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Service innovativeness in retailing: Increasing the relative attractiveness during the COVID-19 pandemic

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ABSTRACT

COVID-19 primarily spreads through close contact between humans and has affected retailing industries extremely hard. To manage the situation retailers have turned to service innovation to change their operations to make consumers feel safe while shopping. This research focuses on the role of service innovativeness in retailing firms during the COVID-19 pandemic through an empirical study of almost 6000 consumers of 28 retailing firms. The results suggested that retailers with high service innovativeness performed COVID-19 imposed innovations better to improve their relative attractiveness. For retailers with physical stores, changes to the servicescape and the offering were found to be the key antecedents of service innovativeness. The findings on COVID-19 imposed service innovations demonstrate the importance of service innovativeness in successfully changing retailing services to adjust to the restrictions from governments and safety needs of customers.

1. Introduction

Retailing is one of the industries most affected by the COVID-19 pandemic (Wang et al., 2020; Beckers et al., 2021). At various times retail customers were not allowed to go to physical stores, not allowed to shop with their spouse or children, required to wear face masks, and not allowed to leave their homes except for specific errands. This obviously has affected retail firms, which serve customers' recurring needs and often rely on a physical store for service provision. Early during the COVID-19 pandemic in Sweden, the turnover of grocery firms was unaffected, whereas apparel and footwear firms lost up to 80% of their turnover. Retail firms have been forced to adapt to the COVID-19 pandemic by developing and introducing service innovations directed towards improving customer safety (Roggeveen and Sethuraman, 2020). Undoubtedly, the COVID-19 pandemic elevated service innovation to a critical strategic issue, as many retail firms had to innovate to survive and stay in business (Heinonen and Strandvik, 2020). However, the question of how exactly retail firms innovate to make customers feel safe and attract them to their stores during the COVID-19 pandemic remains to be answered.

Service innovation is a key factor for differentiation and improving the relative attractiveness of retail firms (Lee et al., 2022). Bolton et al. (2014) suggested that continuous small changes are key for service innovation and can make a big difference for retail firms trying to differentiate the customer experience and improve their relative attractiveness. By studying innovations introduced during the COVID-19 pandemic, Heinonen and Strandvik (2020) identified 11 categories of imposed service innovations, including innovations in service delivery, physical distancing, and remote presence. They further argued that firms have used their innovativeness to overcome the circumstances brought about by the COVID-19 pandemic and simultaneously improved their relative attractiveness. Service innovations are of different types and can be analyzed in various dimensions and categories (Snyder et al., 2016). This suggests that certain dimensions of service innovation might create more value for customers and thus decisively influence their perceptions of retailers' innovativeness. Prior research does not provide conclusive evidence on the dimensions of service innovation that retail customers appreciate the most. For instance, Dotzel et al. (2013) suggested that the introduction of an online channel has a higher impact on firm value than changes within the existing physical channel. However, they also suggested that for retail firms, changes to the existing physical channel are still crucial for increasing firm value. Whether these results are still valid during the COVID-19 pandemic need further investigation.

Although some studies have addressed service innovations and firm innovativeness during the COVID-19 pandemic (Berry et al., 2020; Bove and Benoit, 2020; Heinonen and Strandvik, 2020; Pantano et al., 2020),

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much of the research conducted thus far has been conceptual or based on qualitative case studies (Heinonen and Strandvik, 2020; Pantano et al., 2020). Moreover, limited research concerning mainly pandemic but also pre-pandemic reality has addressed how introduced service innovations are perceived by customers, how they influence the perceptions of firm innovativeness, and how these factors together affect customers' views of the relative attractiveness of retail firms. To address this research gap, the present study aimed to investigate how service innovations influence retailer service innovativeness and relative attractiveness during the COVID-19 pandemic. Taking a customer perspective, we investigated (a) how different dimensions of service innovations influence service innovativeness and (b) whether imposed service innovation mediate the relationship between service innovativeness and relative attractiveness. The empirical study was based on data from the Swedish Innovation Index (SII) that adopts a customer perspective on service innovation (Andreassen et al., 2017). The study focused on retail firms and was based on responses from nearly 6000 customers covering 28 retailers. Data were analyzed using partial least squares (PLS).

