THE SERVICE DETERMINANTS OF FREIGHT FORWARDING INDUSTRY

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Abstract
Purpose: This research aims to find service determinants of four popular international freight forwarding business models in the Latin America.

Design/methodology/approach: To analyze the pros and cons of four popular freight forwarding business models and the importance of determinants in this industry, an analytical hierarchy process (AHP) and importance-performance analysis (IPA) techniques are employed to carry out the study. Thirty leading freight forwarders headquartered in Taipei and have done business with Latin America are surveyed by posting them questionnaire to know their perception on the degree of importance of these service factors and the degree of performance of various business models on these service factors. Twenty three of them have responded the survey. A following up telephone interviews with these freight forwarders after the survey are carried out to further interpret the survey findings.

Findings: Three factors of the service quality dimension have much higher degree of importance than the eight factors of the economic dimension.

Research Implications: Freight forwarders should be service-oriented instead of cost-oriented and revenue-oriented, and risks of neglecting service quality in the freight forwarding industry cannot be overemphasized.

Originality/Value: The business models and their service determinants of freight forwarders in the emerging economics are systematically studied for the first time.

Introduction

There are about 40,000 firms in the forwarding industry globally that have employed 8-10 million staffs (Delen, 2010). The annual revenue of a global forwarder can be as high as $30.5 billion US dollars which has been achieved by the leading forwarder DHL in 2010. Forwarding is a very competitive business, and major international freight forwarders are always looking for their future development opportunity abroad. Latin America with more than 572 million in population and 210 million square kilometers in land area is reported to be one of the most potential economic growth regions in the 21st century. According to UN ECLAC (Economic Commission for Latin America and the Caribbean, 2011), the trade indices for goods in this region is largely grown from 2005 to 2010. Latin America and the Caribbean will grow by 3.7% in 2012 amid global uncertainty and volatility. Viewing this trade growing trend and the future importance of Latin America in world trade, the Republic of Korea and ECLAC has recently signed an agreement for expanding mutual cooperation. Taiwan has strong competition with Korea in the ocean shipping industry. Freight forwarding industry is the trailblazers for ocean carriers in the shipping industry. To understand the successful factors and business models of the freight forwarding industry is thus important from ocean carriers' viewpoint in Taiwan.

Literatures Review on the Functions of Freight Forwarders

Functions of freight forwarding business

Markides and Holweg (2006) cited Ran et al.'s (1993) report and indicated international logistics intermediaries including freight forwarders, customhouse brokers (CHBs), non-vessel operating carriers (NVOCCs) as well as export management companies, are all in the group of third-party logistics service providers (TPL). They are capable of offering complete logistics solutions for the international freight movement. Of tall the TPL stakeholders, the international freight forwarder (IFF) has traditionally been the primary logistics middleman for cross-national trade. Frequent consolidation and restructuring has resulted in tremendous volatility in the sector. Traditional

forwarders have to provide niche freight services by offering value-added services such as customs clearance, warehousing management, transportation management, information technology and special freight handling (Chandler, 1994). Apart from customs clearance (CHB) and NVOCC services, freight forwarding companies can furthermore provide insurance, warehousing and distribution and various other value-adding services such as information technology, consultancy, packing and labeling inhouse or outsourced. Thus their incomes are generated from air-freight, sea-freight, rail-freight, road haulage, warehousing, custom-house brokerage, insurance, and other value activities (Markides and Holweg, 2006).

