

# COSTING A FREIGHT FORWARDER'S OUTSOURCING DECISION

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## ABSTRACT

*Any international Freight Forwarder in Thailand faces tough competition. Airfreight is needed for some goods. The cost is high, but can be offset by low inventory cost. FF Company, the focus firm, provides airfreight services to manufacturers. To keep prices competitive, FF's total airfreight operation cost has to be contained. This research examined whether to outsource part of its airfreight operation or retain it in-house. The total cost of ownership (TCO) concept is used to evaluate this decision. Service quality had to be maintained, outsourced or not. Three TCO models, one for insourcing and two for outsourcing, compared costs per kilogram, service quality, and pros and cons. The finding were that the operation should be retained in-house, not outsourced.*

**Keywords:** Freight forwarder, insourcing, outsourcing, total cost of ownership

### บทคัดย่อ

ในประเทศไทยผู้ให้บริการขนส่งระหว่างประเทศต้องเผชิญกับการแข่งขันที่ยากลำบาก สินค้าบางชนิดจำเป็นต้องขนส่งทางอากาศซึ่งมีต้นทุนสูง แต่ก็ชดเชยกับต้นทุนสต็อกสินค้าที่ต่ำลง บริษัทในกรณีศึกษานี้ เป็นผู้ให้บริการขนส่งทางอากาศแก่ผู้ผลิต เพื่อให้ราคาขนส่งสามารถแข่งขันได้ บริษัทจำเป็นต้องคุมต้นทุนโดยรวมไว้ งานวิจัยนี้เป็นการเปรียบเทียบระหว่างการว่าจ้างให้บริษัทอื่นทำงานบางส่วนที่เกี่ยวข้องกับการขนส่งทางอากาศ กับการทำงานส่วนนี้เอง โดยใช้หลักการที่เรียกว่า TCO มาช่วยในการตัดสินใจ ทั้งนี้คุณภาพการบริการต้องเท่าเดิม งานวิจัยนี้พิจารณาทางเลือก 3 ทาง ได้แก่ การทำงานส่วนนี้เอง และการว่าจ้างบริษัทอื่นอีก 2 บริษัท เพื่อเปรียบเทียบกันโดยใช้ต้นทุนต่อกิโลกรัมคุณภาพการบริการ และข้อดีข้อเสียมาพิจารณา จากการศึกษาพบว่า บริษัทควรทำงานส่วนนี้เองต่อไป

## INTRODUCTION

A freight forwarder, which is a type of logistics service provider, transports goods across national borders, from exporters of manufactured goods, to importers. This vital supply chain service allows manufacturers to concentrate on their core production competency by transferring the delivery process to a specialist forwarder whose own core competence is delivery. For manufacturers, logistics costs are significant to their own competitiveness, so they continually try to reduce this cost, thus sorely testing a freight forwarder's own competitiveness.

FF Company is a long-established freight forwarder in Thailand, with more 800 employees. It provides freight by air and sea, customs brokerage, warehouse management, and inventory management services. To keep its prices competitive, with quality service, FF wondered whether outsourcing some non-core operation would reduce its costs. About half of FF's revenue comes from airfreight.

The airfreight unit has three sections: procurement, customer services, and operations, at the cargo terminal at Bangkok's modern airport. *Procurement* is responsible for carrier selection, airfreight rate negotiation, and space allocation. *Customer service* is the channel for customers to arrange airfreight booking with FF. The *operation unit* at the airport cargo terminal is responsible for receiving the cargo and handing it over to terminal staff. The *operation unit* is labor intensive, with non-core competencies, whose outsourcing could possibly have a big impact on reducing FF's overall costs. Some competitors have outsourced similar operation units.

This research calculates and compares total operating cost (TCO), service quality, and the pros and cons of outsourcing and insourcing. Service quality includes accurate and on-time operation at the cargo terminal, which would be incorporated in any outsourcing service agreement.

