



# Supermarket self-checkout service quality, customer satisfaction, and loyalty: Empirical evidence from an emerging market



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## ABSTRACT

Supermarket shoppers around the world are increasingly encountering and using self-service technologies (SSTs) during their shopping process. The SSTs are mainly offered to reduce retailer costs and enhance customer's experience. Among the many different SSTs available, self-checkout systems (SCS) have become an extremely popular choice of supermarkets around the world. Although some of the main motivations of the supermarkets for offering SCSs are cost cutting, speed, and convenience, supermarkets are also assuming that these services would enhance customer experience, satisfaction, and ultimately loyalty. However, empirical evidence is needed to better understand customer expectations of SCS service quality and how technology based service quality impacts retail patronage. Therefore, the purpose of this research is to examine the service quality of supermarket/grocery store SCSs and its impact on customer satisfaction and loyalty in an emerging market, namely Turkey. Using the SSTQUAL scale (Lin and Hsieh, 2011), data ( $n=275$ ) for the study is collected from shoppers who had just completed going through the self-checkout counter in a large supermarket chain. The results of this study show that SCS service quality positively influences loyalty through the customer satisfaction path. Managerial and research implications of the findings are discussed.

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## 1. Introduction

Rapid advances in technology are significantly influencing how retailers deliver their functions and stay competitive in the globalized markets. These technological advancements are dramatically altering the way consumers interact with retailers and how retailers communicate with their customers. To reduce cost, increase value, and improve customer satisfaction, retailers are adopting a variety of self-service technologies (SSTs) at an increasing rate. According to a survey conducted by the Food Marketing Institute (FMI), while only six percent of the supermarkets in the USA had offered self-checkout lanes in 1999, that share has jumped to thirty-five percent in 2003 (Grimes, 2004), and reached to nearly ninety-five percent in 2007. Furthermore, a recent IHL report shows that approximately 15–40% of all daily transaction value and 12–30% of the daily dollar value of supermarkets (Kroger, Albertson's and others) are being handled by self-checkouts (Holmen and Buzek, 2012). Similar trends are developing in other countries as well. For instance, the NCR Corporation

reported that self-checkouts were introduced to Turkish consumers in five grocery stores for the first time in Turkey in 1999 (NCR, 2001). Turkey mirrored the strategy employed in the US by first introducing self-checkouts in supermarkets but unlike in the US where self-scanning initially failed (Dabholkar et al., 2003), shoppers in Turkey quickly became accustomed to the new system (NCR, 2001). Since then, the self-checkout use in the supermarkets has been increasing and approximately 107 supermarkets currently offer self-checkout service in Turkey.

Although the retailers have been using SSTs for a while and interest in the SSTs is not a new concept, the measurement and evaluation of the value of SSTs are becoming increasingly more important as the retailers expand their offerings and more and more customers utilize such services. A recent survey conducted for NCR shows that almost half of the shoppers under the age of 45 prefer to use self-services in supermarkets (Giesen, 2012). While retailers are motivated by cost reductions, efficiency, flexibility, productivity and improved corporate performance when adopting SSTs (Lee et al., 2009; Bitner et al., 2002), it is imperative to examine the customers' shopping experiences and service quality expectations of self-checkout systems' (SCS) in order to accomplish improved retailer service performance, customer satisfaction and loyalty.

A considerable amount of previous research has studied the importance of service quality on customer satisfaction and loyalty

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using established measurement scales such as SERVQUAL (Parasuraman et al., 1988). Also, the existing research on the measurement of the service quality of SSTs has generally focused on e-services and much less research attempts have been made to examine the measurement of SCS service quality and its impact on customer satisfaction and loyalty. Moreover, most of the previous research has focused on assessing service quality as a global measure of the firm's offerings; we argue that service quality assessments should have a narrower focus for different micro-levels within an organization because of the unique nature of different service offerings. Focusing research attention to service quality of the newly adopted systems, such as SCSs, in a retail organization then becomes crucial because such emphasis will not only contribute to the systemic quality improvements for other offerings of the retailer but also contribute to a management culture that accepts the improvements in service quality as a long-term continuous process and its importance as a key element for the success of the entire organization. We argue that the role of service quality delivered by SCSs should be investigated to understand its influence on consumers' patronage intentions towards retailers as a whole. Therefore, rather than simply examining consumers' acceptance of or satisfactions/dissatisfactions with the SCSs, the purpose of this research is to examine the service quality of supermarket/grocery store SCSs and its impact on customer satisfaction and loyalty in an emerging market, namely Turkey. We first provide a brief synthesis of the service quality literature in general on key conceptual issues. We then focus on the current attempts made to measure service quality in SSTs and more particularly in SCSs. Next, we present our conceptualized model with respect to the role of service quality on loyalty. Finally, we present the results of quantitative analyses and offer explanations of the study's findings.

