Pioneering Strategies in Retail Settings: An Empirical Study of Successful Practices

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Abstract. *Although innovating in the physical stores has become a challenge for retailers, previous studies provided insights based primarily on consumers' and employees' acceptance of technology, with limited attention towards specific practices for successful adopting innovations. Starting from a qualitative analysis of pioneering strategies adopted by a sample of 50 retailers in the Dutch market, this research is devoted to a broad investigation of the innovation management strategies with emphasis on the choice to be the first to innovate. Our findings provide a correlation between the pioneer practices and the sales outcomes, by describing the more favourable conditions for adopting this strategy in terms of time, place and innovation characteristics (i.e., typology). These results would support retailers in the choice of innovating and managing the innovation process.*

Keywords: Pioneering, Retailing, Retail Services, In-Store Technology, Online-Offline Integration, Omni-channel Management, Innovation Management, Technology Management.

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Introduction

In recent years, consumers' demand of innovative in-store services is growing rapidly, pushing retailers to innovate more than in the past for successfully performing in the new competitive scenario (Demirkan & Spohrer, 2014; Grewal et al., 2016; Sorace et al., 2015; Savastano et al., 2019). Despite the uncertainty emerging from the introduction of new technologies in terms of consumers' acceptance and obsolescence risk (Pantano, 2014), a large deal of research agreed on the importance of innovation for retailers (Adapa et al., 2020; Demirkan & Spohrer, 2014; Hristov & Reynolds, 2015; Nilsson, 2007; Pantano & Viassone, 2015; Poncin & Mimoun, 2014; Rese et al., 2014; Sorace et al., 2015). Accordingly, such retailers show an increasing willingness to invest in digital technologies by increasing their budgets for innovation on a year by year basis (Deloitte, 2019). However, there is still much to discover and understand about retail, with an emphasis on the extent to which the new technologies and omni-channel retail are dramatically changing the retail landscape (Grewal et al., 2016; Verhoef et al., 2015).

Moreover, the rapid diffusion of new technologies among consumers, such as mobile devices and social media, provides novel tools for gathering data on market trends, interacting with individuals (Pantano & Priporas, 2016), and building models of

customer behaviour aimed at increasing the degree of differentiation among different competitors (Shankar, 2011). In fact, customizing and personalizing services and products have emerged as key elements to innovate in retail settings, thus claiming a closer connection with customers based on collaborative filtering and automatic customer profiling systems (Pantano, 2014). The continuous progresses in technology further solicit consumers to use and engage with multiple channels simultaneously in order to achieve more efficient shopping experiences. For instance, they might access goods to purchase by browsing websites, visiting stores, or they might use smartphones and tablets to collect information, compare products and purchase the preferred item (Pantano & Priporas, 2016). This condition requires a higher degree of consistency and filtering of information, as well as experience across different channels for implementing a sort of omni-channel experience (Pei & Yan, 2015; Verhoef et al., 2015). In this way, consumers might achieve an enhanced service, by exploiting the possibility to further buy out-of-stock products online through in-store interactive displays or mobile applications (Alexander & Cano, 2020; Blazquez, 2014; Pantano & Viassone, 2015).

The main advantages for consumers lay on the possibility to obtain constantly updated information on available products and services, which they may access through entertaining, high interactive, and user-friendly interfaces (Betzing et al., 2018; Fiore et al., 2005; Keeling et al., 2013; Lee, 2012; Pantano & Priporas, 2016; Rese et al., 2014), by selecting the most useful elements to avoid the problem of information overload (Miceli et al., 2007). On the one hand, stores look more appealing and attractive. On the other hand, they provide new and exciting shopping experiences, by positively meeting consumers' acceptance and encouraging high-involvement consumer purchases (Cowan & Ketron, 2019; Demirkan & Spohrer, 2014; Im & Ha, 2013; Poncin & Mimoun 2014; Rese et al., 2014).

Similarly, retailers may access information on consumers' behaviour and preferences (i.e., collecting the number of visualized products before the purchasing, time for purchase decision, routes within the store etc.), while these technologies provide a support in managing data, predicting trends (i.e., efficiently filtering certain information according to specific parameters), developing customized services and advertising campaigns, and reducing the cost related to personnel (by moving some services traditionally executed by salesforce to the automatic system) (Evans, 2011; Pantano, 2014).

