

Technology readiness and the evaluation and adoption of self-service technologies

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Abstract

As companies struggle to persuade their customers to adopt new self-service technologies (SSTs), it has become increasingly important to understand the factors affecting customers' attitudes towards these SSTs and their adoption behaviour. Technology readiness (TR), i.e. the customer's mental readiness to accept new technologies, has been proposed as such a factor. TR comprises four dimensions: innovativeness, optimism, discomfort and insecurity. This article investigates the effects of TR on customers' (1) attitudes towards using SST for airline check-in, (2) adoption of self-service check-in, and (3) evaluations of a new self-service check-in on the Internet, in terms of perceived service quality, satisfaction and loyalty. An empirical study was conducted among loyalty program customers of a European airline, having access to Internet check-in. Data were collected with online and traditional mail surveys, resulting in 1258 usable responses. Analysis of the data revealed that only optimism and innovativeness formed unique individual dimensions. Furthermore, TR had surprisingly little impact on customer attitudes towards SST, on adoption behaviour, and on SST evaluations. Optimism explained consumer behaviour towards SSTs best, whereas innovativeness had only a marginal effect on attitudes towards using the Internet or a mobile phone to check-in. The article concludes with a discussion of the validity of the TR construct and suggestions for future research. Managerial implications are provided.

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1. Introduction

The growing use of information and communication technology (ICT) in services has revolutionized the interactions between service providers and customers, and increased the standardisation of many services. This development makes the old adage of services being characterised by frequent customer–employee interaction, high service variability and high costs of serving customers less true today than 10–20 years ago

(Lovelock and Gummesson, 2004). Service providers introduce self-service technologies (SSTs) to increase productivity and efficiency (Walker et al., 2002; Zeithaml and Gilly, 1987), and to offer customers access to services via new and convenient channels (Meuter et al., 2003), thereby better meeting customer demand and increasing satisfaction (Bitner et al., 2002). Some SSTs, such as online banking, electronic retailing, scanning purchases in supermarkets, and paying public transportation tickets by mobile phone are indeed popular among consumers.

However, the introduction of an SST does not automatically lead to its usage, which can be an issue in technology markets where the law of critical mass applies (Parasuraman and Colby, 2001). Many technological innovations are radical or really new to

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customers (Garcia and Calantone, 2002), and cause apprehension in those who lack sufficient experience with the technology. Customers' reluctance to adopt SSTs has become a hurdle for companies that want the full cost benefits of technological service innovations. Therefore it is crucial to improve our knowledge on factors affecting customers' willingness to adopt new technologies (Walker et al., 2002).

Personality traits have been proposed to affect customer adoption of SSTs (Dabholkar and Bagozzi, 2002; Susskind, 2004). Technology readiness (TR), i.e. customers' mental readiness to accept new technologies can be considered such a factor (Parasuraman, 2000). So far, the TR instrument has been used to compare consumers in different countries (Parasuraman, 2000; Parasuraman et al., 2004; Tsikriktsis, 2004), to understand the TR of service employees (Taylor et al., 2002), and to explain the relationships between perceived ease of use, usefulness and behavioural intentions (Yi et al., 2003). It should, however, be tested in other contexts as well. In his seminal article, Parasuraman (2000) calls for further research on the TR of customers of different companies and the effect that TR of the customers has on the firm, such as its impact on customer satisfaction. The present study addresses these issues by investigating the impact of TR on customers' (1) *attitude* towards using SSTs, (2) *adoption* of SSTs, i.e. actual usage and (3) response to the firm in terms of perceived service quality, satisfaction and loyalty to an SST. The empirical context of the study is airline check-in services. Airlines are looking for new ways to cut operating costs, and the introduction of self-service forms an important item on their agenda.

First, we review literature on the TR construct and develop propositions to be tested in an empirical study. Second, the empirical context of airline check-in and the data collection methods are discussed. The propositions are then tested with empirical data from customers of a European airline. The article rounds up with a conclusion, managerial implications and a discussion of limitations and directions for further research.

1.1. Technology readiness

Customers' innovation adoption behaviour and the diffusion of innovations have intrigued researchers for decades. In recent years this interest has turned towards SSTs, particularly online services. Studies have addressed determinants of adopting the Internet and the World Wide Web (Lederer et al., 2000; Moon and Kim, 2001; Morris and Turner, 2001), electronic commerce (Gefen and Straub, 2000; Hui and Wan, 2004; Reibstein, 2002; Wolfenbarger and Gilly, 2001), scanner check-out (Anselmsson, 2001; Dabholkar et al., 2003), handheld devices (Bruner II and Kumar, 2005), different SSTs (Meuter et al., 2005; Meuter et al., 2003), and

particularly online banking (e.g. Curran et al., 2003). Predictors of service acceptance or adoption have included, for example, service quality, ease of use and usefulness (from the Technology Acceptance Model, TAM) (Davis et al., 1989), innovation characteristics and individual differences. Though each study has contributed to our understanding of customer adoption of SSTs, they also demonstrate the complexity of the subject. It is beyond the scope of this study to review all findings on the number of predictor variables that have been tested in past studies. Instead, we will introduce the focal construct of this study, TR, on which few studies exist so far.

In addition to factors found in past research, TR has been proposed as a factor that fosters or hinders the adoption of new technologies. So far, empirical research to back up this claim is scarce. TR is defined as "people's propensity to embrace and use new technologies for accomplishing goals in home life and at work" (Parasuraman 2000, p. 308). It is a state of mind, resulting from "mental enablers and inhibitors that collectively determine a person's predisposition to use new technologies." Technologies can evoke feelings of anxiety (Meuter et al., 2003; Venkatesh, 2000), as well as of fun (Agarwal and Karahanna, 2000), that directly or indirectly affect customers' beliefs of and behaviour towards technologies. Although feelings of different valence may coexist in a person, Parasuraman (2000) suggests that either negative or positive feelings towards technology will dominate in each individual. As a result of extensive empirical investigations, four dimensions of TR are proposed: discomfort, insecurity, optimism, and innovativeness.

Discomfort is described as the perceived lack of control and a feeling of being overwhelmed by technology (Parasuraman, 2000). Some of the proposed items are similar to the variables used by Meuter et al. (2003) to study customers' technology anxiety. Meuter et al. (2003) demonstrate that technology anxiety not only has a strong negative effect on customer adoption of SSTs, but that it also has a negative effect on their experience of using SSTs. Similarly, Compeau et al. (1999) found that perceived anxiety towards computers and their reported use were negatively related, whereas Susskind (2004) showed that apprehensiveness towards the Internet had a negative impact on time spent online. Although there appear to be similarities between the TR constructs of discomfort and technology anxiety, Meuter and colleagues in an earlier work (Meuter et al., 2003) conclude that they are different constructs, while making no such distinction in a later article (Meuter et al., 2005). However, social anxiety (Dabholkar and Bagozzi, 2002) is clearly distinct from the TR construct of discomfort. Although social anxiety may cause a feeling of lack of control, anxiety is related to the discomfort of how other people view the

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