Lin and Liang (2011) studied the service quality of the ocean freight forwarder industry in Taiwan by fuzzy zone of tolerance technique, they found twenty two service attributes can be grouped into four service dimensions, including convenience of operation process, aggregated service, transit handling excellently, and rationalization of freight rate. They found five of the twenty two service attributes required a major improvement, namely, electronic data interchange, cargo tracing service, availability of cargo space, the competency of emergency handling, the ability of claims handling and freight rate. A study on the diversification development of international freight forwarders (IFFs) in Bangladesh by Haque (2011) reveals Bangladesh IFFs are lag in the IT service and the value added service. Rathbone(2009) indicated five major causes result in the leading freight forwarders from the general shipping companies: automated processes, cutting-edge information technology, forward-looking leadership, innovative customer service, and empowered employees. Abdel-Maksoud & Kawam (2009) studied the highly competitive freight forwarding market in the United Arab Emirates (UAE), they found cost and quality of services offered to customers are two of the most critical factors influencing the competitiveness for freight forwarding (FF) and logistics firms. In addition, five important variables were identified by the senior executives they interviewed as value creating, including: staff responsiveness, staff professionalism, internal operations, customer satisfaction and loyalty.

Table 1 Key Successful Factor (KSFs) of freight forwarders

Sub-Dimensions	KSFs (Factors) \ Authors	Davies (1981)	Özsomer et al. (1993)	Hardaker et al. (1994)	Chandler(1994)	Murphy & Daley (1999)	Lai & Cheng (2004)	Liang et al. (2006)	Markides & Holweg (2006)	Drewry (2010)	Abdel-Maksoud & Kawam (2009)	Rathbone (2009)	Lin & Liang (2011)	Haque & Ahmad (2011)
Revenue	Revenue from other surcharge	✓	✓			✓			✓	✓				
	Revenue from ocean freight (Rationalization of freight rate)	✓							✓	✓			✓	
	Revenue from inland transport				✓		✓			✓				
	Revenue from value-added service charge (value creating)			✓	✓		✓	✓		✓	✓			
Service Quality	Cargo tracking ability (Convenience of operation process, EDI & cargo tracing service, Automated process)		✓	✓			✓			✓	✓	✓	✓	✓
	Customer complaint response speed (Innovative customer service, staff professionalism)			✓		✓				✓	✓	✓		✓
	Cargo on time arrival rate (Transit handling excellently)		✓	✓		✓				✓			✓	✓
	Low cargo damage and loss record(Aggregated service)		✓			✓			✓	✓			✓	✓
	Customer satisfaction & loyalty												✓	
	Internal Operation												✓	
Cost	Ocean freight cost	✓			✓						✓			
	Documentation cost	✓			✓						✓			
	Communication cost	✓							✓		✓			
	Terminal handling cost	✓			✓						✓			

Source: this research.

There are several import sources of revenues for the freight forwarding industry, including ocean freight (Markides & Holweg, 2006; Drewry, 2010; Lin & Liang, 2011), other surcharges (Davies, 1981; Ozsomer et al., 1993; Murphy & Daley, 1999; Markides & Holweg, 2006), inland haulage (Chandler, 1994; Lia & Cheng, 2004; Drewry, 20100, and revenue from valu-added services(Hardaker e at., 1994; Chandler, 1994; Lai & Cheng, 2004; Liang et al, 2006; Drewry, 2010; Abdel-maksoud & Kawam, 2009).

Service quality of the freight forwarding industry should include cargo tracking ability (Ozsomer et al, 1993; Hardaker et al., 1994; Lai & Cheng, 2004; Drewry, 2010), Customer complaint response speed (Hardaker et atl, 1994; Murphy & Daley, 1999; Drewery, 2010; Abdel-Maksoud & Kawam, 2009; Haque & Ahmad, 2011,; Rathbone, 2009), cargo one time arrival (Ozsomer et al., 1993; hardaker et al., 1994; Drewery, 2010; Lin & Liang, 2011; Haque & Ahmad, 2011), low cargo damage and loss record (Ozsomer et al., 1993; Murphy & Daley, 1999; Markides & Holweg, 2006; Drewry, 2010; Lin & Liang, 2011; Haque & Ahmad, 2011), customer satisfaction & loyalty (Lin & Liang, 2011), and internal operation (Lin & Liang, 2011).