## 2. Literature review

### 2.1. An overview of service quality

Since the seminal article of Parasuraman et al. (1988) that offered a structure to the concept and measurement of service quality, a number of studies have sought to examine the service quality construct more closely. For the last three decades, debates have raged about the dimensions and measures of service quality, about whether contexts (industry) and type of services have any influence on service quality perceptions, whether service quality ought to be assessed at the encounter level or more generally, or how cultures influence and modify the effects of service quality (Bitner, 1995; Carman, 1990; Cronin and Taylor, 1992; Furrer et al., 2002; Teas, 1993; Zeithaml and Bitner, 2003). Such debates have significantly enriched the literature on the subject and may have even contributed to the evolution of a “service-dominant (S-D)

logic” that argues for the centrality of service as the value creating activity that drives marketing exchanges (Vargo and Lusch, 2008).

Traditionally, service quality has been conceptualized as the difference between customer expectations of a service to be received, and perceptions of the actual service received (Grönroos, 2001; Parasuraman et al., 1988). Parasuraman et al. (1988) conceptualized service quality as a construct with five dimensions (*reliability, responsiveness, assurance, empathy and tangibles*) and the SERVQUAL scale was offered to measure service quality in face-to-face service encounters. Although it has been a very popular measure to use, SERVQUAL has also been criticized for its weaknesses and practical applications (Cronin and Taylor, 1992). Carman (1990) argued that there is little theoretical support with regards to the relevance of service expectations–performance gap as a basis of measuring service quality. Also, other researchers argued that there might be a possibility of existence of up to 9 dimensions of service quality depending on the type of service sector under investigation. Similar criticism was also raised by several other researchers (Cronin and Taylor, 1992; Babakus and Boller, 1992; Teas, 1993; Brown et al., 1993). Cronin and Taylor (1992) argued that the conceptualization and operationalization of SERVQUAL was inadequate and cited relevant marketing literature (Bolton and Drew, 1991; Churchill and Surprenant, 1982; Woodruff et al., 1983) supporting simple performance-based measures of service quality. As a result, Cronin and Taylor (1992) offered their version of perceived service quality model (SERVPERF), which takes into account the customer's perception of the quality of the service provided. The SERVPERF scale has since been frequently used to measure service quality in several studies (Bloemer et al., 1999; Vanniarajan and Anbazhagan, 2007; Athanassopoulos et al., 2000).

### 2.2. Service quality of SSTs

SSTs may be defined as “...technological interfaces that enable customers to produce a service independent of direct service employee involvement” (Meuter et al., 2000, p. 50). The retailers provide SSTs to enhance consumers' experience, reduce employee related expenses, achieve customer retention, and keep up with the technological advancements. A range of service delivery points such as ATMs, automated hotel checkouts, Internet services (such as banking over the Internet), self-service kiosks (digital photo kiosks, information kiosks, interactive music and movie samplers, and electronic kiosks for gifts), grocery self-checkout lanes and pay-at-pump gas stations incorporate technology to provide their service to the consumer. The adoption of SSTs has been following an evolution process which is illustrated in Table 1. This table shows Fitzsimmons' (2003) concept of the ‘evolution of self-service’ stages from the original ‘face-to-face’ service encounter to the current trend for a service encounter that is facilitated by technology.

**Table 1**  
Evolution of self-service.  
Source: Fitzsimmons (2003, p. 444).

Service industry	Human contact	Machine assisted service	Electronic service
Retail banking	Teller	ATM	Online banking
Grocery	Checkout clerk	Self-checkout station	Online order/pickup
Airline	Ticket agent	Check-in kiosk	Print boarding pass
Restaurants	Waiting staff	Vending machine	Online order/delivery
Movie theater	Ticket sales	Kiosk ticketing	Pay-per-view
Book store	Shop assistant	Stock-availability terminal	Online ordering
Education	Teacher	Computer tutorial	Distance learning
Retail store	Checkout clerk	Self-checkout station	Online shopping

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