

Does self-scanning improve the productivity of grocery stores?

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Abstract

Technological advancements in the retail sector have substantially increased the scale and scope of customers performing services themselves. Examples of such self-service implementations is provided for numerous retail industries, such as bank transactions through automatic teller machines, shopping via Internet, buying tickets through kiosques, self check-in at airports, checking out from hotel rooms through Interactive TV, using self-scanning systems in libraries and retail stores etc.

The common ground for these phenomena is that services traditionally performed by employees of the seller are moved to the customers of the seller. The phenomenon is fairly recently introduced in business as well as the academia, and has created interest both from business practitioners and researchers.

A research area comprising the effects of such technological service solutions is referred to as technology-based self-service (TBSS) or self-service technology (SST) has therefore been brought about. The research has its origin in studies by Dabholkar (1994) and Meuter et al. (2000), who developed concept- and classification schemes for the research area. The main part of empirical studies have taken a consumer perspective of SST, focusing on: (1) studies referring to adoption behaviors of consumers (Bateson 1985; Bobbitt and Dabholkar 2001; Dabholkar 1996; Dabholkar and Bagozzi 2002; Dabholkar et al. 2003; Lee and Allaway 2002; Meuter et al. 2005) and (2) issues referring to service quality and customer satisfaction (Anselmsson 2001; Dabholkar 1996; Meuter et al. 2000). Most SST research has maintained the perspective of consumers, while the retailer's perspective and the impact of SST on the economic performance of retailers has been investigated to less extent. To the best of my knowledge, the study outlined in this extended abstract is the first taking an explicit perspective of the impact of SST, in terms of self-scanning in grocery stores, on productivity on the store level.

However, it should be recognized that there are studies having suggested that implementing SST could improve productivity and ultimately contribute to bottom-line profits for companies implementing SST (Lovelock and Young 1979; Ojasalo 1999). Lovelock and

Young (1979) were among the first to introduce customer co-production in a business performance context, and suggest that customers may be vital contributors to a firm's productivity through SST applications. The effect on productivity from replacing labor by SST and successfully managing customers as human resources was also discussed by Dedrick et al. (2003). Nevertheless, such propositions rarely combine with empirical support.

The effects of SST on economic performance of retailers comprise a complex network of effects, and the present study will only partly address this complexity. In order to position the present study, a short version of this complexity will be elaborated in the following. At a first glance, SST provides promising potential for utilizing customers as free inputs to increase productivity (Ojasalo 1999). However, this potential will only be realized if: (1) there is no negative effect on store traffic due to the implementation of SST; (2) the retailer does not have to lower price in order to motivate customers to serve themselves; and (3) the costs involved in implementing and operating SST are not higher than the saving of labor hours.

Further, there is research that suggests that improved cost efficiency of resources used in the service process may have a negative effect on personal contact that translates into less perceived value by customers (Barnes et al. 2000; Zeithaml et al. 1990). Cost saving may, indeed, be a primary objective for retailers introducing SST, but customers may be less interested in cost savings, unless they perceive see the savings in some way are passed along to them (Bitner et al. 2002). Thus, if actions that improve labor efficiency yet have a negative effect on customer-perceived service quality and store traffic, productivity and profit performance may not be necessarily be improved.

As stated above, the present study will only partly address the effects of SST on the economic performance of retailers. A first delimitation refers to only self-scanning in grocery retailing is applied to represent the SST phenomenon. A second delimitation is that the effects of self-scanning will only be addressed on the store level. A third delimitation refers to the scope of economic effects captured by the empirical study. Focus is on the short-term effects from implementing self-scanning on store productivity.

Empirical data for the study comprise 66 weekly observations from late 2011 to early 2013, from 27 hypermarkets in Sweden, all affiliated to the same retail chain.

For each week, data has been provided for sales, number of customers, number of self-scanning customers, total number of labor hours used in the store, and number of labor hours in the check-out line. These data facilitate an appropriate platform for analyzing if, and if so

to what extent, there is a relationship between the proportion of customers using self-scanning and store productivity.

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