As the higher the cost the lower the economic competitiveness, thus the control of cost has its impacts on the competitiveness of a freight forwarder. The cost factor mainly contain ocean freight

paid to the vessel operating carriers (Davies, 1981; chandler, 1994; and Abdel-Maksoud & Kawam, 2009), documentation cost paid to the ocean carriers and the other freight forwarders who received the co-loaded cargoes, the communication cost between forwarders, its partner forwarders, and the shippers, and the terminal handling cost paid to the ocean carriers (Chandler, 1994; Abdel-Maksoud & Kawam, 2009).

Business models of freight forwarding(FF) industry
Drewry Maritime Research (2010) has made an in-depth analysis of and suggests best practices for monitoring logistics activities in the global freight forwarding sector. The freight forwarders' business model can be grouped according to their profit margins and revenues. Their resilient margins can be generated through adequate control on their variable costs, and revenue can be generated through their consolidation and wholesale freight services. However, according to the authors' knowledge, a clear analysis on the business models for freight forwarding industry is simply not available currently.

Interview with industry executives and review literatures(Tzeng & Liao, 1997), the general business models of FF industry are structured. There are four business models for the freight forwarders who want to enter into the Latin American freight market. Global logistics solution providers have offered their prompt delivery service and door to door service by multimodal transport network worldwide. Companies such as DHL and TNT are examples of the global cargo consolidators. Non-vessel operating common carriers are major forwarders solicited and consolidated cargoes and issued their own bill of ladings to their shippers. International cargo consolidators are forwarders provide cargo consolidation service without taking any responsibility to the shippers. They simply consolidate the cargoes and relay them to the other freight forwarders or carriers. The fourth FF business model is to be as a key agent for major foreign ocean carriers. This model simply handles imported and exported cargoes designated by their foreign ocean carriers.

Following a personal interview with several executives of freight forwarding companies, the author summarize service factors reported in previous researches and in the interview, an analytical hierarchical structure is shown in the Figure 1.

Research Methodology and Participants

Research Methodology
Two techniques were employed to carry out this research: the Analytic Hierarchy Process (AHP) technique and the Importance and Performance Analysis (IPA) technique. The AHP technique is firstly used to find the weight for the FF performance dimensions and criteria, followed by the use of the IPA to illustrate the critical criteria that need to be improved.

The AHP technique can be used to simplify a complicated system by constructing a hierarchic structure. Elements at any level are comparable, and elements in the same level of the hierarchy should be independent from each other. A criterion under a dimension should be correlated with the dimension in its upper level, and judgments about the elements in a hierarchy do not depend on the lower level elements. An AHP structure should follow the homogeneity axiom, which states that the elements being compared should not differ from each other too much.

The AHP technique is based on three axioms, namely, the reciprocal axiom, the homogeneity axiom, and the principle of hierarchic composition. There are three procedures in implementing the AHP technique: decomposition, comparative judgments, and the hierarchic composition or synthesis of priorities. The pairwise comparison between each dimension and criterion should satisfy the transitivity relationship; however, a perfect transitivity relationship is not required. When the transitivity relationship does not exist, the consistency index (C.I.) and consistency ratio (C.R.) are employed to test the degree of consistency of the respondent's responses.

Martilla and James (1977) were the first to propose the IPA technique to analyze automobile dealers' services and customers' patronage of the dealers' service department. Service attributes with a high degree of importance and low degree of satisfaction were considered to require more resources and inputs from the car dealers to keep their customers' patronage.

