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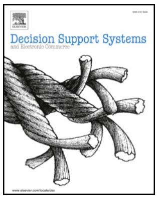

How self-service technology experience evaluation affects waiting time and customer satisfaction? A moderated mediation model

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ABSTRACT

The effects of increasingly ubiquitous self-service technologies (SSTs) on customer satisfaction are ambivalent and poorly understood. In the retail sector, such technologies often provide decision support as main purpose (information terminals) or side effect (self-scanning). This research investigates how SST experience evaluation affects customer satisfaction with the store indirectly, through the mediation of waiting time satisfaction and satisfaction with SSTs, as well as whether the SST type moderates these processes. Satisfaction with SSTs strongly mediates the effect of SST experience evaluation on store satisfaction; both cognitive and affective waiting time satisfaction also mediate the relationship between SST experience evaluation and satisfaction with SSTs. These effects differ across SST types: The mediation of satisfaction with SSTs on the SST experience evaluation–store satisfaction link is stronger for less interactive technologies (self-checkout), whereas the mediating influence of affective waiting time satisfaction on the SST experience evaluation–satisfaction with SSTs relationship is stronger for more interactive technologies with supplementary decision support functions (self-scanning). If retailers or service providers aim to strengthen the link between SST experience and SST satisfaction via perceived waiting time, they should therefore consider to increase interactivity of SSTs by integrating interactive decision support functions (even if decision support is not the main purpose of the SST).

1. Introduction

Progress in information technology (IT) and information systems (IS) provides firms with more options for replacing or supplementing personal service provision with self-service technologies (SST). Many of these technologies provide decision support to consumers either as main purpose (apps, information terminals) or as a side effect (self-scanning). Self-scanning, for example, allows customers check product information by scanning barcodes, although the main purpose of this technology is increasing checkout efficiency. Other technologies mostly focus on efficiency gains without providing major decision support (simple self-checkout).

Investments in these technologies pay off, when customers decide to adopt the technology, when the technology provides a positive customer experience, when this experience results in satisfaction with the technology and when this effect spills over to the company. However, previous research mostly focusses on theories explaining IT adoption [22,59,60]. Accordingly, research on SST also mostly focuses influencing factors of initial technology acceptance [14,16,35,38,62]. In contrast, less research in the IS [51,70] and SST literature [13,62,64] addressed post usage behavior. Bhattacherjee [4–6] drew attention to the role of usage satisfaction as a determinant of IT continued use. However, the role of satisfaction in this process is still not completely understood. This holds in particular for the role of customer instore experience with the technology and possible spillover effects from satisfaction with the technology to satisfaction with the retailer.

In retail or service contexts, perceived waiting time plays an important role in understanding the relationship between technology experience and satisfaction, as technology usage can influence time perception [64]. Waiting time is an important issue for retailers, as it is one of the most common customer complaints [8] and has an impact on the intention to use SSTs [15,41]. Previous research mostly considers speed and time savings as extrinsic benefits of these IT [40], while it focuses less on the role of waiting time satisfaction as an outcome of SST usage

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and influencing factor of satisfaction with the technology.

Furthermore, effects of technology usage experience may depend on the level of interactivity of the technology. Verhoef et al. [61] distinguish "passive" SSTs that provide appropriate information without customer interaction with the technology and SSTs, which require more active customer participation. Technologies with decision support features (e.g. self-scanning), are for example more interactive than technologies without (e.g. self-checkout). Customers using interactive technologies may attribute a positive experience more to themselves than to the firm, which has consequences on satisfaction [36,56]. Furthermore, using interactive technologies can fill time and thus influence the effect of waiting [54]. However, little is known about these differences, as most previous research has focused on single technologies [16,35].

Summing up, this research addresses the gaps mentioned above in three ways:

- First, it investigates how technology experience evaluation affects customer satisfaction with the technology and the store.
- Second, it analyzes the mediating influences of cognitive and affective waiting time satisfaction as consequences of technology experience.
- Third, it studies the moderation effect of technology types with different levels of interactivity and decision support.

This research thus brings three new contributions to IS research. First, it focuses particularly on technology experience evaluation as a main driver of satisfaction with the technology, rather than perceptions of technology attributes [62] or perceived quality [46]. It therefore follows Bhattacherjee [5], who highlighted the role of satisfaction for understanding post usage behavior. Second, it includes waiting time satisfaction as a critical mediator. Rare IS research examines time perception as an outcome of technology use [64].Third, it analyzes two kinds of SSTs in retail service settings (self-scanning and self-checkout) and it clarifies their moderating effects on the proposed mediated relationships. These two SST types serve a similar purpose (speed up the shopping trip) but feature different levels of interaction with the technology and decision support to customers.