## STATEMENT OF THE PROBLEM

By 2013, the FF's airfreight volume had increased substantially, and direct labor cost was US\$500,000. In 2014, this volume fell by 7%; labor cost did not. The terminal operates 24/7, with two 12-hour shifts, the last 4 hours being paid as overtime (1.5 times the basic). As cargo arrival time is unpredictable; employees are on standby for urgent cargo. Loose cargo, not in cartons, requires much handling time.

Monthly direct labor cost did not deviate much, but freight tonnage varied between 1.5 million kg and 2.6 million kg. Then, FF lost a major customer to a competitor offering a lower price. Despite this loss, the labor cost remained constant.

Other problems were that operations staff turnover was high, which with absenteeism caused unstable capability; documents were submitted late to airlines, so some cargo had to be offloaded; terminal congestion happened at peak periods; and some cargo was delivered late to the airport, because of traffic. These problems affected quality of service and FF's costs.

## LITERATURE REVIEW

### Make or Buy Decision

Outsourcing is not a new concept. Russell and Taylor (2003) claimed that an outsourcing decision is really the same as a "make or buy" decision used for decades. Many companies have limited resources and cannot afford to run everything in-house, or they lack the required expertise. Thus, the make-or-buy question can be a constant challenge, and several studies have provided practical guidance in response (Probert, 1997). The main

issue is often cost (Padillo, 1995), but there are other important dimensions such as strategic perspective and service quality (Jennings, 1997). Many models exist for outsourcing decisions, specifying significant criteria (McIvor, 2008).

McCarthy and Anagnostou (2004) stated that transaction costs integrate economic arguments with managerial and organizational aspects. In-house operations incur fixed costs plus variable costs, whereas outsourcing may overcome the fixed cost but the purchase price is typically higher than the per unit variable cost of making it. These decisions should be made cross-functionally, to include the purchasing manager (Narasimhan & Das, 2001); research and development people (Ellram, 2002), and the logistics function (Maltz & Ellram, 1997).

### **Outsourcing**

Outsourcing is the transferring of activities and control from internal to external operations for cost reduction, operation constraint and financial benefit (Nordigarden, 2007). Outsourcing is seen as a strategy for cutting costs accessing new skills and capabilities, and achieving greater financial flexibility. However, not all companies have successfully implemented outsourcing strategy (Linder, 2004). Massimiliano, Tuck, and Hague (2007) stated that making the wrong decision for outsourcing can lead to disaster, with cost overrun, project delay, or a solution that does not fit business needs. Purchasing is often to obtain the best price, regardless of quality, delivery, reliability, technical capability and the financial stability of the supplier. Many companies decided to buy rather than make, based on short-term reasons of cost reduction and capacity constraint (Humphreys, Lo, & McIvor, 2000). McCarthy and Anagnostou (2004) concluded that the reasons for outsourcing are to exploit external suppliers' investments, innovations and capabilities as well as to reduce operating costs whilst increasing focus on core competencies. Outsourcing allows any company to emphasize their core business or competency (Kant & Richard, 1994).

However, outsourcing has some negative impacts: an increased exposure to risk; higher long-term costs; and a potentially dangerous draining of internal expertise (Aubert, Patry, & Rivard, 1998). Harland, Knight, Lamming, & Walker (2005) stated that most failures in outsourcing were due to poor supplier selection. Anderson and Anderson (2000) identified two major problems: direct dependence on suppliers, and losing the knowledge to re-integrate later what has been outsourced.

### **Insourcing**

Encon and Tsang (2004) stated that the insourcing is the process management of performing a service by in-house staff; as a result, it keeps the control of the business competencies and provides specialist skill to the organization. Quinn and Hilmer (1994) recommended that the company should insource its core function or competency for the reason of its competitive advantage. On the other hand, the insourcing incurred cost, required capital investment, complexity of management and less focus on its core competencies; which may end up with competitive disadvantage (Usher, 2004). In addition, the company may lose its opportunity to have the experience, expertise, and recent technology from the third party (Sohal, Millen, & Moss, 2002). Bozarth, Handfield, and Chandiran (2013) stated that insourcing had its advantages of controlling, managing its

own resources, whereas outsourcing had its flexibility, lower initial investment. On the other hand, insourcing had its disadvantages, of higher initial investment and possibility to have a better service from suppliers, whereas outsourcing had the risk of having a bad suppliers and losing control over the process.