Hence, the success for retailers relies on their ability to manage the innovation process through the reconfiguration of internal and external resources, as well as on the subsequent reduction of costs (Grewal et al., 2009; Pantano, 2014). In this context, recent studies have emphasized how strategies based on innovation in terms of experiences and engaging services provided to the customer could lead retail companies to achieve a competitive advantage and a market share growth (Pantano et al., 2017a, b; Pinto et al., 2017). Since consumer experience is totally revised in the new scenario, retailers are encouraged to include the consistent innovations in the business model for enhancing value creation and business profitability (Cao, 2014, PwC, 2017; Pantano, 2014; Sorescu et al., 2011). Due to the advent of multi-, cross-, and omni-channel customer management, retailers must change their business models by eliminating existing boundaries between online and offline, and reconsidering the role of the physical store through the optimization of product and service portfolios and the adoption of new technology, mobile payments and multiple delivery solutions to strengthen product experience and marketing practices, with the aim of increasing

operational and business performance. Online to offline business models, which seamlessly combine both online and physical experiences, is what consumers expect today from retailers (Liao & Yang, 2020). Therefore, the innovative force pushes retailers to redefine established practices and integrate new organizational structures, by facing them with new challenges concerning the choice of being the first one to innovate. In nearly every business sector, early adopters of new technologies and business models have changed the rules of the game (Grewal et al., 2020a). While there is a large deal of literature investigating the importance of innovating in the retail industry (Demirkan & Spohrer, 2014; Hristov & Reynolds, 2015; Nilsson, 2007; Pantano & Viassone, 2015; Sorace et al., 2015), there is actual a lack of studies on the definition of basic factors for the development of successful innovation strategies.

Since past literature largely stressed the innovation management in retail from a consumers' perspective (Demirkan & Spohrer, 2014; Pantano, 2014; Poncin et al., 2014), this study aims to make retailer responses clearly emerge, by exploring the corporate perspective with emphasis on the choice of time and place for innovating (i.e., one store for testing, trial period, etc.). These elements would allow declining some common elements while investigating the pioneers' choice. Grewal et al. (2020) have recently sustained that companies willing to embrace the opportunities given by the changing retail scenario, by investing in innovative technologies to experiment which best enhance the operational efficiency and the customer experience, are likely to be the most successful (Grewal et al., 2020b). Consistently, the aim of this paper is to understand the pioneering strategies for retailers in terms of successful outcomes and related practices to successfully act as first innovator, through a qualitative analysis, drawing up on the following research questions:

RQ1: To what extent does a pioneering strategy reward retailers?

RQ2: Which are the best practices supporting this strategy?

To achieve this goal, the study employs a qualitative approach, by identifying a set of retailers who introduced innovative technologies within their points of sale as the innovators on the market. In this way, the paper would advance our knowledge on how retailers might innovate successfully through a pioneering strategy.

This paper is structured as follows: the first part provides a definition of the pioneering strategy in retail settings, while the second part focuses on the qualitative analysis involving respondents with different roles in different retail sectors. Results and discussions are further considered. The last section provides some guidelines for successfully adopting pioneering strategies.

Theoretical Background

Environmental changes generate opportunities for pioneers while requiring the organizational skills and capabilities to capitalize them in significant benefits. Organizations usually innovate to achieve new business opportunities, through the reconfiguration of internal and external resources and exploitation of new ideas into successful outcomes (Niu et al., 2013). In fact, innovation represents the practice to embrace proactive behaviour in replying to the environmental changes for surviving and growing (Pantano, 2014).

While defining innovation strategies, the time sequence plays an important role in order to outline when to innovate (Niu et al., 2013). The decision-making process includes the identification of the best moment for innovating, as well as the choice to

develop new products, processes and markets (pioneering), or to exploit other innovators' efforts to improve their existing offer in a sort of imitation strategy (following) (Zhou, 2006; Parra-Requena et al., 2012). Due to the advantages emerging from both innovation strategies, retailers face a critical challenge: be the first-mover (pioneer) or follower?

The pioneering/following strategy reflects the higher or lower level of leadership/followership in the market (Parra-Requena et al., 2012). On the one hand, past researches outlined how the first market entry might reward pioneers (Alpert et al., 2001; Carson et al., 2007; Covin et al., 1998; Kaličanin, 2008; Jakopin & Klein, 2012), whereas, on the other hand, different studies identified the higher risks encountered by pioneers and the subsequent threat to be the first to fail (Minet et al., 2006; Mueller et al., 2012; Robinson & Min, 2002).

For instance, a more specific area of analysis in pioneering advantage has focused on some settings where brand repositioning and brand switching costs are minimal, such as mature markets. In these cases, the pioneering advantage relies on the process by which consumers learn about brands and build their preferences (Carpenter & Nakamoto, 1989). As a consequence, a new preference structure would be developed and the pioneer would be rewarded by a larger market share that will act as a barrier for later entrants. The rationale of this effect can be found in the preference of the distribution shift, where the pioneer frames perceptions and becomes prototypical of the category, achieving a superior position and a subsequent degree of protection from similar competitors.

Advantages for pioneers can be listed as follows: (i) acquiring a positive image and reputation of being an innovator and a leader in the industry, (ii) reducing management costs due to the support of new technologies, (iii) maintaining and acquiring loyal consumers, (iv) making imitation strategies as difficult as possible for their competitors, (v) reaching a unique and differentiated positioning, and (vi) acquiring and accumulating competitive advantages connected to experience and network externalities, which tend to support each other and to strengthen over time (Kaličanin, 2008; Pantano, 2014; Spence, 1981).

