Demand pull and technology push perspective in technology-based innovations for the points of sale: The retailers evaluation

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ABSTRACT

Despite the consumers' increasing demand of technology-based innovations for making stores more appealing and the huge availability of advanced technologies, there is still a lack of research on the retailers' and employees' points of views towards the introduction of these systems. In fact, an efficient innovation should take care of both the final users/consumers' and the retailers/employees' needs and expectations. Hence, the aim of this study is to advance our knowledge on retailers' pull of new technologies for improving their job in accordance with the most recent systems, as well as on the main characteristics of these innovations for defining a new integrative framework of analysis and development.

1. Introduction

The innovation issue is acquiring importance also for marketing science studies, by providing new practices and standards for developing new tools able to (i) increase consumers' experience, (ii) reply to environmental changes in market trends fast, (iii) develop new strategies for increasing market share, and (iv) exploit successfully the extant resources (Hauser et al., 2006; Pantano and Viassone, 2012). In particular, the current advances in technologies are able to enhance both consumers' shopping activity and retailers' job (Pantano and Di Pietro, 2012; Zhu et al.,2013). For instance, new interactive systems (such as touch screen displays) are able to provide more customized information on available products, as well as applications for clients' mobile devices that can support consumers in product searching inside the stores. Similarly, other mobile applications may provide automatic payment modalities for allowing consumers to save time and reducing the lines at the cash desks.

Hence, the huge availability of advanced technologies that could be introduced in points of sale and consumers' interests towards new systems which are able to support and enhance shopping experience (Chiu et al., 2010; Oh et al., 2012) forces retail-oriented firms to innovate for maintaining and increasing the business profitability.

For this reason, understanding what consumers and retailers expect acquires importance for the successful adoption and diffusion of innovations. Despite the large number of technologies for points of sale and the potential benefits emerging from the introduction of these advanced systems, still only a limited number of retailers adopted them with different strategies (Pantano and Viassone, 2012). A justification might rely on the uncertainty, risks, huge monetary investments and late returns on investment involved in the innovation process, with consequences for technology failure (Evans, 2011; Alkemade and Suurs, 2012; Pantano et al., 2013), which could discourage retailers to afford the technology-based innovations adoption process. For instance, uncertainty for retailers would be related to the consumers' acceptance of the technology, and the level of system usage, as well as the risk of obsolescence (in terms of obsolescence of components, threats of substitution with newer technology, and damages by users; Pantano and Di Pietro, 2012; Pantano et al., 2013; Zhu et al., 2013). Hence, the diffusion and utilization may be affected by several externalities able to reduce the exploitation of all benefits of the innovation.

Retailers are only adopters of the technology, that has been developed by other R&D firms; thus their decision concerns only the introduction/adoption and according to a certain strategy. Although past studies identified consumers' needs as the driver of product innovation (Von Hippel and Katz, 2002; Bonner, 2010), while identifying what consumers expect to find in the stores concerning new technologies for supporting their experience and helping retailers to identify the best innovation, there is still a lack of research on what retailers expect and need from a new technology, with emphasis on the extent to which the new

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technology could improve the quality of employees' job and to the extent to whichthey should use it for the business profitability. Past studies considered the research question related to the influence of demand in generating innovation in addition to selecting it (Di Stefano et al., 2012). To achieve this task, efficient measurements of retailers' needs are required for understanding the retail innovation process and how technology providers can capitalize the innovation development.

The aim of this paper is to advance our knowledge on the demand of technology-based innovations for stores based on the retailers' perspective, and on how these ones start from the firm's internal characteristics. To achieve this goal, the study focuses on a qualitative investigation involving 47 small-size retail-oriented firms, based on a content analysis. The first part of the paper is devoted to the definition of expectations and to the role of these ones on the technology-based innovation adoption process, whereas the second one investigates retailers' perspective in terms of needs and expectation through a qualitative analysis by highlighting the main consequences for the innovating process in retailing in order to define a new integrative framework of analysis and development.

2. Theoretical background

2.1. Technology push perspective for innovating in retailing

The last decade has seen a huge deal of effort in the development of the best technology for improving the traditional points of sale such us interactive displays and smart mirrors, new systems for searching and purchasing products, etc. (Evans, 2011; Pantano and Di Pietro, 2012; Bodhani, 2012).