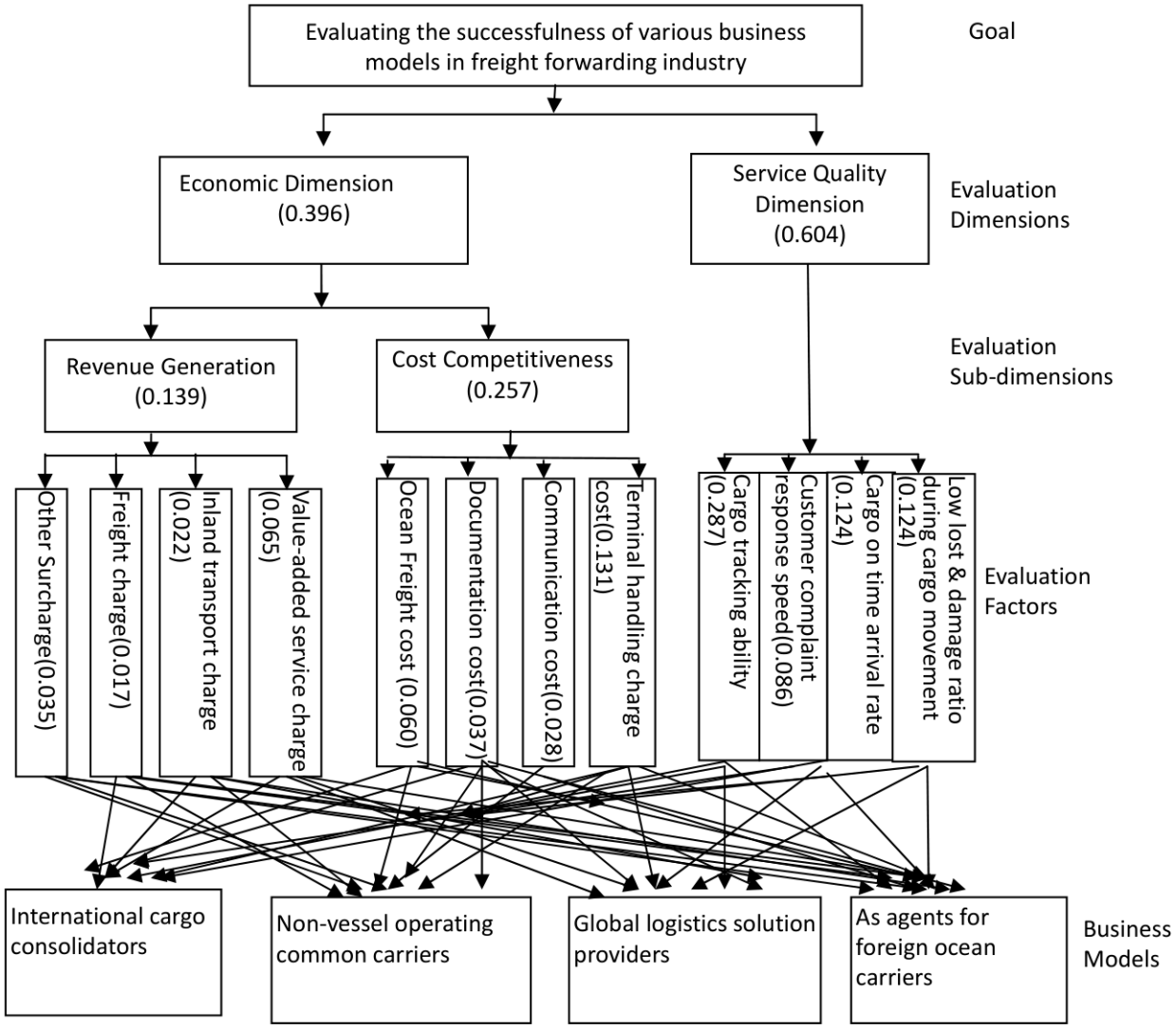

Figure 1 Hierarchical structure and KSFs and freight forwarding business models

Participants

There are only one major ocean freight forwarding association in Taiwan, the International Ocean Freight Forwarders and Logistics Association, Taiwan (IOFFLAT). Of the IOFFLAT 662 members, 640 of them are local FFs headquartered in Taiwan and 22 international members from Singapore and Hong Kong. Viewing the IOFFLAT members' serial number, the local member number is currently 1,498 and the international member number is 22. Thus it is about 42.7% of IOFFLAT member are still in operation in Sept. 2012. Survey participants were selected by reviewing freight forwarders' corporate profiles of the Freight Forwarder Association in Taipei. Freight forwarders who have annual revenue over US$ 300 million were chosen as the potential participants. It is found the forwarders with high annual revenue were mostly large forwarders who have business connection with forwarders in Latin America. Thirty leading freight forwarders home based in Taipei were targeted to respond to the survey. Questionnaires were distributed in the July in 2012 via post mail. There are 23 participants respond the survey and achieved a high response rate of 76.6%. The high response rate is achieved because the author has contacted with the potential respondents by telephone and asks for their agreement to participate this survey before the questionnaires are posted. In addition, a promise to mail a summary of the survey findings to the participants also is helpful to increase the response rate.

Analyses of Findings

It is found leading forwarders in Taipei perceived service quality is the most important dimension influence the successfulness operation of a freight forwarder in Latin America., followed by cost competitiveness dimension, and the revenue generation dimension. Looking into the details of the twelve factors in the three dimensions, cargo tacking ability, and cost of terminal handling charge and cargo on time arrival rate are the top three important factors with the degree of importance more than 10% from the freight forwarders' viewpoint. Revenue from ocean freight charge, revenue from inland transport charge, and cost of communication are found to be the three least important factors influenced a freight forwarder's successful operations in Latin America (see Figure 1).