**Table 1: Advantages and Disadvantages of Insourcing and Outsourcing**

<b>Insourcing</b>	
<b>Advantages</b>	<b>Disadvantages</b>
Ability to oversee the entire process	Fixed operation cost
High degree of control	Capital investment required
Economies of scale	Staff turnover challenge
	Third party may offer better service
	Core competency may not be focused
<b>Outsourcing</b>	
More focus on its core competency	Loss control over the entire process
Better performance from supplier.	Possibility to select a wrong supplier
Low investment is required	Coordination challenges
Cash flow	Communication challenges
Flexibility	
No staff turnover	

Source: Adapted from Usher (2004), Bozarth et al. (2013), and Sohal et al. (2002)

**Drivers of Insourcing and Outsourcing**

Usher (2004) stated that there are 10 key drivers for outsourcing: a) Cost; b) Quality; c) Risk and liabilities; d) Specialization and diversity; e) Responsibilities and accountabilities; f) Flexibility; g) Innovation; h) Investment; i) Information; and j) Customer orientation. Production cost from economy of scale is the first potential benefit for insourcing (Venkatesan, 1992). Williamson (1981) added that outsourcing may involve risk or opportunity cost, since the suppliers may control some critical parts or process. Bozarth et al. (2013) suggested four factors that affect the decision to insource or outsource, which apply to this case, as shown in the following Table.

**Table 2: Factors that Affect the Decision to Insource or Outsource**

	<b>FAVORS INSOURCING</b>	<b>FAVORS OUTSOURCING</b>
Environmental uncertainty	Low	<b>High</b>
Competition in the supplier market	<b>Low</b>	High
Ability to monitor supplier’s performance	Low	<b>High</b>
Relationship of product/service to buying firm’s core competencies	High	<b>Low</b>

Source: Bozarth et al. (2013)

This Table illustrates the assessment of each factor that affects the decision of insourcing and outsourcing. In the case of the airfreight industry, the environment uncertainty is high

because all companies prioritize to ship their cargo by seafreight, because of its lower logistics cost. Competition in the supplier market is low as there are not many suppliers who provide a cargo handling service in the cargo terminal. The ability to monitor supplier's performance is high because the company has its own experienced supervisor to monitor the daily operation at the cargo terminal. The outsourcing process will have a low relationship with the company's core competencies, since the process intended for outsource is labor intensive which can be supervised by a supervisor and airfreight manager.

### **Total Cost of Ownership (TCO)**

A useful concept for making outsourcing decisions is Total Cost of Ownership (TCO), which is not only concern with cost reduction but with all internal and administrative type of costs as well as the external costs of doing business with suppliers. TCO is not a universal model but has to be adjusted according to a specific company.

Price is often seen as the primary criteria for supplier selection (Degraeve & Roodhofs, 1999). However, other such as Ellram (2002) recommended that the company should not outsource any activity only for cost reduction purpose, but needs to determine all related cost for purchasing the services from at hird party and should look at direct costs and the many indirect costs. Lambert, Emmelhainz, and Gardner (1996) stated that TCO needs to include related costs, such as sourcing cost, salaries, and service failure cost.

Therefore all concerned department of the buying firm should be involved in the decision. Ellram (2002) suggested that six cost categories need to be considered in the analysis of a TCO model: management, delivery, service, communication, price, and quality.

After all related operation costs are listed, the summation of all related cost will be quantified as TCO of insourcing in terms of US\$ per year ( $TCO_{insource}$ ). In this research, researcher prefers to use the average  $TCO_{insource}$  per kilograms for benchmarking, hence the formula is as below:

$$TCO_{insource} / kg = \frac{TCO_{insource}}{\text{Annual tonnage}}$$

The reasons for using the average TCO per kilogram for benchmarking are twofold. Firstly, in the procurement perspective, the airlines always offer airfreight rate by per kilogram basis. The average TCO per kilogram can be added to the airfreight buying rate to reflect the true cost of airfreight department of FF Company.