According to the technical characteristics, the most recent technologies can be classified in 3 main categories: (i) touch screen displays/in-store totems, (ii) systems for mobiles (mobile applications), and (iii) hybrid systems. The systems included in the first category are focused on technologies belonging to the point of sale, such as the virtual garment fitting systems (first introduced in online retail shops, and then, adapted also for physical points of sale), which allow consumers to virtually try clothes through 3D body scanning systems (Choi and Cho, 2012) or the Self-Service Technologies (SSTs; e.g. the automatic cash desks), based on automated and interactive interfaces that consumers can exploit without the assistance of an employee (Zhu et al., 2013), with benefits for reducing costs, and the quality of service efficiency (Lin and Hsieh, 2011; Lee et al., 2012; Elliott et al., 2012). The second category includes systems for consumers' own mobile phones. These technologies provide interactive contents and services for enriching consumers' in-store shopping experience, by providing detailed and customized information, such as automatic payment modality or automatic item searching according to their own wish list, the possibility to virtually compare the chosen product with others, etc. (Rudolph and Emrich, 2009; Bennet and Savani, 2011). In fact, many brands are providing free mobile applications for supporting consumers in finding the best product while shopping in physical stores. Since the systems in the third category are based on retailers' own technologies that users can move around the store, these ones can be considered hybrid. In fact, they are usually based on RFID (Radio Frequency Identification) systems able to read the bar code of the item and to subsequently provide more details, to recognize consumer's profile and match the profile with available purchases, to recommend products, etc. (Wong et al., 2012). Other meaningful examples are intelligent shopping trolleys, which consist of traditional shopping trolleys enriched with systems able to interact with consumers through ease-of-use interfaces, provide more information, localize the consumer's position and propose the best path for reaching the selected items, etc. (Black et al., 2009). The main advantage of these technologies is their capability of providing more useful information for supporting consumers' in-store experience, by allowing them to save time through enriched and customized information, useful functions, and entertaining tools.

The most recent technologies are mainly characterized by the context-awareness, the system ability to adapt its behavior according to users' behavior (e.g. the ability to recognize client's position in the store and suggest him/her the path or the proximity of such products) and to overcome the traditional desktop technologies characterized by the response based only on the environmental stimuli (Kurkovski, 2005; Choi et al., 2011).

2.2. Demand pull perspective for innovating in retailing

Since innovation providers and consumers may view innovation in different ways, innovation might fail in providing the right solution for consumer needs (Kunz et al., 2011). Innovations in products and services must accurately respond to end-users needs for succeeding in the marketplace (Von Hippel and Katz, 2002). Despite the necessity to respond to market desires, this activity is usually expensive, time consuming, and complex. Hence, deep understanding of clients' expectations becomes a critical factor for innovating successfully (Bonner et al., 2010).

Expectations represent the wished level of performance (Ryding, 2011). In fact, consumers create their beliefs about a product, brand, service, etc. by comparing it to their initial expectations (Ryding, 2011). For instance, the expectation confirmation model has been developed for deeply investigating consumers' satisfaction and repeat decision towards a new technology (Bhattacherjee, 2001; Min and Shenghua, 2007). It posits that user's intention to continue using a certain system is influenced by his/her level of satisfaction with the system and perceived usefulness, and the extent of his/her confirmation of expectations (Bhattacherjee, 2001). Hence it is strictly linked to the comparison between the post-purchase evaluation and the pre-purchase expectations. This is especially evident in the case of products/services where expectations may change with time (Chou et al., 2010), such as the expectations regarding information technologies that can change in relation with the increasing users' abilities and interests.

According to recent works, retail environment is changing due to increasing competition and consumers' demand with greater expectations (Ryding, 2011). Past studies showed how the current retailers' strategies towards the usage of advanced technologies in the points of sale do not satisfy totally consumers' expectations (Pantano and Viassone, 2012). Therefore, understanding what consumers expect by designing the service that fits the expectations and delivering this service allows retailers to fulfill the gap between clients' expectations and effective perception of the service with benefits for satisfaction and loyalty (Ryding, 2011). Concerning advanced technologies in retailing, consumers mainly expect that these ones will improve their shopping activities, by providing new tools, services and functions for saving time while purchasing (Pantano and Viassone, 2012).

Past studies on consumers' usage of innovative advanced technologies in points of sale underlined the important role played especially by (i) the trust in the technical system, which acquires a vital value when the technology substitutes face-to-face interaction with the retailer such as in the electronic channel (Pantano and Di Pietro, 2012; Chattaraman et al., 2012; Park et al., 2012; Rafiq et al., in press.), (ii) the enjoyment while using this innovation (Venkatesh, 2000; Wang, 2012), and (iii) the influence of others (i.e. relatives, partners, and friends; Chong et al., 2009; Pantano and Di Pietro, 2012). In fact, these variables are able to