In contrast, the main disadvantages are: (i) market and technological uncertainty, (ii) unpredictable changes in technology and in consumers' needs (especially after the introduction of the innovation), (iii) free-rider benefits to followers, (iv) incumbent inertia, which implies the difficulty of pioneers in changing their business practices in accordance with the market changes, and results in the gradual improvement of existing technology rather than the introduction of a totally new technology, and (v) difficulties in creating a new demand for a totally new product or brand (Kaličanin, 2008; Finney et al., 1988; Min et al., 2006).

Despite these disadvantages, the overall difference between pioneering and following strategies emerges from the costs of innovating and cost of imitating, by also considering consumers' switching costs while choosing the follower's offer (Kaličanin, 2008). Hence, successful pioneering strategies mainly rely on the ability to build up barriers that inhibit the entrance of potential competitors (Parry & Bass, 1989). Table 1 summarizes the benefits and risks of acting as a pioneer.

Table 1. Characteristics of pioneering strategies.

Pioneering strategy		References
Benefits	• Market leadership	Spence, 1981; Parry and Bass, 1989; Kaličanin, 2008; Parra-Raquena et al., 2012
	• Building entrant barriers for later entrants	
	• Acquiring a positive image and the reputation of being an innovator, a leader and a pioneer in the industry	
	• Reducing management costs due to the support of new technologies	
	• Maintaining and acquiring loyal consumers	
	• Reaching a unique and differentiated positioning	
Risks	• Market and technological uncertainty	Lieberman and Montgomery, 1988; Min et al., 2006; Kaličanin, 2008; Finney et al., 2008
	• Unpredictable changes in technology and consumers' needs	
	• Free-rider benefits to followers	
	• Incumbent inertia, which implies the difficulty of pioneers in changing their business practices in accordance with the market changes	
	• Difficulties in creating a new demand for a totally new product or brand.	

Source: Authors' development.

Past studies (Posselt & Berger 2007; Jakopin & Klein, 2012; Sung, 2014) further outlined the difficulties for pioneers to innovate in service markets due to the intangibility of services (which makes them difficult to protect with patents), and the low imitation costs (solicited by innovations not protected with patents). Similarly, the innovation process in service industries is usually characterized by a limited effort in Research and Development (Trigo, 2013). In fact, the retail industry is rather devoted to the development of new products than to the development of new systems for improving the process, by frequently adopting innovation produced by other companies (Pantano, 2014). Despite these considerations, innovation is becoming a rewarding practice in the retail industry as well, which is introducing several different technological innovations (Demirkan & Spohrer, 2014; Hristov & Reynolds, 2015; Poncin et al., 2014). In this scenario, the possibility for a follower to easily imitate a pioneer's practice, as well as the increasing demand of technological innovations in retail settings generate a highly competitive environment for retailers.

A pioneer can collect information on consumers' needs and preferences in order to develop a new technology able to match consumer expectations before the competitors can do the same. Hence, starting from largely accepted definitions (Parra-Requena et al., 2012; Zhou, 2006), we can identify a pioneering strategy in retail settings as the behaviour performed by retailers who are the first to introduce a certain technology at the point of sale for enhancing the process. For instance, such retailers are the first to provide new services and a certain shopping experience while they are also the first to explore a technology aimed at collecting data on actual market trends and model customer behaviour, thus improving the efficacy of their market strategies. Although past literature largely investigated the pioneering strategies in the service sector, the research mainly focused on the case of telecommunications (Fernandez & Usero, 2009; Jakopin & Klein, 2012). Hence, there is still a lack concerning the innovation/imitation strategies in the retail industry, with regard to the introduction of technological innovations in physical stores.

Method

Research design

Given the exploratory nature of the study (Creswell, 2009) and the shortage of studies on innovation management in retailing from a corporate perspective, qualitative research was considered as a necessity since it provided insights and an understanding of the problem setting (Cornelissen, 2017). The authors selected the Dutch market for the purpose of the study, due to the technology push lead by Philips, which was the leader in providing technological innovation solutions for improving in-store retail services at the moment of the analysis. The research design involves different firms with similar characteristics: they all operate in the Dutch B2C market, they launched advanced technologies able to enrich the services offered within the past three years, and they implemented a pioneering strategy while introducing these technologies. Moreover, the referred technologies were chosen under the constraints of (i) similar cost for installation and maintenance (to be affordable also for those retailers with limited financial resources); (ii) similar goal of supporting in-store consumer experience while enhancing the information and the products availability within the physical store; and (iii) user-friendly interfaces.

