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The impact of basic human needs on the use of retailing self-service technologies: A study of self-determination theory



Larry Sau Kei Leung*, Margaret J. Matanda

Department of Marketing, Monash University, Caulfield, Melbourne 3000, Australia

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ABSTRACT

Self-service technologies (SSTs) are becoming increasingly popular in retailing contexts. Previous theories of SST adoption have largely ignored the basic human needs, such as competence, autonomy and relatedness, that drive customer motivation and the use of SSTs. We address this theoretical gap and examine self-determination theory (SDT) in the context of the supermarket self-checkout. Based on the argument proposed by SDT, self-determined motivation is hypothesized to mediate the relationships between autonomy, competence, and perceived anonymity, and the intention to use SSTs. Data collected from 361 respondents form a structural equation model and support these hypotheses. The current study is important as it helps understand the role of customers' participation in the self-service. Managerial and theoretical implications are suggested.

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1. Introduction

One of the fastest-growing business phenomena in the past decade has been the adoption of self-service technologies (SSTs) in retailing. SSTs are defined as “technological interfaces that enable customers to produce a service independent of direct service employee involvement” (Meuter et al., 2000, p. 50). The increased presence of technology-mediated interactions in retailing is evidenced by the emergence of new technology-enabled shopping modes in both offline and online retailing contexts (Verhoef et al., 2009). These SSTs have radically changed the way businesses interact with customers, as the latter have increasingly become co-producers of services (Ho and Ko, 2008; Meuter et al., 2000). This changing customer role frequently requires customers to engage in new behavior (Meuter et al., 2005).

SSTs provide many benefits to businesses. For example, they help businesses serve more customers at higher speeds with fewer resources, thus reducing costs because employees can be replaced by SSTs (Yang and Klassen, 2008). SSTs also help businesses to reduce costs in training, real estate, equipment, and communication (Canbase, 2009; Hall, 2004). In the retail industry, SSTs have helped grocery stores cut costs and reduce head count; four self-

service registers can reduce the number of service staff from four to one (Rosen, 2001). By eliminating the involvement of service representatives with SSTs, companies can offer cost-effective services (Cunningham et al., 2008) and enhance store patronage (Lee and Yang, 2013). SSTs also offer more consistent and stable services and are not affected by fluctuations of service demand or employee mood (Weijters et al., 2007). The literature indicates that SSTs can also increase customers' satisfaction and loyalty and can enable a company to effectively reach new customer segments (Bitner et al., 2002). In addition to improving efficiency, SSTs can empower both customers and employees (Hsieh, 2005) as they add customer value by increasing place and time convenience (Yang and Klassen, 2008).

Because SSTs are important to businesses, supermarkets have increasingly deployed self-checkout systems. For example, one of Ireland's most widely recognised supermarkets Superquinn deployed self-checkout systems in its 19 stores in 2007 (NCR, 2007). High street supermarket chain Spar in the UK installed self-checkout in its 2700 stores in 2009 (Green, 2009). In Australia, Woolworths and Coles installed 3000 self-service checkouts in 500 and 545 stores in 2012 (Silmalis, 2013). In 2013, 40% of transactions were handled by self-checkouts at Coles (Chieftech, 2013). The number of customers using self-checkout machines is also growing. In the U.S., more than 80% of consumers said they would be likely or very likely to use self-checkouts, and 40% of consumers said they were more likely to shop in stores equipped with self-checkout systems (Patterson, 2004). In a survey of 350 consumers (Maras, 2006), 94% of the respondents said that they

* Corresponding author at: Postal address: Room 1104, Crawford House, 70 Queen's Road Central, Central, Hong Kong. Tel.: +852 242 340 95; fax: +852 301 15 240.

E-mail addresses: larryleung@meteacher.com, skleung@monash.edu (L.S.K. Leung)

had used a self-checkout scanner at least once, and 27% of the respondents reported that they used self-checkout scanners 70% of the time to process their checkouts.

As customers increasingly accept self-checkout machines, it is essential for firms to identify ways to enhance the use of SSTs among customers to make such investments worthwhile. Customers must know what is expected of them and must be motivated and able to use SSTs to successfully coproduce a service/product (Dellande et al., 2004; Meuter et al., 2005). However, current theories of technology adoption have vastly ignored the role of customers' participation in the self-service. To fill this theoretical gap, we examine self-determination theory in an SST context and investigate how basic human needs such as autonomy, competence, and perceived anonymity drive customers' intentions to use SSTs. The current study is important as it helps clarify the role of customers' participation in the self-service in terms of basic human needs. The following sections present current theories of technology adoption, the self-determination theory, basic human needs, hypotheses and the conceptual model.