Secondly, in the commercial perspective, when the FF Company's sales staff offers an airfreight quotation to customers, the quotation will be based on the per kilogram rate; for example from Bangkok to Singapore US\$ 0.3125 per kilogram. The rate which is offered to the customer is calculated by the buying rate from an airlines plus profit. In the future, the average TCO per kilogram will be a guideline for a sales staff to mark up; the rate will be calculated by the buying rate from an airline plus TCO per kilogram, then plus profit.

No TCO model can fit all purchasing situations, and TCO should not be focused only on the buying company, but should also cover the suppliers' side, since the use of TCO not only affects the buying company, but also its suppliers (Ellram & Siferd, 1998).

Another list of costs, which fits this study, is below:

**Table 3: Insourcing and Outsourcing Costs**

	<b>INSOURCING</b>	<b>OUTSOURCING</b>
<b>Direct Costs</b>	Direct material	Price (from invoice)
	Direct labor	Freight costs
	Freight costs	
	Variable overhead	
<b>Indirect Costs</b>	Supervision	Purchasing
	Administrative support	Receiving
	Supplies	Quality control
	Maintenance costs	
	Equipment depreciation	
	Utilities	
	Building lease	
	Fixed overhead	

Source: Bozarth et al. (2013)

### **Service Quality**

Service quality is the measurement or evaluation of how well the suppliers delivered its service compared with the expectation of buying firm (Lewis & Booms, 1983). Service quality is the intangible, so the buyer cannot perceive its quality or value before the buyer purchase it. Meister (1990) argued that customers can judge the services quality by comparing between their perceptions with their expectation. In addition, if the performance is higher than the expectation, it is a high service quality. The main objective for service quality is reaching or exceeding the customers' requirement/expectation (Amitava, 2008).

## **METHODOLOGY**

Data for 2013 plus 2014 was collected, mainly consisting of monthly reports of: Monthly Tonnage; Salary and Overtime for direct labor cost; Head count of operators at the airfreight terminal; Quotation from two outsourcing companies to be a benchmark for internal operating cost.

Interviews were conducted with the: Airfreight Product Manager of FF Company; another Freight Forwarder; two outsourcing candidates to evaluate their capabilities and quotations; and the HR Manager about staff recruited and resigned.

The potential benefit of outsourcing a function is the focus. This involves examining total operation cost and service quality of outsourcing, and its pros and cons. All that would then be compared with insourcing.

This is a TCO list of the resources deployed in the operation at the cargo terminal:

- a) *Direct labor cost* was the total staff wages, overtime, and bonuses.
- b) *Supervisor cost* was the total salary, overtime and bonuses of supervisors.
- c) *Recruitment cost* was the fee paid to the recruitment company
- d) *Training for new staff*, for on the job training.
- e) *Meal allowance* for operation staff.
- f) *Social insurance* cost paid as in labor legislation.
- g) *Uniform allowance* star<sup>6</sup> per year.
- h) *Office supplies*
- i) *Equipment maintenance and depreciation*
- j) *Gasoline allowance* and *Mobile phone allowance*.
- k) *Annual terminal pass fee* paid to the terminal office.
- l) *Error cost* calculated for door to door parcel service fee.

### **Service Quality of Insourcing in the Context of FF Company**

For the service quality of insourcing in this research, the researcher focused on two attributes, the first one was *accuracy*, which referred to the percentage of shipments which were correctly shipped to the correct destination. Since there were a number of incidences involving mis-routing, cross labelling error caused by the operating staff putting the wrong agent tag and airlines tag on the packages, so that the package was shipped to the wrong destination. The second attribute was *on time*, which referred to the percentage of shipments which the operating staff submitted the document to airlines' office on time. Since there were a number of incidences in which the operation staff submitted to airlines' office late, consequently the shipments were offloaded. The number of incidences of both cross labelling and offloading was used to calculate the service level percentage of the FF Company in delivery to its customers.

Johnston (1995) stated that service quality was a main criterion in supplier selection for the focal firm to measure, control and develop its supplier's performance. The buying firm expected its suppliers to be able to respond to the demands on time in order to generate satisfying outcomes for both parties. Also, company success depends on having competitive pricing, world-class service quality, and response to the demand on time (Monczka, Trent, & Callahan, 1993). Holmes and Lett (1977) stated that customers are more likely to share their positive experiences with others.