Firstly, we identified one retailer who acted as pioneer for each of the following industries: grocery, cosmetics, shopping mall (a whole shopping mall), department stores, and sportswear, with the constraint to have introduced at least one innovation in the previous years as the first adopter. Secondly, we selected the key person in charge of the definition of the innovation introduction strategy and employees/salespeople (as the ones in charge of collecting consumers' reactions towards the new tools). Mikkelsen (1995) characterizes them as key informants. For each case of retailer, after having the company's permission, we approached store managers and employees during their working hours and invited them to participate in the study in a separate environment. Semi-structured in-depth face to face interviews were used to provide data on how the pioneering strategy has been executed and perceived by consumers. In particular, 50 respondents (Table 2) have been recruited in the cities of Eindhoven, Amsterdam, Maastricht and Tilburg (The Netherlands).

Table 2. Interviewees per industry and adopted technology

Industry	Type of innovation introduced	Description	Interviewees	Main Benefits
Grocery	Intelligent self-scanner	Portable devices able to scan barcodes in order to provide customers with price and other product information, count the amount of purchase, and pay automatically via this system for the self-checkout.	7	<ul style="list-style-type: none"> • Time saving; • Enriched information quality
Shopping Mall	Context aware interactive display	Large interactive touch screens located within the shopping mall entrance, which customers may access to find a store/product within the mall and automatically evaluate the best route from their location.	20	<ul style="list-style-type: none"> • Time Saving

Cosmetics	Informative touch screen	<i>These touch screens offer the possibility to interactively find out a large amount of information about the branded products according to the personal needs, for instance to find the best product for consumer's specific skin typology and virtually try on the product. They also serve as informative touch points.</i>	3	<ul style="list-style-type: none"> • Enriched information quality; • Product Evaluation
Department Store	Smart touch screen display	<i>They offer a virtual catalogue, which gives consumers the opportunity to order out-of-stock items, access to enriched information on products and anticipate the new arrival based on consumers preferences.</i>	7	<ul style="list-style-type: none"> • Enriched information quality
Sportswear	Smart touch screen display	<i>Large interactive touch screens that enrich the offer of the physical point of sale, by allowing consumers to compare products, choose the favourite ones, order them when out-of-stock (for free home delivery or pick-up at the point of sale) and pay. They also serve as informative touch points.</i>	13	<ul style="list-style-type: none"> • Customization; • Time saving; • Enriched information quality
Tot			50	

Source: Authors' development.

Each interview lasted between 30 and 45 minutes. The open-ended questions of the interview protocol were designed to solicit detailed explanations of the interviewees' experience with the technology and of how they judge the adopted strategies as successful ones in terms of support for their job, number of consumers who used the technology, number of consumers who needed assistance for using the technology, number of consumers who effectively bought after its usage, etc. Hence, the respondents were stimulated to freely reveal their personal experience with richness of details and relevant issues encountered since the introduction of the technology. The interview guide also included specific demographic and organizational background questions on the main characteristics of the respondents (e.g., age, experience in retailing, role and experience in the store, interest in new technologies, etc.) and of the retailer, such as the size (number of points of sale, average size of the points of sale, and annual turnover, with exclusive reference to the Dutch market).

Each interview has been recorded and subsequently transcribed in text files and uploaded on the software MAXQDA for the content analysis (Pantano & Priporas, 2016). The software allowed to evaluate each respondents' answers through the following steps: (i) associating a *code* to each emerging concept from the interviews (considering the *code* as the abstraction, through a synthetic index, of these concepts), (ii) identifying the most recurrent structures (judgements, perceptions, opinions, technology introduction strategy, etc.) through the code frequency value, and (iii) figuring out the correlations between codes (co-occurrence analysis).

Reliability

Content analysis is linked to the subjective ability to identify the right codes within the text, consistent with the interview protocol, which cannot be executed automatically through the software. For this reason, each rater may identify different codes. Hence, defining standards for evaluating the quality of content analysis is still a critical issue. Despite this consideration, a measurement of the value of this kind of research is required to provide the reader with a clear vision of the quality of results. In this paper, we define the reliability measure as the evaluation of the raters' agreement towards the identified codes, which might be evaluated by comparing the results from coding performed by each rater on the basis of a predetermined coding scheme (Oleinkik et al., 2014; Popping, 2010; Scott, 1955). In other words, if two different raters identify almost the same codes, the resulting codes can be considered as an accurate interpretation of the phenomenon. The most used reliability index in content analysis is K (kappa agreement), calculated as follows (Popping, 2010):

$$K = \frac{P_o - P_e}{1 - P_e} (1)$$

P_o represents the noticed proportion of agreement and P_e the proportion of agreement under the null-hypotheses of independence. Considering two independent raters, our analysis shows $K = .763$. Since "1" means the maximum level of agreement and "0" the null-agreement, we can consider our value of K as quite acceptable, and the code analysis reliable (Oleinkik et al., 2014).

