



Air passengers' willingness to pay for counter check-in services

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ABSTRACT

The airline industry employs a variety of self-service technologies (including kiosks and web check-in services) that can increase efficiency and save time for passengers, mainly due to the fact that air passengers can complete their check-in procedures by themselves. Since the self-service check-in has not been widely utilized in Taiwan, this study mainly investigated factors that influence the willingness to pay (WTP) for choosing counter check-in services. Due to a large portion of our survey air passengers (58.5%) being unwilling to pay any fee at all, the spike model was adopted with a triple bound dichotomous choice survey in order to avoid estimation errors. Two types of trip lengths, short and medium/long, were investigated to gain insights into the effects of distance on the willingness to pay (WTP) for choosing counter services. The estimation results showed that the WTP for medium/long distances was higher than short distances. These findings could be used to guide managerial strategy as well as future research.

1. Introduction

Since 2004, the International Air Transport Association (IATA) has been promoting the StB (Simplifying the Business) project. The main purpose of the project is to use information technology and automation to simplify the existing complex aviation operations and cost saver for airlines, time saver for passengers, and space saver for airports. In the past, before the introduction of self-serve check-in services, travelers going abroad needed to wait in a queue for two hours before boarding the plane to allow the ground staff to complete the check-in procedures. The service would cause congestion during peak hours and increase passenger waiting time while reducing the service level and quality. However, self-serve check-in services require an average of 30 s to one minute to finish the check-in procedures.

As self-serve check-ins can be used to complete the check-in procedures for multiple passengers at the same time, they are a convenient tool. This service is generally promoted by the airlines to passengers as being easier and faster because self-serve check-in not only reduces the time of passenger would normally spend at the airport, but also ease congestion and prevent long lines at check-in counters. If the passenger has no luggage to check-in then the process of checking in takes around one minute and the boarding pass is printed on the spot; if the passengers have baggage to check in, they can move quickly to a special lane (baggage drop-off points) is typically offered to them to reduce wait times.

Alice (2005) pointed out that the average counter and self-service check-in operating cost for each passenger is 3.68 USD¹ and 16 cents, respectively, indicating that counter check-in services will increase an airline's operating costs. Chang and Yang (2008) pointed out that cutting down the number of personnel and check-in desks can result in a considerable reduction in costs for airlines. Therefore, in recent years, airports and airlines have introduced electronic services to provide passengers with self-serve check-in

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¹ 1 USD is approximately NT\$ 30.18.

services that improve service quality and reduce operating cost expenditures. The IATA (2010) pointed out in the final report of the StB project that 125 airports in the world provide self-service check-in kiosks, with Europe and America as the main market. According to the statistics of China Airlines in 2013, passengers using web check-in services and self-service check-in kiosks were 2,069,600, accounting for an overall average utility rate 18.69% (China Airlines, 2013). The result indicates that there is still room for growth. Besides, Miller et al. (2011) and Chiambaretto et al. (2013) also indicated that check-in/Luggage services connecting to WTP are worthy to study.

It can be learned from the above that passenger choice of check-in services and the accompanying influencing factors are important issues to the aviation industry for the promotion of self-service features in the future. Meanwhile, there are many antecedent factors that influence consumer acceptance of self-service. For examples, recent studies have found that the factors that determine the choice of check-in mode such as waiting time (Wittmer, 2011), nationality and previous experience (Lu et al., 2011), passenger's age and level of education, the reason for making the journey, and waiting time and the type of airline (Castillo-Manzano and López-Valpueda, 2013), cognitive factors as control and delivery speed (López-Bonilla and López-Bonilla, 2013) or enjoyment (Ku and Chen, 2013). In addition, some studies employed queuing theory, system simulation, dynamic planning to discuss the issue of achieving efficient check-in procedures (Yan et al., 2004; Dijk and Sluis, 2006; Yan et al., 2008; Parlar and Sharafali, 2008; Bruno and Genovese, 2010; Hsu et al., 2012).

