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Evaluating the service requirements of combination air cargo carriers

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ABSTRACT

The purpose of this paper is to assess the service requirements of combination air cargo carriers (CACCs). Firstly, based on the CACC's operational features and relevant literature, the service requirement attributes (SRAs) of CACCs were investigated. A gap index based on Fuzzy AHP was then proposed to evaluate the perceived differences toward those SRAs between CACC users and CACC operators. Finally, as an empirical study, the CACCs in Taiwan and their users were investigated to validate the model. The results indicate CACC users pay much attention to SRAs: *Perfect cargo delivery*, *Adequate shipping spaces*, *Accurate cargo delivery* and *Staff's professional knowledge*. While, the SRAs with higher gaps for CACCs in Taiwan are: *Stable flights*, *Adequate flight spots* and *Special cargo delivery*. Based on those results, the theoretical and managerial implications for CACCs in improving service quality are discussed.

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1. Introduction

According to the research reports of Boeing company for global airfreights (Boeing, 2012), shipment quantities will increase threefold and grow at an annual rate of 5.9% over the next 20 years. Of which, the top five areas with a high growth rate will be Domestic China (9.2%), Intra-Asia (7.9%), Asia–North America (6.7%), Europe–Asia (6.6%) and South-Europe (6.5%). The above results indicate the Asia area can be the focus of airfreight developments in the future.

For airfreights, the carriers can be classified as three types: combination air cargo carrier (CACC), conventional all-cargo airline (CACA) and integrated carrier (IC). In practice, the service model of airfreights could be explained as Fig. 1. The main shipments of CACCs come from air freight forwarders (AFFs) consolidating cargo from shippers. Thus, AFFs are usually the main customers of CACCs. As for CACAs and ICs, their shipments may come from both AFFs and shippers. The latter can even provide a door-to-door service independently. Currently, the market share of CACCs' shipments is still higher than both of CACA and IC carriers. However, the IC

carriers have been gradually establishing an integral supply chain system by which they can provide a complete and prompt service for shippers. This result has significantly threatened the other two carriers, especially the CACCs. Thus, it is important for CACCs to consider how to deal with future competition.

In the relevant literature concerning airfreight services, most of studies focus on users' service requirements (e.g., Wang, 2007; Cheng & Yeh, 2007). Few articles examine the perceived gap in the service requirements between users and service providers. In practice, the gap may provide improvement information for service providers and allow them to allocate their resources with efficiency. Under resource limitations, the information is very useful for service providers in making policies to improve their service operations.

The purpose of this paper is to assess the service requirements of combination air cargo carriers (CACCs). Since AFFs (air freight forwarders) are the main customers of CACCs, this paper defined AFFs as the users of CACCs. Based on the CACC's operational features and relevant literature, the service requirements attributes (SRAs) of CACC are investigated in this paper. A Fuzzy AHP model is then proposed to weight those SRAs from both perspectives of CACC users (i.e., AFFs) and CACC operators respectively. Based on those weights, a gap assessment model is then proposed to evaluate the perceived differences on the SRAs between CACC users and CACC operators, by which, the CACC operators may make policies in improving service qualities. Finally, as an empirical study, the CACCs in Taiwan and their users were investigated to validate the

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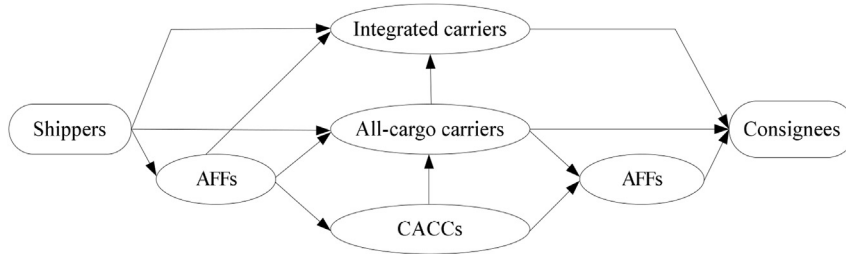


Fig. 1. The service model of airfreights.

model. The remainder of the paper is organized as follows: Section 2 presents a literature review. Section 3 explains the research method used in this paper. A discussion of the results is then presented in Section 4. Finally, some general conclusions and limitations for further research are given.