Sample

Concerning the personal characteristics of the sample, the majority of respondents is young (86% of respondents is less than 36 years old), while there is a balance considering the experience in retailing (16% with a very short experience, 26% with a short experience, 28% with a medium experience, while 30% with a long experience) and in the specific store/role (32% with a very short experience, 30% with a short experience, whereas 22% and 16% with a medium and long experience, respectively). Similarly, there is a balance towards the interest in new technologies (18% with a low interest, 28% with a sufficient interest, 40% with a good interest, and 14% with a high interest). Regarding the retailers' size, 52% are small, 26% are medium, whereas 22% are Large-sized retailers. Table 3 shows a summary of characteristics of respondents and their related retailer.

Table 3. Sample demographics.

Demographics	Percentage
Gender	
Female	68 %
Male	32 %
Age	
Less than 25 years old	58 %
25-35 years old	28 %
36-45 years old	10 %
46-60 years old	4 %
Interest in new technologies	
Low	18 %

<i>Sufficient</i>	28 %
<i>Good</i>	40 %
<i>High</i>	14 %
<u>Experience in retailing</u>	
<i>Very short experience (less than 1 year)</i>	16 %
<i>Short experience (between 1 and 2 years)</i>	26 %
<i>Medium experience (between 2 and 5 years)</i>	28 %
<i>Long experience (more than 5 years)</i>	30 %
<u>Experience in the store/retailer</u>	
<i>Very short experience (less than 1 year)</i>	32 %
<i>Short experience (between 1 and 2 years)</i>	30 %
<i>Medium experience (between 2 and 5 years)</i>	22 %
<i>Long experience (more than 5 years)</i>	16 %
<u>Retailer Size</u>	
<i>Small</i>	52 %
<i>Medium</i>	26 %
<i>Large</i>	22 %

Source: Authors' development.

Findings

The first analysis focuses on the code frequency, which represents the number of respondents who highlighted the same structure (code). The codes have been identified with the constraint to appear at most once in each interview. Since we identified 149 different categories, we imposed the constraint of a frequency value at least of 10 to focus only on the most representative ones. By setting this value as cut-off point, we obtained 15 codes (Table 4).

Table 4. List of (the most important) codes emerging from the content analysis.

Code	Description	Number of respondents Frequency (%)
Presence in each POS	<i>The technological innovation has been directly introduced in all points of sale of the retailer, since the beginning</i>	10 (20 %)
Often Used	<i>The technology has been used often by consumers since its introduction</i>	11 (22%)
Enhances store offer/services	<i>The technological innovation enhances the store offer and/or the provided services</i>	12 (24%)
Merely new technology	<i>The technological innovation has been introduced 10 to 24 months ago</i>	13 (26%)
Used autonomously	<i>The technological innovation has been efficiently used by consumers without employee's assistance</i>	14 (28%)
Used with employee's support	<i>The technological innovation has been used with the support of employees</i>	14 (28%)
Improves the store/mall image	<i>The technological innovation enhances the store/mall image</i>	15 (30%)
Selected stores	<i>The technological innovation has been firstly introduced in few selected stores, and then in all points of sale</i>	16 (32%)
No successful outcomes	<i>After the innovation introduction, no</i>	16 (32%)

	<i>outcomes have been noticed in terms of increased number of consumers, sales, consumers' interest for the stores, etc.</i>	
Rarely Used	<i>The technological innovation has been rarely used by consumers</i>	17 (34%)
Largely Used	<i>The technological innovation has been largely used by consumers</i>	17 (34%)
Successful outcomes	<i>After the innovation introduction, several successful outcomes have been noticed in terms of increased number of consumers, sales, consumers' interest for the stores, etc.</i>	18 (36%)
Directly in all POS	<i>The technological innovation has been introduced directly in all points of sale</i>	19 (38%)
Totally new technology	<i>The technological innovation has been introduced less than 1 year ago</i>	22 (44%)
Permanent Technology	<i>The technological innovation has been introduced for standing many years</i>	47 (94%)

Source: Authors' development.

Preliminary considerations concern the modality of introducing the technology. In fact, the majority of interviewees (47 respondents over 50, which represents 94%) introduced the technological innovation for standing permanently inside the store (see code "*Permanent technology*"), with the aim to not replace or modify the technology for several years. In addition, many retailers introduced the technological innovation in all the stores of the chain simultaneously, without preliminary tests in few pilot-stores for a trial period (see code "*Directly in all POS*"). Secondly, the innovations under investigation have been introduced for less than 1 year (see code "*Totally new technology*"). Thirdly, a similar number of respondents identified a sort of reward towards their strategy, in terms of successful outcomes including increased number of consumers, sales, consumers' interest for the stores, etc. (see codes "*No successful outcomes*" and "*Successful outcomes*"). The previously mentioned results are consistent with the search for a prototypical positioning aimed at differentiating the retailer's brand on a permanent basis.