Amitava (2008) stated that quality control is a method to ensure that service level meets the customers' requirements. Mockler (1984) stated that quality control is the most effective way to ensure that suppliers can deliver the service, as the commitment between both parties in order to achieve customer's objectives. Quality control is used to evaluate the actual performance to that stated in the service agreement, and to take action to close the gap (Juran, 1989). Moreno-Lonzo and Peris (1998) confirmed that the objective of quality control is to ensure that suppliers perform to the customer's requirements. Garvin (1988) stated that good planning and error prevention are essential parts of quality control and management.

Total cost of ownership (TCO) is an analysis tool that leads to more understanding of the related costs in order to deliver the service to customers. The related costs include both internal operating cost as well as the external cost of doing business with suppliers. Cost identification is the most difficult part in a TCO analysis; and a process flow chart is a tool for helping to identify all related cost, as it lists all sequential activities. Two major types of cost are direct and indirect cost: direct cost is the related cost incurred directly with in the process, whereas indirect cost is the related cost which supports the main process.

Service quality is the first criterion which customers consider, therefore FF needs to ensure that all suppliers are able to deliver the best services according to the service agreement specified in a contract. Since the performance of suppliers has a direct impact on the firm's reputation. Quality control is necessary to ensure suppliers' performance.

**Table 4: Pros and Cons of Outsourcing by the FF Company**

<b>Pros</b>	<b>Cons</b>
More focus on its core competency	Loss control over the entire process
Ability to access better performance from supplier.	Possibility to select a wrong supplier
Low investment is required	Coordination challenges
Cash flow	Communication challenges
Flexibility	
No staff turnover challenge	

The main advantage of outsourcing here is that the company can deploy its resources to increase the volume of tonnage as well as focusing more on its core competency, i.e., airfreight procurement and customer service. In addition, the company is able to overcome the staff turnover challenge. Besides the main advantage, it is possible to get better performance, due to the specialization and expertise of the third party which also focuses on its process. Outsourcing also requires low initial investment to procure the equipment as well as lower equipment maintenance expense and depreciation expense incurred in its process. In addition, the company is able to overcome the frequent recruitment and training cost. Consequently, the company can use its money better for projects which focus on its core business.

On the other hand, the disadvantages of outsourcing force the company to carefully consider that because the company will lose control over its process as well as possibly select the wrong supplier, this may adversely affect the company's performance and service quality. The disadvantage also includes the challenge to coordinate and communicate with the third party in order to be aligned to the same goal of service quality to customers. Finally, the supplier's performance will affect the customers' satisfaction with FF company.



## FINDINGS & CONCLUSIONS

The findings showed that the total operating cost in 2013 plus 2014 for insourcing was US\$ 842,827. Outsourcing to supplier A would be US\$ 944,023, and to supplier B would be US\$ 956,740. The total freight throughput for this two-year period was 52,433,919 kg. So the average TCO of insourcing was US\$ 0.0159 per kilogram. The TCO of outsourcing supplier A would have been US\$ 0.0181 per kg, and for supplier B would have been US\$ 0.0184 per kg. From the operating cost perspective, insourcing the operation at the cargo terminal was more cost effective than outsourcing it to either supplier. Thus, insourcing would incur a lower operation cost than outsourcing, for supplier A by US\$ 114,688, and for supplier B by US\$ 130,938.

**Table 5: Cost Structure of Insourcing and Outsourcing**

	<b>Insourcing</b>	<b>Outsourcing – supplier A</b>	<b>Outsourcing – supplier B</b>
Total operating cost (US\$)	842,827	944,023	956,740
Direct cost (%)	73.35%	86.79%	82.21%
Indirect cost (%)	25.59%	7.55%	12.21%
Other cost (%)	1.06%	5.66%	5.59%

Source: FF Company

The *direct cost* was that tied to the process. When FF Company had in-house operation at the cargo terminal, staff payment costs were directly incurred. Thus, insourcing incurred the lowest direct cost to the company in 2013 plus 2014, because the company managed its own direct cost. The direct cost was US\$ 0.0116 per kilogram, whereas, the direct cost of outsourcing was US\$ 0.0156 per kg for supplier A, and US\$ 0.015 per kg for supplier B.