Concerning the overall weighted performance evaluated by these 26 senior executives, 'the global logistics service providers' (GLSP) have the highest competitiveness among the four types of freight forwarding business models, followed by 'global cargo consolidators'(GCC), 'as agent exclusively for an ocean carrier', and 'the non vessel operating common carriers' (NVOCC) (see Table 3).

The median value on the importance of the twelve service attributes for the four types of freight forwarding business models is 0.063. Median performances values of the four business models on the twelve service attributes are 4.442, 4.462, 4.538, and 3.788 (see table 3). Thus the origin of the importance-performance analysis matrix is found. Service attributes located in the upper left quadrant imply the service attributes have higher degree of importance but have lower degree of performance, thus to input more resources to improve these service attributes is the first priority for a freight forwarders.

Among the four types of freight forwarding business models, it is found that the global logistics service providers have the highest overall weighted performance, followed by non-vessel operating common carriers, global cargo consolidators, and as agents for foreign carriers (see table 3).

Table 3 Performance of four FF business models on the 12 service attributes

Business Models / Service attributes (Degree of importance)	GCC	NVOCC	GLSP	Agent
RVAS: Revenue from value added service (0.065)	4.692	4.808	4.885	4
RITC: Revenue from inland transport charge (0.022)	4.462	4.731	4.846	3.769
ROFC: Revenue from ocean freight charge (0.017)	4.423	4.500	4.423	3.154
ROS: Revenue from other surcharges (0.035)	4.577	4.692	4.462	3.808
CTHC: Cost of terminal handling charge (0.131)	2.923	3.654	3.923	2.692
COC: Cost of communication (0.028)	2.769	3.462	3.500	2.654
COD: Cost of documentation (0.037)	2.769	2.538	2.692	3.154
COF: Cost of ocean freight (0.060)	2.654	3.192	2.962	2.577
CTAR: Cargoes on time arrival rate (0.124)	4.462	4.808	4.692	4.346
CCRR: Customer complaint response rate (0.086)	4.346	4.654	4.654	4.308
CTA: Cargo tracking ability (0.287)	4.462	4.423	4.846	4.654
LLDR: Low lost and damage record (0.107)	4.538	4.269	4.615	4.385
Weighted performance Score	4.054	4.241	4.411	3.942
Median value of the performance of the 12 service attributes	4.442	4.462	4.538	3.788