For deeply investigating the effect of the technology on successful outcomes, since a similar value emerged for both the relevant codes, we conducted a further analysis based on the evaluation of association structures between the various constructs emerging from the preliminary frequency analysis (co-occurrence analysis). Table 5 summarizes these results, where the rows represent the single code and the columns each respondent; "1" denotes whether the respondent identified that code (in other words, a correspondence between the two codes exists), "blank" otherwise.

Table 5. Respondents' response by effect of technology introduction on outcomes.

Code/Industry	No Successful Outcomes										Successful Outcomes									
Presence in each POS											1		1			1	1	1	1	1
Enhances store offer/services	1		1			1		1			1		1				1			
Merely new technology		1						1			1					1	1	1	1	
Used with employee's support						1		1			1	1		1	1	1	1	1	1	
Used autonomously											1		1			1	1	1	1	
Improves the store/mall image	1		1		1			1		1		1		1			1			
Selected stores			1	1		1			1		1	1		1	1	1	1		1	
Directly in all POS		1			1	1		1							1	1	1		1	1
Totally new technology	1		1	1	1	1	1	1		1	1	1	1	1	1					
Permanent Technology	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Rarely used		1		1	1		1			1		1		1						
Often used					1					1						1	1	1	1	
Largely used	1		1				1	1		1		1		1		1	1		1	1
Small-sized retailer			1	1	1	1	1	1		1	1	1	1	1	1	1	1			
Medium-sized retailer											1			1	1	1	1		1	1
Large-sized retailer	1						1	1			1	1	1			1	1			

Source: Authors' development.

This analysis figures out that both retailers who outlined successful outcomes and who did not notice any improvement, introduced the innovation permanently. Thus, it doesn't emerge as a variable with a direct effect on the retailer's outcome, which is explained by the time needed by customers to experience the benefits associated with the innovation. Accordingly, a relation between no successful outcomes and a totally new technology emerges. A justification might lay on the novelty of the technology. Due to the short period since the introduction, it is possible that most of the consumers have only partially understood the benefits emerging from the use of that technology.

Moreover, most respondents who extended the new technology to all the stores of the chain after the initial introduction within a limited number noticed a sales increase. Similarly, most of the interviewed retailers who introduced the technology in all points of sale noticed a sales increase. Noteworthy results further emerged by consumers' usage of the technology. Although past studies considered the interactions with automatic machines as less cooperative and less friendly than the relationships with human employees (Keeling et

al., 2013), successful outcomes resulted for the technology that offered the possibility to be used without the direct support of the employees (*“Used autonomously”*). In addition, medium-sized retailers are the ones who mostly noticed some successful outcomes. Oppositely, retailers who did not notice any successful outcomes were small-sized and underlined a limited (or quite null) usage of the technology by the customers (see code *“Rarely used”*). This means that consumers who did not use the technology, either autonomously or with employee’s support, usually left the store without purchases. Contrarily, when consumers made a more extensive usage of the technological innovation, retailers noticed successful outcomes.

The subsequent co-occurrence analysis aimed at deeply evaluating the codes *“No successful outcomes”* and *“Successful outcomes”* by focusing on the reference market (Table 6). As anticipated, in Table 6 rows represent the single code and columns each respondent, while “1” denotes whether the respondent identified that code, “blank” otherwise.

Table 6. Respondents’ responses by codes outcomes (successful and no successful) and reference market.

Code/Industry	No Successful Outcomes										Successful Outcomes									
Grocery	1								1	1					1	1				
Cosmetics										1									1	
Shopping mall		1	1	1	1	1	1					1	1	1	1	1				
Sportswear											1			1	1	1		1	1	1
Department store									1		1				1	1				

Source: Authors’ development.

This analysis underlines that the shopping mall did not notice significant changes in the outcomes, while most of the respondents of sportswear highlighted noteworthy improvements after the introduction of the technological innovation before the competitors. Similarly, the last analysis investigated in detail the emerging codes according to the reference market. As previously, in Table 7, rows represent the single code and columns respondents, while “1” denotes whether the respondent identified that code, “blank” otherwise.

Table 7. Respondents' response by reference market.

Code/Industry	Grocery	Shopping Mall	Cosmetics	Department Store	Sportswear
Presence in each POS			1 1		1 1 1 1 1 1 1 1
Enhances store offer/services	1 1 1	1		1 1 1	1 1 1 1 1
Merely new technology	1	1	1 1	1 1 1 1	1 1 1 1 1
Used with employee's support	1		1 1 1	1 1 1 1	1 1 1 1 1
Used autonomously		1	1 1	1 1 1 1 1	1 1 1 1 1
Improves the store/mall image	1 1	1 1 1 1	1 1	1 1	1 1 1 1
Selected stores	1 1 1	1 1 1 1	1 1	1 1 1 1	1 1 1 1 1
No successful outcomes	1 1 1	1 1 1 1 1 1 1 1	1 1	1 1	1 1 1 1 1
Successful outcomes	1 1		1 1	1 1 1 1	1 1 1 1 1 1 1 1
Directly in all POS	1 1	1 1 1 1 1		1 1 1 1	1 1 1 1 1
Totally new technology	1 1 1 1 1 1	1 1 1 1 1 1 1 1	1 1 1 1	1 1	1 1 1 1 1
Permanent technology	1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1	1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1
Rarely used	1	1 1 1 1 1 1	1 1	1 1	1 1 1 1
Often used		1 1 1		1 1 1 1	1 1 1 1
Largely used	1 1 1 1 1 1	1 1	1 1	1 1	1 1 1 1 1

Source: Authors' development.