The *Indirect cost* was the cost for facilitating and supporting the operation. Now, the outsourcing incurred lower indirect cost than insourcing, especially supplier A at US\$ 0.0016 per kilogram, because this supplier provided its own supervisors to assist FF Company manage their staff at the terminal, so that FF Company could reduce its own supervisors from 5 to 3. FF Company was able to reduce its own overhead cost, depreciation cost, recruitment cost, and training cost. Supplier B offered a lower service fee than A, but no supervisor support, consequently the FF Company needed to maintain the numbers of its own supervisor as for insourcing. Supplier B's indirect cost was US\$ 0.0022 per kg, whereas the insourcing indirect cost was US\$ 0.0038 per kg. The *error cost* (accuracy, error, and layoff) for insourcing was US\$ 0.0003 per kg, whereas it was zero for outsourcing because both suppliers were responsible for this cost. The layoff cost would only be incurred if the company decided to outsource.

The initial research was on the *outsourcing impact on the company's total airfreight operation cost*. It has been shown that outsourcing would have a negative impact in terms of total operating cost. Currently, the company insources its own operation at an average total operating cost US\$ 0.0159 per kg, whereas outsourcing would have an average total operating cost of US\$ 0.0181 and US\$ 0.0184, respectively for supplier A and B. Without

TCO analysis, had FF Company decided to outsource, it would have incurred a greater operating cost of US\$ 100,938 for the two-year period 2013 plus 2014.

In-sourcing brings many benefits. The company retains 100% control over its operation process. Therefore, it can adapt or adjust its own operations in order to deliver the best service to its customers. The knowledge base, experience, and know-how, which the company has of insourcing, are intangible assets in its business intelligence. With insourcing, the company gains the benefit of economies of scale. The company can lower its total operating cost if there is higher freight throughput, which can be a competitive advantage. Due to the intense competition in the airfreight forwarder industry, most high volume customers are changing the way they select freight forwarders. They tend to use global bidding instead of country bidding. With global bidding, it is more difficult for a freight forwarder to maintain its freight throughput. The FF Company chose to study outsourcing as a means to maintain competitive advantage for the next round of bidding. It will now have to consider other means. It will also have to tackle the staff turnover and absenteeism problem.

To answer the second research question for *the benefits of outsourcing*, it will be variable operation cost. Since the direct cost of outsourcing is only dependent on the freight throughput, FF Company incurs an operating cost only if freight passes through the process. If no freight, then FF Company incurs no direct cost. A good example is that after the FF Company had lost a freight contract in 2014, the total operating cost of outsourcing reveals a lower cost of insourcing. The next benefit focuses on the company's core competency. The FF airfreight manager can concentrate more on the commercial side of airfreight negotiation as well as on his customer service section without involvement in the cargo handling process at the cargo terminal, and his staff turnover can be overcome.

The third research question examined *whether outsourcing would affect the company's service quality*. In this study, service quality focus only on accuracy of the cargo handling process and on time taken to hand over the document to airline offices. Accuracy was measured by the number of shipments passing through the process without correct labels. The on-time dimension was measured by the number of shipments without being offloaded. In 2013, there were 323 offloading incidents and 16 incorrect label incidences, out of a total of 37,925 shipments. Therefore the service level of delivery to its customers was 99.11%. In 2014 the service level was 99.18%. The FF Company has insourced its operation at the cargo terminal since its beginning. The service quality has always been a prime policy of top management, because it builds the trust and confidence of customers as well as their loyalty.

If FF Company decided to outsource, a service level agreement would be in the contract. In addition, the company would have its own supervisor to monitor and manage the operation at the cargo terminal to assure that its supplier fulfills the service level agreement. But there is the risk of selecting a wrong supplier, who may not be able to achieve the agreed service level.