At present, airlines in Taiwan provide free check-in services for passengers using self-service check-in, with the expectation that passengers will use self-serve check-in as much as possible to provide another way to use personal blank time efficiently and reduce anxiety and uncomfortable feelings while queuing for counter check-in. From the past to the present, airlines in Taiwan have not charged passengers for using counter check-in methods. However, in September 2011, AirAsia proposed the strategy of charging passengers for not using self-service check-in procedures, which indicated that some airlines have realized the possibility of charging passengers for using counter check-in services to reduce airline operating costs and improve service efficiency.

However, the payment of a service fee for using counter check-in services is characterized by non-market goods. Therefore, based on the Random Utility Model (RUM), this study established passenger willingness to pay (WTP) price situations using the Contingent Valuation Method (CVM) and the Non-Market Valuation Method. As the WTP of respondents was very likely to be zero, excessive zeros could easily cause estimation bias. Past studies often adopted the Spike model to overcome this problem and avoid model estimation bias (Morancho et al., 2005; Jou et al., 2011a, 2012, 2013). Our study found that about 58.5% of passengers were not willing to pay a service fee. Therefore, as the excessive percentage of zero WTP may result in estimation errors, the Spike model was adopted to resolve this problem.

2. Literature review

2.1. Spike model-related literature review

The earliest application of the Spike model was proposed by Krström (1997), who investigated the price that travelers at Bromma Airport in Stockholm were willing to pay to reduce airport flight activities and thus reduce pollution, environmental risks and noise problems. According to the findings of the study, 77% of the samples did not want to pay the fee, and the resulting Spike approximate was 0.78 (percentage of WTP being zero). The WTP estimated using the logit model was negative 2540 SEK,² and the WTP estimated using the Spike model was 1500 SEK, indicating that the price estimated using the Spike model was more reasonable in the case of samples with a WTP of zero. In 2006, Hu studied the WTP for non-genetically modified vegetable oils using CVM to collect price data. Both the conventional model and the Spike model were used in combination. As the number of respondents opting for WTP was zero, the Spike model was adopted to reduce estimation bias. In addition, in the Spike model, a single variable model and a multi-variable model were established for comparison. The results indicated that the WTP estimated using the single variable Spike model was lower than that of the other two models and the variance of WTP was the lowest. This indicated that the estimation of the single variable model of WTP is more accurate.

McCartney (2006) studied whether the wind turbine towers installed in Australia's Jurien Bay Ocean Park would affect the view of the seascape and the beach and investigated the social value of changing the location of the wind power turbines. In the study, the CVM Double-Bound questionnaire design method was adopted to collect the price, and the Spike model was applied in calibration. According to the findings, the difference of the constrained models for the beach area and seascape was 2 USD. The result implied that the two scenes had the same importance to society. Therefore, in the management of the ocean park, the features of the scenes should be considered at the same time. Yoo et al. (2006) proposed using CVM to get the WTP of people for controlling or avoiding spam. In the face of measuring non-market wealth and goods prices, the virtual market hypothesis of CVM can effectively help respondents to construct and demonstrate the monetary value of avoiding spam. The study adopted a double-bound selection method in the questionnaire design. Samples with a WTP of zero were found in the survey; therefore, the Spike model was also adopted for the WTP calibration. The results indicated that the WTP of the respondents to avoid spam, in the case of a single variable, was 1836 KRW³). Moreover, in the multi-variable calibration, income, a number of e-mail accounts and quantity of spam had a positive impact on WTP for avoiding spam interference.

Yoo and Kwak (2009) applied the SBDC (Single-Bounded Dichotomous Choices) questionnaire design to evaluate the WTP of

² 1 SEK is approximately NT\$ 3.73.

³ 1 KRW is approximately NT\$ 0.029; and 1 Euro (EUR) is approximately NT\$ 35.98.

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