This analysis confirms that most of the retailers introduced the innovation in a permanent way, independently from the reference industry. Noteworthy, results also concern the differences in technology adoption by industry. In fact, cosmetics, sportswear and department store introduced the latest innovation more than one year ago (*"Merely new technology"*), whereas grocery and the shopping mall innovated more recently. This means that these two industries seem to be more dynamic and innovation oriented.

Similarly, cosmetics, department store and sportswear respondents noticed that consumers access the technological innovation both autonomously and with employees' support; in the grocery, department store and sportswear industries, we also noticed a positive effect of technology on the store services (see code *"Enhances store offer/services"*), whereas retailers from the other industries did not express any opinion in this direction.

Only in the sportswear industry, the respondents implemented a common strategy for all points of sale, reporting that technologies were diffused in the whole retailer's chain. Concerning consumers' usage of the technology, according to the opinion of the respondents, consumers from the grocery industry were the most active, whereas the number of consumers who used the technological innovation in the shopping mall was limited. A justification might rely on the different consumer mind-sets and shopping behaviours in the abovementioned industries. While consumers are solicited by a utilitarian motivation in the grocery industry (thus they pay more attention to time saving, etc.), consumers visiting a shopping mall are more influenced by hedonic motivation (i.e., the search of entertaining experiences).

Discussion

Successful innovation at the point of sale requires new skills, competences and capabilities. Although investments in technologies do not always provide the expected returns, past studies underlined the importance of the retailers' willingness and capacity to introduce and manage technology for building and defending their competitive market position (Greenhalgh et al., 2004; Pantano, 2014; Weber & Kantamneni, 2002).

Following our research questions, this study identifies how to pursue successful innovation strategies in retail settings according to (i) the extent to which pioneering strategies rewarded retailers, and (ii) the practices retailers used for adopting this strategy.

(i) Pioneering strategy rewarding retailer

In accordance with previous studies (Demirkan & Spohrer, 2014; Hristov & Reynolds, 2015; Poncin et al., 2014), our research confirms the extent to which innovating in retail might be rewarding for retailers. Starting from the general definition of pioneering (Parra-Requena et al., 2012; Zhou, 2006), in this study we have firstly defined the main features of the pioneer retailer (a retailer who integrated a technology as the first in the market, acquired the image of being an innovator/pioneer, reduced management costs due to the integration of the innovation, maintained and acquired loyal consumers).

Despite the high difficulties and risks of innovating in the service industry (Jakopin & Klein, 2012; Posselt & Berger, 2007; Sung, 2014), findings highlight how the introduction of technological innovation has been much rewarding for retailers operating in the sportswear industry, and for medium-sized retailers. This suggests that retailers of similar size (in terms of points of sale and market coverage) would act with similar innovation behaviour to achieve positive innovation outcomes. It is possible that those firms that do not have a large size or huge financial resources are able to use their existing resources and capabilities better when innovating. Therefore, we can argue that the large size or the huge financial capabilities do not imply increasing returns from the pure exploration of the new technologies within the points of sale. They might not be able to lever their resources in the development of successful innovations.

(ii) Practices for pioneering successfully

Concerning the best practices, our analysis shows that the innovations have been permanently introduced, in a limited number of pilot-stores (thus, introducing the innovation simultaneously into all stores of the chain does not seem a rewarding pioneering strategy), and are referred to technologies that could be accessed without the direct assistance of a salesperson. These data extend past results (Demirkan & Spohrer, 2014; Hristov & Reynolds, 2015; Pantano & Viassone, 2015; Poncin et al., 2014;

Sorace et al., 2015) by distinguishing between innovating in pilot-stores and in the whole chain to achieve positive innovation outcomes. Concerning the choice of a permanent technology, retailers noticed that the success derived from consumers' possibility to experience the technology for enough time to understand the benefits emerging from its usage, while retailers could better allocate the initial high investment costs to those periods in which they are expected to benefit from the introduction of the innovation. In particular, according to the retailers' point of view, selecting an initial limited number of pilot stores would solicit consumers' interest and curiosity, confirming the possibility to reach a unique market position and market leadership (Kaličanin, 2008; Parra-Requena et al., 2012). Thus, consumers would slowly approach the technology, which can motivate them to visit some stores and subsequently to expect the presence of the innovation in the other stores as well. Then the technology could be extended to the retailer's entire chain. Finally, the choice of a new system that could be used autonomously allowed consumers to decide whether to use the technology or not. In this way, customers do not feel forced to change their consumption behaviour. In fact, our results confirm that increased successful outcomes are strongly connected to the usage of the technology during shopping time (Demirkan & Spohrer, 2014; Pantano, 2014).

