Fitting facilities to self-service technology usage: Evidence from kiosks in Taiwan airport

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ABSTRACT

The goal of this research was to investigate how service process fit and facilitating conditions affect usage behavior of SSTs. In this study, we formulated a technology usage model from the perspective of the TAM and customer value, and we collected check-in kiosk usage samples from the Taiwan airport by administering a face-to-face questionnaire to willing respondents, of which 429 were returned completed.

Check-in kiosks can provide a service experience that defines how passengers is to be boundary when dealing with airline companies. To achieve a higher intention to use check-in kiosks, there should be a clear service process communication between SSTs and passengers, and facilitating conditions provide specialized instruction to passengers who need help in using check-in kiosks. Enjoyment is an important moderating factor between intention to use and actual usage of check-in kiosks. Our findings suggest that when check-in kiosks display visually pleasing designs, passengers are attracted to use them. In turn, airline companies can create a process that could function as a model for their high-quality service, such as meeting with a professional advisory board to discuss problems and find solutions to meet customers' needs.

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1. Introduction

The growing application of technology in services enables new ways of doing business and transforms the interaction between customers and organizations. To go along with this current trend, airline companies have started to adopt self-service technologies (SSTs), such as airport self-check-in kiosks, and allow customers to create a service outcome without direct service employee involvement (Beatson et al., 2006; Elliott et al., 2012; Lim, 2012; Lu et al., 2011, 2009; Tam and Lam, 2004). SSTs enable passengers to take an active role in the production of their service experience, and these experiences extend beyond the interaction with technology, including the delivery of products (Oyedele and Simpson, 2007), service support (Liljander et al., 2006), and consumption of products and services (Elliott et al., 2012). Likewise, it creates the total customer experience that influences the customers' perceptions of value and service quality, and which consequently affects customer

loyalty. A challenge for airline companies is thus to understand what features of the SSTs will attract or repel customers as well as how to present these technologies as attractive alternatives for users (Smyth et al., 2012).

Although most studies recognize several determinants (e.g., reliability, usefulness, interactivity, and so on) toward SST usage intention (e.g., Beatson et al., 2006; Elliott et al., 2012), the significant roles of service process fit and facilitating conditions have been relatively neglected in the existing research. Service process fit is defined as a configuration of technologies through which service providers sense and respond to the dynamic and complex needs of customers using information technology (Fan and Ku, 2010). SSTs, such as check-in kiosks, are an integral part of the whole service process for supporting customer's overall service experience. Therefore, SSTs are not isolated parts from the holistic service process, and they are not simply functional substitutes for operational staff. From the service perspective, a service process fit in operations is necessary to make SSTs activities consistent with the passenger-oriented work process; airline companies should analyze customers' experiences and problems, and then respond to and support their needs accordingly (Matisziw et al., 2012). Previous studies have also pointed out that potential users of check-in

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kiosks expect the check-in environment to be highly controlled, that airlines may mitigate frequent flyers' resistance to kiosks by providing additional benefits or seat selection privileges (Chang and Yang, 2008; Kıyıldı and Karasahin, 2008; Léopold, 2009), and that kiosks are expected to be light and compact and should be installed near the luggage conveyor belt to provide satisfactory service. Thus, there is a need to understand the service process fit and its implication on the effects that kiosks will have on operations and implementation.

On the other hand, facilitating conditions refer to the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system (Venkatesh et al., 2003). Check-in kiosks can be found in a variety of locations. They typically include a computer loaded with software and housed inside a protective case, although they can also consist of a computer placed on a table or desk in an accessible area for passengers to use. An Internet-based self-service access must meet the specific requirements of information technology as well as the general requirements of the access system architecture (Kinard et al., 2009; Léopold, 2009; Rostworowski, 2012; Venkatesh et al., 2011; Xue and Field, 2008). For example, airline companies are increasingly turning to check-in kiosks with the aim of improving productivity and service quality while cutting costs; however, the passenger check-in process differs depending on the check-in mode chosen, the number of bags checked, and the airline that the passenger has chosen to fly on. Check-in kiosks allow passengers to avoid the long lines at ticket counters and to check into their flights at their own convenience. As such, we argue that facilitating conditions should affect passengers' intent to use such kiosks.

