



Choosing self-service technologies or interpersonal services—The impact of situational factors and technology-related attitudes

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ABSTRACT

Many companies have introduced self-service technologies (SSTs) although not every customer wants to use or is able to use new technologies. This study aims to explain the actual use of SSTs by analysing a framework based on antecedents derived from the social cognitive theory, such as role clarity, perceived crowdedness, and need for interaction, and technology readiness dimensions.

Survey data were collected from 525 passengers (40% response rate) at a European airport. The passengers choose between a self-service check-in and an interpersonal check-in counter. Perceived crowdedness appears to have the strongest impact on the customers' decision to use SSTs. In addition, need for interaction and role clarity seem to have a significant impact on the actual use of SSTs. The results indicate that technology readiness does not have a significant impact on the use of SSTs. These findings contribute to the domain of knowledge concerning the implementation of SSTs and consumer behaviour, providing important implications for academia and practice.

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1. Introduction

The increasing use of information and communication technologies in the service industry has resulted in a revolution in the interaction between service providers and their customers. Service providers introduce self-service technologies (SSTs) to improve their productivity and efficiency and to serve customers via new channels to increase customer satisfaction and customer loyalty (Meuter et al., 2003). A SST is a technological interface that enables customers to produce goods and services without a direct contact with the service provider (Meuter et al., 2000). Examples of SSTs are: Internet banking, self-scanning possibilities in warehouses and supermarkets, paying bills by mobile phones, the airline check-in via Internet, check-in booths at airports, interactive kiosks, interactive phone/voice systems, ATMs, package tracking, tax preparation software, electronic retailing, and Internet shopping (Lu et al., 2009; Auh et al., 2007; Eriksson and Nilsson, 2007; Liljander et al., 2006; Lin and Hsieh, 2007; Van Beuningen et al., 2009). Customers of service providers become co-producer of such a service.

The most important obstacle for the providers of such SST applications is to trigger customers to try to use such a SST for the

first time (Bitner et al., 2000) otherwise known as the initial trial decision (Meuter et al., 2005).

Despite the rapid increase of the use of SSTs, the literature on the antecedents that influence the use of these SSTs by customers is rather limited (Bolton et al., 2007; Lin and Hsieh, 2007; Meuter et al., 2005). The success of technology-based self-services depends significantly on whether or not customers have the capability to use the new information technology (Wang and Shih, 2009). Parasuraman (2000) introduced the technology-readiness construct, referring to a person's predisposition to use new technologies. The use of SSTs is likely to be influenced by technology readiness (TR), which reflects the consumer mental readiness to accept new technologies (Tsikriktsis, 2004). So far, little academic research has been done on the impact of TR on consumer behaviour (Lin and Hsieh, 2007). In addition, some recent studies show ambiguous relationships between TR and the use and appreciation of SSTs (Liljander et al., 2006; Massey et al., 2005). There are also questions on the impact of situational factors on the actual use of SSTs (Eriksson and Nilsson, 2007; Lin and Hsieh, 2007; Lin et al., 2007). People are driven not only by personal factors (Zhen et al., 2007) but also by situational factors (Oyedele and Simpson, 2007). The actual use of an SST is likely to be impacted positively in a crowded environment (perceived crowdedness; Machleit et al., 2000) and in situations where customers know what is expected from them (role clarity; Lee and Allaway, 2002). The literature provides theories and other contributions to analyse antecedents of usage intentions, usage or satisfaction with SST's (e.g. the technology acceptance model, the

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innovation diffusion theory or the SERVQUAL approach; see for instance Dabholkar (1996), Dabholkar et al. (2003) and Anselmsson (2001)). However, while these contributions include general perceptual variables, this study focuses on individual differences and situational factors.

In addition, research is foremost limited to behavioural intentions, in many cases using student samples (Chen et al., 2009), instead of the actual behaviour of a representative sample of customers that need to make a choice between using a self-service technology or not (Cunningham et al., 2009; Robertson and Shaw, 2009; Meuter et al., 2005; Tsikriktsis, 2004). While most studies try to explain the “intention to use” self-service technologies, we have used a powerful design in a real-life setting in which customers had to make a choice between an interpersonal encounter and a technologically based encounter (i.e. an SST; analogous to Reinders et al., 2008).

The aim of this study is to analyse the effect of attitudes toward technology (technology readiness and need for interaction) and situational factors (perceived crowdedness and role clarity) on the selection behaviour of customers, regarding their actual use of an SST or a traditional service interaction with an employee interaction. We have constructed a theoretical framework that incorporates explanatory factors, from which a number of hypotheses were derived. The hypotheses are tested, using survey data which were collected from passengers of international flights at a Dutch airport. Passengers had the choice between a check-in at the counter and a self-service kiosk.