Note: Median values of the importance of the 12 service attributes is 0.063

Figure 4 to figure 7 are the IPA illustration for global cargo consolidators, NVOCC, global logistics providers, and as agents for major carriers. 'Revenue from other surcharges', 'revenue from inland transport charge', and 'revenue from ocean freight' attributes are the three determinants for global cargo consolidators' successful operations (see figure 3). Because global cargo consolidators only

issue cargo receipts and do not issue their own bill of lading and do not contacted with ocean carriers directly, they normally solicit shippers' freight and intermediate the freight service between shippers and NVOCC. They normally consolidate the less than container load cargo and forward the full container load cargo to NVOCC to make profit from the ocean freight payment differences between the full container load cargo rate and the less than container load (LCL) rate. The three attributes are major important incomes for the consolidators, but when the consolidators relay the LCL cargo to NVOCC, the NVOCC also charges the consolidators very high fees on these three charge items. Thus consolidators cannot easily generate significant profit from these three charge items currently.

For non-vessel operating common carriers (NVOCC), 'cost of terminal handling charge'(CTHC), and 'low lost and damage record'(LLDR) are found to be the determinants. However, the NOVCCs have over-performed on 'the revenue from inland transport charge'(RITC), 'revenue from other surcharge'(ROS), and 'revenue from ocean freight charge' (ROFC) service items. NVOCCS can move their resources from the three charge items to 'cost of terminal handling charge' (CTHC), and 'low lost and damage record' (LDR) items (see figure 4).

This is because of NVOCCs normally used the low ocean freight strategy to solicit shippers' patronage. This low ocean freight rate is about the same rate that NVOCCs have to pay to the ocean carriers. NVOCCs also ask for low inland transport charge and low surcharge to operate in a highly competitive freight market. NVOCCs have to pay a very high terminal handling charge (THC) to carriers. Although these THCs can be recovered by charging the LCL shippers even higher unit THC rate, NVOCCs' high THC charge is always complained by the LCL shippers. NVOCCs require an improvement on this service attribute via negotiating lower THC with ocean carriers.

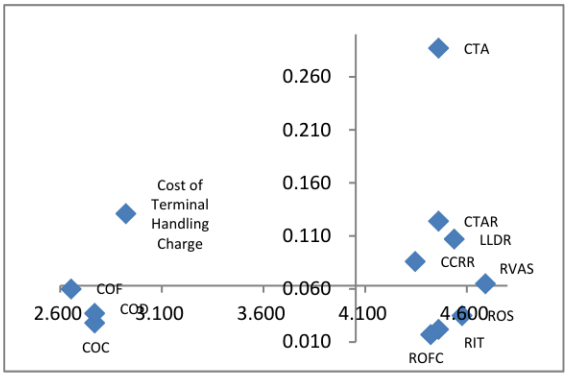

Figure 3 IPA of global cargo consolidators

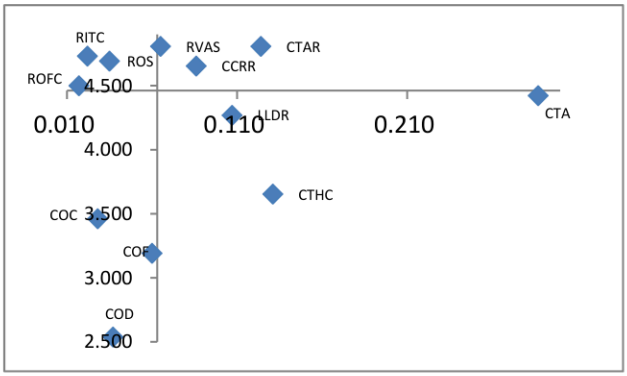

Figure 4 IPA of non-vessel operating common carriers

For global logistics service providers, 'cost of terminal handling charge' (CTHC) attributes is found to be the determinant service attribute, and the 'revenue from inland transport charge' (RITC) service attribute is found to be the over-performed attribute (see Figure 5). This finding is somewhat surprised to the authors, as most global logistics service providers are mostly using air transport as their major transport mode to move cargoes across nations. THC has a broad definition. It refers not only to the terminal handling fee in the container port, but also refer to the ground handling fee at the

cargo terminal in an airport. Global logistics service providers all have their own ground handling work force in major airports worldwide. Outsource these ground work force to a HRM (human resource management) contractor can reduce the cost of ground handling fee in a low throughput air cargo terminal.