To address the above-mentioned research gaps, the goal of this study was to investigate how usefulness, service process fit, and facilitating conditions affect usage behavior of SSTs based on the perspectives of technology acceptance model (TAM) and customer value. Besides, we also incorporated perceived enjoyment as an important moderator in examining its effect in the relationship between behavioral intention to use and actual usage. Perceived enjoyment is an important antecedent to the adoption intention of technology (Lin and Hsieh, 2011; Oghazi et al., 2012); however, technology-based self-service has some obvious advantages over the traditional staff-assisted full service. From a perspective of customer value, consumers seek for an enjoyable and entertaining shopping experience, and in-store kiosks could contribute to such an experience; however, this might only be accomplished if the consumers experience them as easy to use and adding value (Burke, 2002). That is, not all check-in kiosks are successful and not all customers are willing adopters; from the self-service perspective, passengers are in effect co-producers of the service. Thus, we argue that perceived enjoyment moderates the impact of the attribute and attitude variables on intention to adopt check-in kiosks.

The paper is organized as follows. Section 2 reviews the background theoretical foundations from previous literature and then advances a research model and hypotheses. Section 3 details the research method used to test the proposed model and Section 4 presents the analysis and results of this study. Section 5 discusses our research findings, and concludes with limitations, implications, and potential topics for future research.

2. Theoretical background and hypotheses

2.1. Technology acceptance model

Fig. 1 identifies the key constructs and main relationships examined in the study. As shown, usefulness, facilitating conditions, and service process fit are hypothesized to affect customer's behavioral intention to use SSTs, and behavioral intention to use
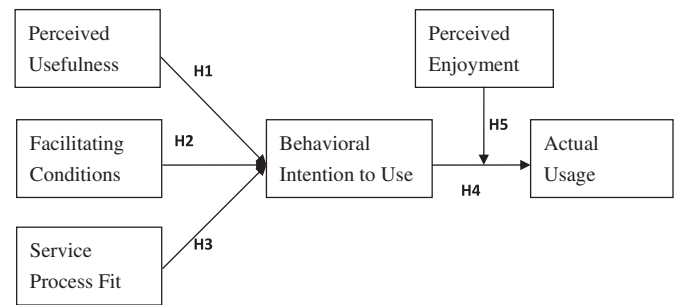

Fig. 1. Research model.

SSTs is hypothesized to affect customer's actual usage toward SSTs. In addition, perceived enjoyment is hypothesized to moderate the association between behavioral intention and actual usage. The following section elaborates on these relationships and explains the theoretical underpinning of these hypotheses.

We have drawn on the widely acknowledged technology acceptance model (TAM) and customer value perspective as two theoretical bases for this study. First, TAM is to provide a general explanation of the determinants of technology acceptance that is capable of explaining user behavior across a broad range of end-user computing technologies. TAM posits that perceived ease of use and perceived usefulness are considered as two predecessors affecting behavioral intention to use that technology, and in turn, leading to its actual use behavior (Davis, 1989; Curran and Meuter, 2005; Lee and Allaway, 2002; Liu et al., 2012; Oghazi et al., 2012). Ease of use refers to the degree to which a person believes that using a particular system would be free of effort. Perceived usefulness refers to the degree to which users perceive a particular system as enhancing their performance (Davis, 1989; Oghazi et al., 2012) and as the basis for predicting end-user acceptance of computer technology. Likewise, perceived usefulness is a key variable in predicting the intention to use a system. In addition, perceived ease of use also influences perceived usefulness (Venkatesh, and Davis, 1996; Venkatesh and Morris, 2000). Following Davis (1989), in the SSTs context, usefulness means that the self-service activity can improve the way in which a task is carried out or be helpful with completing the passenger's tasks (e.g., check-in).

Previous studies have provided evidence of the significant effect of perceived usefulness on behavioral intention to use (e.g., Davis et al., 1989; Venkatesh and Davis, 1996; Venkatesh, 1999; Venkatesh and Morris, 2000; Pikkarainen et al., 2004). In the context of SSTs adoption, when check-in kiosks meet passengers' needs, the passengers are able to enjoy the benefits. Check-in kiosks make it possible for passengers to choose the level of service that they want and to interact with the staff to suit their individual preferences better (Reinders et al., 2008; Correia et al., 2008; Kıyıldı and Karasahin, 2008; Yan et al., 2004). This allows assigning personnel to those phases of the travel experience where personal service is more valued. As such, passengers are more willing to use check-in kiosks when they recognize the pragmatic value based on usefulness. This leads to hypothesis 1.

Hypothesis 1. *The perceived usefulness of an SST is positively associated with the behavioral intention to use that SST.*

2.2. Customer value perspective

TAM has received substantial attention in information systems literature because it focuses on system use, has reliable instruments with excellent measurement properties, is parsimonious, and is empirically sound (Pavlou, 2003). However, TAM is also criticized