Although outsourcing may have many advantages, it is reliant on supplier selection, and, the risk of wrongly selecting a supplier cannot be entirely avoided. Thus, outsourcing may

come to have a negative impact if the supplier cannot perform well and harms the service quality of the FF Company, and thus the company's goodwill and reputation.

### **THEORETICAL IMPLICATIONS**

The research finding is consistent with Jennings (1997) that the insourcing and outsourcing is an important strategy to top management that goes beyond only costing. There are multiple dimensions that the focal firm is required to analyze before making the decision to outsource. In addition, the result is in line with Platts et al. (2002). Since the company has many sections or departments, the cross functional make or buy decision seems appropriate as it covers a variety of areas of expertise and reduces individual biases in a focal firm. Furthermore, Nordigarden (2007) suggested that the outsourcing can solve operation constraint and getting financial benefit. However, this is in contrast to McCarthy et al. (2004) who found that outsourcing may not lead to cost reduction, which is in line with the case of FF Company as it did not get an operation cost reduction benefit from outsourcing.

The initial finding of this case study is surprising. After further in-depth studying of the result, it is found that the outsourcing option may offer the operation cost reduction benefit to FF Company only if the freight throughput is lower than two million kilograms because the company has its benefit of economies of scale. This finding is consistent with the statement of Aubert et al. (1998) that outsourcing has some negative impacts which may lead to an increased exposure of a risk of bad supplier selection, higher long-term costs and a potentially dangerous draining of internal expertise of the firm.

Ellram (1993 and 1995) provides one the best suggestions for why a firm should not outsource any activity just for cost reduction purposes. The company needs to understand the true cost of doing business with a selected supplier. The buying firm needs to determine all related costs for purchasing the services from a third party which is not just the price offered by a selected supplier. Furthermore, the finding is in line with Lambert et al. (1996) that the TCO needs to include other related costs such as: sourcing costs, salaries of the purchasing personnel, service failure costs and other costs or related activities required to get the services delivered. As a result, all concerned department of the buying firm are required to get involved. Additionally, Ellram (1994) and Bozarth et al. (2013) recommend identifying direct costs and indirect costs, which was applied to find the result in this case study. The finding is consistent with Johnston (1995), Monczka et al. (1993), and Holmes et al. (1977) that quality control is the most effective way to ensure that suppliers can deliver the service in line with the standards agreed between both parties in order to achieve customer's objectives.

### **MANAGERIAL IMPLICATIONS**

In order to decide whether to insource or outsource through the use of the total cost of ownership model, the research found that the TCO per kilogram of insourcing was lower than outsourcing when the outsourcing versus insourcing models were developed using two years of FF Company historical data. In addition, with insourcing the company could retain one hundred percent control over all activity in the cargo handling process at the cargo terminal and enjoy the benefits of economies of scale when the freight throughput is

greater than two million kilograms per month. Based upon the findings of this study, the FF Company should pursue a strategy of attempting to close the gap of monthly throughput and raise the monthly amount above the two million kilograms per month break-even point. Outsourcing options might be of benefit for the company only if the freight throughput continues to be lower than two million kilograms per month. Moreover, outsourcing carries the risk that the chosen supplier may not perform to the service standards set in the service contract, which would impact the service level of the FF Company. Furthermore, outsourcing would require the layoff of the operations staff, which would affect employee morale.

## LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

This research was conducted to study an outsourcing versus insourcing decision through the use of total cost of ownership. This case study analyzed the FF Company in Thailand. Future research into other companies or businesses should be conducted in order to study the cost structure, process flow, and service quality attributes, which may be different from this research. Since TCO is not the universal model, it cannot fit to all companies or businesses.

The service quality of this research included only two attributes: on-time and accuracy. Nevertheless, these two attributes of service quality may be insufficient or fit other companies, and will depend on each company's vision and objectives.

In the future, it is likely that the freight forwarder business will continue to grow and present intense competition. Thus, the FF Company should adapt its operation to cope with that. In future research, some other operations management concepts, such as Lean operations, may prove to be useful tools for the FF Company to manage its operation rather than outsourcing to a third party.

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