G. and van Fossen, A. “*Integrating the tourism industry: problems and strategies.*” *Tourism Management* Vol. 22, No. 1, pp. 11-19, 2001.
- [24] Yang, S., Huang, G.Q., Song, H. and Liang, L., “*Game-theoretic approach to competition dynamics in tourism supply chains.*” *Journal of Travel Research* Vol. 47, No. 4, pp. 425-439, 2009
- [25] Coase, R.H. “*The nature of the firm,*” *Economica*, Vol. 4, No. 16, pp.386-405, 1937
- [26] Williamson, O.E. “*The Economics Institutions of Capitalism: Firm, Market, Relation and Contracting*”, London: Collier Macmillan, 1985.
- [27] Williamson, O.E., “*Transaction cost economics: the precursors.*” *IEA Economic Affairs* Vol. 28, No. 3, pp. 7-14, 2008.
- [28] Williamson, O.E., “*Outsourcing: transaction cost economics and supply chain management,*” *Journal of Supply Chain Management*, Vol. 44, No. 2, pp.5-16, 2008.
- [29] Simon, H.A. *Models of Man*. New York: Wiley, 1957.
- [30] Grover, V. and Malhotra, M.K. “*Transaction cost framework in operations and supply chain management research: theory and measurement.*” *Journal of Operations Management*, Vol. 21, pp. 457-473, 2003.
- [31] Hobbs, J.E., “*A Transaction cost approach to supply chain management.*” *Supply Chain Management*, Vol. 1, No. 2, pp. 15-27, 1996.
- [32] Meredith, J., “*Building operations management theory through case and field research*”, *Journal of Operations Management*, Vol. 16, No. 4, pp. 451-454, 1998.
- [33] Voss, C., Tsikriktsis, N., Frohlich, M., “*Case research in operations management*”, *International Journal of Operations & Production Management* Vol. 22, No. 2, pp. 195–219, 2002.
- [34] Yin, R. “*Case Study Research: Design and Methods*”. 3rd ed. London: Sage, 2003.
- [35] Piboonrungrroj, P. “*Methodological implication of research design in tourism supply chain collaboration*”, *Proceeding on 18<sup>th</sup> EDAMBA Academy*, 23-29 July. Soréze, France, 2009.
- [36] Flynn, B.B., Sakakibara, S., “*Schroeder, R.G., Bates, K.A., Flynn, E.J. Empirical research methods in operations management*”, *Journal of Operations Management*, Vol. 9, No. 2, pp. 250-284, 1990.
- [37] Valentini, G. and Zavanella, L. “*The consignment stock of inventories: industrial case and performance analysis*” *International Journal of Production Economics* Vol. 81-82 ,pp. 215-224, 2003