2. Literature reviews

2.1. The SERVQUAL scale

For the measurement of service quality for service industries, the SERVQUAL scale is one of the famous instruments. The SERVQUAL scale is a multi-item scale developed to assess customer perceptions of service quality in service and retail businesses (Parasuraman, Zeithaml, & Berry, 1988). The SERVQUAL scale decomposes the notion of service quality into five constructs and develops 22 questions to measure the service quality. The five dimensions are defined as follows: (1) Tangibles: physical facilities, equipment, staff appearance, etc. (2) Reliability: ability to perform service dependably and accurately. (3) Responsiveness: willingness to help and respond to customer need. (4) Assurance: ability of staff to inspire confidence and trust. (5) Empathy: the extent to which caring individualized service is given. In later studies, the SERVQUAL scale was widely applied for service quality measurements (e.g., Davis & Mentzer, 2006; Seth, Deshmukh, & Vrat, 2006). However, the SERVQUAL scale was originally developed for measuring the perceived service quality of individual customers, so it may not be adequate for business customers (Durvasula, Lysonski, & Mehta, 1999). Thus, for measuring the service quality of business customers, most relevant studies need to revised the SERVQUAL scale by considering the business' features, such as port services (Ugboma, Ogwude, Ugboma, & Nnadi, 2007; Pantouvakis, Chlomoudis, & Dimas, 2008), air cargo services (Wang, 2007), shipping carrier services (Lai, Chen, Wang, & Lin, 2009), container terminal services (Hsu, 2013), international port distribution centers (Hsu & Huang, 2014), etc.

2.2. The service quality in airfreights

In the relevant literature on the service quality of airfreights, most studies focus on both air cargo carriers and air cargo logistic providers. For example, for the former, Wang (2007) discussed the improvement in service quality for the air cargo sector of China Airlines. The paper identified three service quality dimensions with 20 service requirement attributes (SRAs) to measure the service quality of air cargo carriers. The three dimensions were Professionalism, Physical service and Correctness & positivity. The result indicated the top 3 SRAs in need of improvement for China Airlines are: Prompt handling of import/export work, Willingness to help solve customer service and Standard operating procedures. Hsu, Li, Patty, and Mark (2009) examined the factors affecting firms' selection of air carriers. In the article, six factors were extracted: Product characteristics, Values, Inventory cost, Shipping charges, Shipping

distance and Time. The results showed shippers with high product value and short delivery distance focus on the shipping charge and prefer choosing the air cargo carrier that offers more flights.

As for air cargo logistic providers, Cheng and Yeh (2007) investigated the relationship between core competencies and sustainable competitive advantage for air-cargo forwarders. The paper defined the core competencies as three variables: Resources, Capabilities and Logistics services. For the Resources variable, nine attributes were proposed and three dimensions were extracted: Corporate scale and information equipment, Relationship with clients, Upstream and downstream partners, and Corporate reputation and past delivery quality. For the Capabilities variable, ten attributes were proposed and three dimensions were extracted: Staff capability to provide service, Comprehensive management system and marketing capability and Multiple flight selection and price reduction capability. For the Logistics services, 19 attributes were proposed and six dimensions were extracted: Logistic information, Customer delivery service, Transportation quality and quantity, Upstream and downstream partner integration, Providing integrated logistic service and Price flexibility and prompt response to quoting. The results indicated Capabilities is the most essential internal variable influencing the sustainable competitive advantage, in which, the Staff capability to provide service is the critical factor. Tsai, Wen, and Chen (2007) examined the demand choices of high-technology industry for air logistics service providers. The paper proposed 15 SRAs from shippers' perspectives, which were classified as four constructs: Service cost, Service performance, Value-added services and Perceived Capability. The results indicated shippers pay most attention to Service performance, followed by Service cost and Value-added services. Meng, Liang, Lin, and Che (2010) investigated the effects of logistics services on customer satisfaction with air cargo logistic providers. In the study, logistic services were assessed by five dimensions with 23 SRAs, which were named as Delivery value, Knowledge innovation value, Service value-added, Information value and Performance satisfaction value. While, customer satisfaction was verified by four constructs with 22 satisfactory indexes, which were termed as Reliability, Agility, Customization and Flexibility. The results indicated the Service value-added is the most significant factor affecting customer satisfaction.

3. Research method

For ease of explanations, some notations are used in this paper:

SRA	Service requirement attribute
CACC	Combination air cargo carriers
AFF	Airfreight forwarder
RP	Responsiveness
IS	Integrated service
TG	Tangibles
TC	Transportation capability
PS	Personnel service
GI	Gap index

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