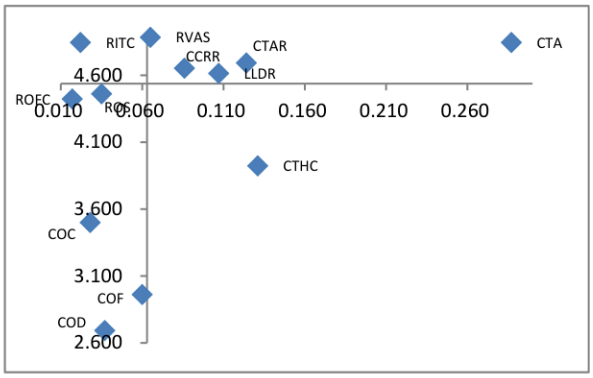

Figure 5 IPA of global logistics service providers

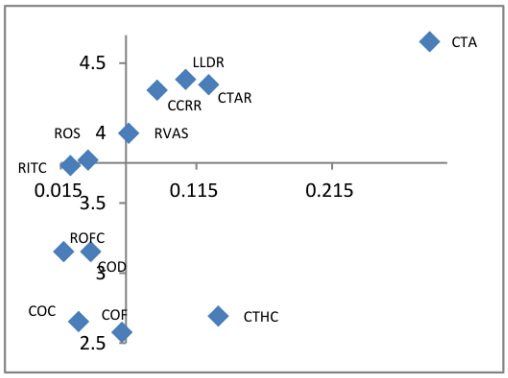

Figure 6 IPA of as agents for major carriers

For 'as agents for major carriers' forwarding business model, 'cost of terminal handling charge' is found to be the only determinant service attribute, and 'revenue from other surcharges' is found to be the only over-performed attribute (see Figure 6). Local FFs operates as agents for major carriers mostly simply involve in soliciting cargoes for a very limited number of ocean carriers. Although these FFs also consolidate and forward these cargoes to the other FFs through their subsidiary companies, most of the time, they solicit cargoes for their principal ocean carriers only. Their major revenues are generated from the freight which does not include the THC. In a recessed freight market, one of ocean carriers' major revenue is generated from the THC they received. Thus ocean carriers are usually keen at raising their THC fees when the freight market is soft. The THC fee should be greatly reduced if an ocean carriers' agent want to improve its competitiveness during a soft market.

Discussions and conclusions

It is found that in three of the four freight forwarding business models, the revenue from inland transport charge is found to be the over-performed service attributes. This implies most forwarders do not think this service attribute is very important to the successful operation of their business. However, they over-charge shippers the inland transport charge. Evergreen Marine Corporation (EMC) did decide to set up its branch office in the UK when its British agent keep the profitable inland service routes for itself and relayed the non-profitable inland service routes to EMC in the early 2000s. Inappropriate profit from inland transport service will make both carriers and shippers disappointed.

On the other hand, 'cost of terminal handling charge' is the determinant attributes in three of the four freight forwarding business models. In the short sea service routes, the terminal handling charge (THC) is the major cost the shippers have to pay. How to negotiate with the ocean carriers to reduce the THC and consequently reduce the THC charges to shippers is the key successful factor for forwarders.

In addition, the importance of service quality dimension is higher than the economic dimension. Among the two sub-dimensions of the economic dimension, the cost competitiveness sub-dimension is about twice more important than the revenues competitiveness sub-dimension. Forwarders should provide their best service quality with the possible lowest cost, and the factors in the revenue sub-dimension should be employed as the last resort to compete with their cohorts.

As this research has only surveyed Taiwanese freight forwarders, future research can have a survey on a large geographical region and to include the shippers' viewpoint to have a more general conclusion.

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