Conclusions

Although past studies emphasized the benefits emerging from the innovation process, and considered pioneering as a successful strategy for competing in several industries (Alpert et al., 2001; Carson et al., 2007; Covin et al., 1998; Kaličanin, 2008; Jakopin & Klein, 2012; Niu et al., 2013; Posselt & Berger 2007), there was still a gap in considering retail settings. Our study contributed to the definition of pioneering in the retail industry. We further listed some actual pioneers and outlined the practices they adopted for innovating. In fact, our research extends the past studies investigating innovation strategies in retailing (Adapa et al., 2020; Demirkan & Spohrer, 2014; Grewal et al., 2016; Hristov & Reynolds, 2015; Nilsson, 2007; Pantano & Viassone, 2015; Poncin et al., 2014; Sorace et al., 2015;), by distinguishing between the ways in which retailers might adopt innovation, with emphasis on pioneering strategies. It further adds knowledge on the extent to which these strategies can be adopted, by highlighting the drivers accordingly.

Concerning a managerial perspective, our findings outline the extent to which pioneering has been rewarding for retailers, by emphasizing some practices to be adopted. In particular, retailers oriented at acquiring and maintaining competitive advantages by pursuing a pioneer position need to focus on the (i) number of stores where the technological innovation is preliminarily introduced; on the (ii) technology obsolescence risk (risk to be replaced by newer technology), because consumers need time to approach and extensively use the new system, which should not only stand for a limited period; and on the (iii) technology characteristic of the "ease of use", which does not require the direct assistance of employees (Figure 1).

Figure 1. Emerging pioneering practices in retail settings and correlated outcomes.

Source: Authors' development.

Retailers should also be aware of the strong relations between the successful outcomes and the large consumers' usage of the technological innovation, as emerged from our findings. In fact, there is a meaningful correlation between the low usage of innovation and no relevant outcomes. Finally, the retailers' strategies would need to evolve according to the progresses in the technology that increases the obsolescence risk of each technological innovation, in order to integrate those improvements as an opportunity for successful management strategies. Therefore, prospective pioneers should ensure that their innovation policies are consistent with these three fundamental elements.

Limitations and further research

Starting from our results, future research is expected to verify both the fundamental effects (e.g., business model innovation, profitability, customer satisfaction/loyalty, employee wellbeing, etc.) resulting from the adoption of several emerging technologies (e.g., AI, robotics, IoT, smart sensors, AR, etc.) and the underlying processes that explain the behavioural consequences on customers and employees of using those technologies in different contextual scenarios. Identifying the factors that moderate these effects can provide both academics and practitioners with important insights concerning when the outcomes might be augmented or mitigated, in ways both beneficial and potentially detrimental (Grewal et al., 2020a).

In addition to the fast-changing pace of this scenario, the onset of the COVID-19 outbreak generated an extraordinary acceleration of trends that emerged over the past five years. Innovations in terms of e-commerce platform and offerings, mixture of digital and in-store experiences, curbside pickup and quicker delivery options, and contactless delivery and payments have been implemented in few months, when they would normally take years (Ozturk & Kahn, 2020; PwC, 2020). The contingency factors brought by COVID-19 will drastically affect both supply chain management and performance. Successful companies will move to sustainable operational performance with shorter and more resilient supply chains, risk management, and business continuity plans. The speeding up of the end-to-end digital transformation, both on the demand and the supply side, will request a fast adaptation of consumers to the contact-free economy, less low-cost supply chains, and additional emphasis put on quality and diversification of service levels (Fonseca & Azevedo, 2020).

Despite the important insights obtained, some limitations should be taken into account. The first limitations concern the typology of innovation under investigation. Although some authors suggested distinguishing between radical and incremental innovations (Kaličanin, 2008; Min et al., 2006), our analysis does not consider different pioneering strategies for those two different innovation categories. Moreover, this research, explorative in nature, limits the analysis to few meaningful examples while requiring more quantitative data for a larger generalizability of the achieved results. In fact, our insights provide the starting point for further quantitative analyses investigating successful pioneering strategies involving a larger sample of retailers, as well as comparative studies involving pioneer retailers who operate in different markets. Indeed, the high familiarity with technological innovation and innovative thinking characterizing the Dutch market could lead to obtaining results not replicable in other countries, where the absence of a strong innovative culture could limit or delay the beneficial effects revealed by our findings.

Similarly, our study focuses on pioneers, without proposing a structured comparison with pioneers who failed in innovating in terms of the wrong choice of time or of successful followers. Further studies would propose a detailed analysis of the drivers and failures of pioneering in retailing, by including quantitative measures.

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