In the next section, we review the literature related to technology experience and waiting time, then develop a series of hypotheses. After we present the survey procedure and measures, we detail the results. Finally, we discuss some theoretical and practical implications of this research and note some limitations and avenues for further studies.

2. Theoretical and conceptual framework

2.1. Theoretical background

As we focus on two different IT systems which are two SSTs (self-scanning and self-checkout), we use the term SST instead of IT or IS when developing our framework. However, in most cases theses terms can be used synonymously.

2.1.1. SST experience evaluation

Also known as technology-based self-service [14], SSTs are IT artifacts [68] or customer self-service IS [30] that refer to "technological interfaces that enable customers to produce a service independent of direct service employee involvement" [41] [p.50]. By using these systems, the consumer interacts with the technology to perform the service, without having contact with service personnel, so that she or he becomes a partial employee [43]. The introduction of SSTs systems to services places responsibility on the customer [12] by creating inseparability between the customer and the technology [49]. That is, SST changes the way the service is organized and delivered [39], implying a new customer experience [27,30]. If consumers evaluate a SST experience favorable or unfavorable depends on the value that this experience generates. SST use experience may provide customers with utilitarian (e.g. efficiency, speed) or non-utilitarian value (emotional aspects) [38]. Use experiences can be good or bad, positive or negative [30]. In performing the service, the customer might evaluate SST use as a form of freedom or source of pleasure, enjoyment, autonomy, control, and independence [15,41]. Alternatively, experience with a SST may be evaluated as bad, stressful and unpleasant, especially if the consumer is not comfortable with technologies and their use [12], the use of SSTs is perceived as difficult, or the system fails or takes too much time [25].

2.1.2. Waiting time

For services for which customers are physically present, waiting is intrinsic to the service experience [58]. Waiting generally is regarded as an undesirable activity that customers must undertake to complete the service [55]. Waiting can lead to both emotional (anger, irritation, frustration) and behavioral (e.g., abandonment) responses, especially when it is costly and limits the person's ability to engage in more productive or rewarding ways to spend time [18]. Therefore, firms try to decrease actual, objective waiting time [31], such as by expanding its capacity with additional checkout equipment and personnel. Yet, these effects are limited by unmanageable factors such as physical space limits or customer traffic during rush hours [8,55]. Because it is economically and logistically infeasible to eliminate waiting, a complementary alternative seeks to manage customers' perceptions of waiting [18,31], which can be radically different from objective or clocked time [21]. Such efforts do not necessarily affect the actual time spent waiting, but they make waiting seem fun or entertaining [55].

In line with Oliver [44,45], waiting time satisfaction is a post-experience, judgmental evaluation with both cognitive and affective aspects [19]. The cognitive component pertains to consumers' perception of the waiting time as acceptable, reasonable, and tolerable [19], as well as short or long [48]. The affective component instead reflects emotional reactions to the wait, such as irritation, boredom, frustration, anger, or stress [29,54], which tend to arise because customers perceive waiting as a waste of time, unproductive, or valueless [58]. Waiting satisfaction in turn strongly affects service evaluations and satisfaction [28,54]. Therefore, we contribute to the literature by understanding the role of waiting time satisfaction when using SST.

2.1.3. Customer satisfaction

Customer satisfaction corresponds to an evaluation of whether a product or service has met the person's needs and expectations [69]. It also has an affective dimension [66], related to the customer's judgment about whether the product or service provides a pleasurable level of consumption-related fulfillment [45]. Customer satisfaction occupies a central position in marketing research and in organizations, because it is an important driver of re-patronage, loyalty and positive word-of-mouth behaviors [44,45] and of firm's performance [2].

In the domain of information systems, customer satisfaction is a key driver of system continuance intention [4,5] and behavior [6]. In the context of service IT, customer satisfaction may be identified by two dimensions: satisfaction with the service provider and satisfaction with the system or the technology itself [52,68]. As highlighted by Song et al. [52], service-related satisfaction (here satisfaction with the store) reflects the users' feelings about his/her interaction with the service which includes multiple instances (e.g. product assortment, service quality, security, etc.). The satisfaction toward the SST stems from the customers' evaluation of the SST use. The satisfaction with the SST itself may be an important determinant of user satisfaction with the service. Therefore, it is important to differentiate the two kinds of satisfaction.

Most previous research in information systems and SSTs field has essentially focused on one or the other of the both kinds of customer satisfaction. For example, Xu et al. [68] show the influence of utilitarian and hedonic benefits on customer satisfaction with the experience of using a mobile application. Our research extends their work by integrating service-related satisfaction to provide further insights.

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