2. Literature and conceptual model

The development of new technologies has created many new opportunities for companies providing service to their customers. Across industries, companies have extended their range of technologies allowing customers to enjoy services without direct contact with service employees (Lin and Hsieh, 2007). Meuter et al. (2000) defined self-service technology (SST) as technological interfaces that aid users in generating service without direct involvement from the (service) company's employee. Companies have introduced self-service technologies to increase productivity and efficiency (Walker et al., 2002), to lower or avoid high labour costs (Lin and Hsieh, 2007), and/or to offer customers access to services via new and convenient channels (Meuter et al., 2003) aimed at better meeting customer demand and increasing customer satisfaction (Bitner et al., 2002). Currently, there is a wide range of SST alternative available to companies (Meuter et al., 2003).

However, the introduction of an SST does not automatically lead to its usage (Liljander et al., 2006). With most SST options, customers have a choice between an interpersonal and a technologically based encounter (Meuter et al., 2003). Customers' reluctance to adopt SSTs has become a hurdle for companies that try to benefit from their service innovation (Walker et al., 2002). Despite a growing number of publications on the adoption and usage of SSTs, Lin and Hsieh (2007, p. 1599) conclude that there is still very little known about factors influencing customers' (...) usage of SSTs". Some research builds on the original Technology Acceptance Model, providing extensions and adaptations, but still focusing on the central constructs of 'perceived usefulness' and 'perceived ease of use' (e.g. Lu et al., 2009; Kim et al., 2008; Eriksson and Nilsson, 2007). Along the same line, studies have used the concept of Technology Readiness in order to explain the preference of customers to either use a self-service technology or not (e.g. Liljander et al., 2006; Lin and Hsieh, 2007). Other studies have included situational factors, such as waiting time by Simon and Usunier (2007); the complexity of the technology by Simon

Table 1
Variables explaining the decision to use SSTs.

| Variables | Literature | Effect on use SSTs |
|-----------------------|---|--------------------|
| Need for interaction | Dabholkar (1996) and Dabholkar and Bagozzi (2002) | + |
| Innovativeness | Parasuraman (2000) and, Liljander et al. (2006) | + |
| Optimism | Parasuraman (2000) | + |
| Discomfort | Parasuraman (2000) | – |
| Insecurity | Liljander et al. (2006) and Lin and Hsieh (2007) | – |
| Role clarity | Jasmand (2006) and Ho and Yo (2008) | + |
| Perceived crowdedness | Machleit et al. (2000) and Dabholkar and Bagozzi (2002) | + |

and Usunier (2007), and the role clarity of users by Meuter et al. (2005) and a range of customer traits varying from demographics (such as age, gender and education by Meuter et al. (2003) to psychographics, such as self-efficacy by Van Beuningen et al. (2009). The purpose of this study is to build on this (rather limited) prior research, combining insights and assumptions concerning factors that might stimulate or hinder the actual usage of SSTs (Table 1).

Many studies are grounded in the original Technology Acceptance Model, as introduced by Davis (1989), focussing on the adoption of customer interface technologies and service technology innovations (Simon and Usunier, 2007). In this study, the focus is not on the attributes of an automated interface, impacting the actual usage of an SST. This research centres on the differences between customers who chose an SST and customers who prefer the service provided by employees. The starting point is that customers have a choice. The study is focused on services for which both personnel-in contact and service technology are service options. In our search for explanatory variables we have used the concept of Technology Readiness. Parasuraman (2000, p. 308) defined Technology Readiness as the “people's propensity to embrace and use new technologies for accomplishing goals in home life and at work”. The construct refers to a person's predisposition to use new technologies. Technology Readiness comprises four dimensions: Innovativeness, Optimism, Discomfort and Insecurity (Lin and Hsieh, 2007; Tsikriktsis, 2004; Parasuraman, 2000). *Innovativeness* is the tendency to be a technologically pioneering and thought leader (Parasuraman, 2000). The innovativeness-dimension of TR is a general, not a domain-specific form of innovativeness (Liljander et al., 2006). *Optimism* relates to having a positive view of technology in general. The optimism-dimension includes customer beliefs on control, flexibility and efficiency (Parasuraman, 2000). *Discomfort* has been described as the perceived lack of control over technology and a feeling of being overwhelmed by technology (Parasuraman, 2000). The concept of technological anxiety (i.e. Meuter et al., 2003) parallels the discomfort-dimension in that it refers to a person's negative state of mind about technology tools. However, discomfort focuses on a general perceived lack of control, while technological anxiety focuses on the ability and willingness to use technology-related tools (Meuter et al., 2003). *Insecurity* refers to the distrust of technology and scepticism about its ability to work properly (Lin and Hsieh, 2007). The lower the expected benefits of an innovation, the higher the resistance to implement the innovation (Liljander et al., 2006). The dimensions Innovativeness and Optimism are assumed to have a positive relationship with technology acceptance; Discomfort and Insecurity a negative relationship, hence,

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