2. Theories of technology adoption

The earliest attempt to predict behavioral intentions to use technology is the theory of reasoned action (TRA) (Fishbein and Ajzen, 1975). The TRA suggests that attitude toward a specific behavior and subjective norms can predict behavioral intentions. However, the predictability of the TRA is reduced when the studied behavior is not under volitional control (i.e., behavior over which the individual does not have full control) (Gentry and Calantone, 2002). Thus, the theory of planned behavior (TPB) was subsequently proposed (Ajzen, 1991). The TPB is an extension of the TRA model that add perceived behavioral control as an additional construct to better predict human behavioral intentions and behavior (Ajzen, 1991). The TPB has been found to be capable of predicting behavioral intentions and behavior in various situations (Mathieson, 1991; Quelch and Klein, 1996). The TPB has better predictability for behavioral intention than the TRA does, but another model, called the technology acceptance model (TAM), shows better predictability of behavioral intentions in the context of technology (Gentry and Calantone, 2002). The TAM explains the effect of external variables (perceived usefulness and perceived ease of use) on users' acceptance of PC-based applications (Davis, 1989). In contrast, the innovations of diffusion theory (IDT) (Rogers, 2003) explains the process by which innovations and ideas become diffused and adopted by wider social networks. Diffusion refers to the process by which an innovation is communicated among the members of a social system through different channels (Rogers, 2003). The IDT posits that there are four elements in the diffusion process: (a) the innovation, (b) the communication channels through which the innovation is diffused, (c) time, and (d) the social system (Rogers, 2003). The characteristics of the innovation, the communication channels, and the social system are likely to have varying influences at different times throughout the diffusion process (Rogers, 2003).

Although the TAM and the IDT are capable of predicting technology adoption, these theories emphasize customers as passive audiences driven by the features of technology, communication channels, time and social systems. However, customers are actually 'customizing consumers' and co-producers (Bendapudi and Leone, 2003) who are able to customize the consumption experience for themselves (Firat et al., 1995). Therefore, firms must also understand the roles of customers' participation in the service and must use their talents to improve their competitiveness in the market (Lengnick-Hall, 1996). However, theories capable of explaining customers' psychological responses to the use of SSTs have been ignored in the previous literature.

Self-determination theory (SDT) is a motivational theory that explains how humans achieve their goals or perform activities according to their psychological or cognitive responses. In terms of SDT, these psychological or cognitive responses constitute different forms of motivation on a continuum (Deci and Ryan, 1991). SDT does not define instrumental rewards, such as money or food, as extrinsic motivation. Instead, it respects humans as individuals who actively interact with their environment. Extrinsic motivations are psychological or cognitive responses that are regulated by different levels of a sense of choice or volition or by coerced interpersonal or intra-psychic forces (Deci and Ryan, 2000a).

Extrinsic motivations comprise two forms of motivation, controlled and autonomous (Deci and Ryan, 1991). When behavior is not highly controlled or regulated by intrinsic reasons, such as a sense of choice or volition, motivation is said to be autonomous or self-determined. By contrast, when behavior is regulated by external reasons, such as coerced interpersonal or intra-psychic forces, motivation is regarded as controlled or less self-determined (Deci and Ryan, 2000b). Controlled and autonomous motivations do not exist in single forms. Controlled motivation comprises both external and introjected motivations, and autonomous motivation comprises identified and integrated motivations (Deci and Ryan, 2000b). External motivation refers to behavior regulated by tangible and intangible rewards or punishment (Deci and Ryan, 2000b). Introjected motivation refers to behavior regulated by contingent consequences that are internal to individuals (Deci and Ryan, 2000b). Identified motivation presents when the underlying value of an individual's behavior is accepted and recognized (Deci and Ryan, 2000b). Integrated motivation presents when an individual's behavior is internalized, consistent and fully integrated within his/her sense of self (Deci and Ryan, 2000b). Extrinsic and intrinsic motivation are inter-related (Deci and Ryan, 2000a), as shown in Fig. 1. Intrinsic motivation refers to behavior that is initiated for an individual's own sake and leads to interest and excitement. When extrinsic motivation is autonomous, it is closely related to intrinsic motivation (Deci and Ryan, 1991). Amotivated individuals are those who are not motivated at all; amotivation is thus the farthest type from intrinsic motivation. Human behavior is driven by different forms and combinations of these forms of motivation (Deci and Ryan, 2000a). When motivation is more self-determined, behavior is more internalized (Deci and Ryan, 2000b). The combined form is referred to as self-determined motivation. SDT posits that human behavior is driven by different levels of self-determined motivation (Deci and Ryan, 2000a).

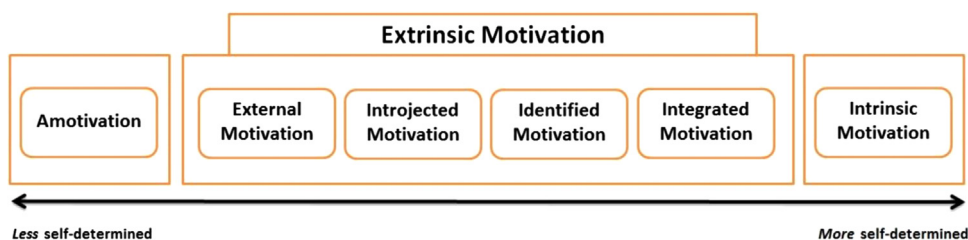


Fig. 1. Continuum of extrinsic and intrinsic motivation.

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