This research provides several theoretical and managerial contributions. First, our findings suggest that changes to the servicescape are the key driver of perceived service innovativeness. In particular, retailers who have developed their online channel are viewed as more innovative (see e.g. Dotzel et al. (2013)). Second, our findings suggest that imposed service innovation partially mediate the relationship between the service innovativeness and relative attractiveness of retailers. This highlights the key role of imposed service innovations (see e.g. Heinonen and Strandvik (2020)). As expected, this mediation only holds for physical retailers and not for online retailers, validating the boundary condition of this mediation effect. The key managerial implication is that the COVID-19 pandemic has changed how customers view digital service innovations in retailing. Our results suggest that the servicescape in the online channel has become essential for improving the relative attractiveness of retail firms, especially physical retailers building an online channel.

2. Theoretical framework

2.1. Service innovation and service innovativeness

A service innovation can be viewed as "a new process or offering that is put into practice and is adopted by and creates value for one or more stakeholders" (Gustafsson et al., 2020, p. 114). In particular, we considered customer perceptions of service innovations through the outcome of service firms' activities that result in changes to service offering characteristics, delivery processes, and resources (Gustafsson et al., 2020). Thus, in contrast to much of prior research on service innovation (Gallouj and Savona, 2008; Toivonen and Tuominen, 2009), this study adopted a customer-centric view of service innovation that is more closely related to the demarcation (emphasis on customer) and synthesis perspectives (emphasis on value) of service innovation (Witell et al., 2016).

In line with the service-dominant logic (Vargo and Lusch, 2004), Andreassen et al. (2017) argued that customers judge the value of service innovations. Customer focus and value have a long tradition in service research, where seminal articles by Levitt (1969), Shostack (1977, 1982), Ravald and Grönroos (1996), and Vargo and Lusch (2004) have played important roles. In a literature review, Witell et al. (2016) suggest that research on service innovation has evolved toward an emphasis on the customer and on value. For example, Cullen (2008) described service innovation as a value proposition that enables the customer of the service to create value for themselves. This implies that to be considered a service innovation, the implemented changes to the service must be noticeable to customers and enable value creation. Firms with the ability to develop such service innovations have higher degrees of service innovativeness.

Service innovativeness can be conceptualized in various ways depending on the adopted perspective and level of analysis (Lin, 2019). Regarding perspective, the degree of innovativeness can be judged either by the customer or the firm. One stream of research (Sullivan and Marvel, 2011; Melton and Hartline, 2015; Akgün et al., 2016) take a firm perspective, whereas another stream of research (Zolfagharian and Paswan, 2009; Lin, 2016, 2019) suggest that innovativeness should be viewed by the customer. This research adopted a customer perspective, viewing perceived innovativeness as judged by customers.

Regarding level of analysis, service innovativeness can be viewed as a product-level construct (Cheng and Huizingh, 2014; Melton and Hartline, 2015; Akgün et al., 2016) or as a firm-level construct that represents firms' abilities to introduce service innovations (Dotzel et al., 2013; Lin, 2016, 2019; Durmusoglu et al., 2018). We focused on firm-level service innovativeness as perceived by customers. On the basis of Lin (2016, 2019) and Zolfagharian and Paswan (2009), we define service innovativeness as the customer's perception of the service provider's ability to develop valuable service innovations.

The perception of service innovation and service innovativeness is based on changes to services over time. Therefore, service innovativeness depends on the spatial and temporal context. For instance, Yahoo, one of the first digital platforms that provided online services such as e-mail, online media, and search engines, was once viewed as a highly innovative firm. However, over time, they failed to retain such an image, as they focused on existing services and were outpaced by the service innovations of their competitors. Therefore, to maintain an image of service innovativeness, service providers must keep attracting customers through the introduction of new service offerings, new ways of interaction, or changes to other service dimensions (Lin, 2019). In other words, firms must constantly remind customers of their innovativeness by introducing new service innovations (Andreassen et al., 2017).

2.2. Dimensions of service innovation as antecedents of service innovativeness

There are three alternative ways of conceptualizing service innovation; (a) an overall definition, (b) through categories, (3) through dimensions (Witell et al., 2016). The present research focuses on dimensions, suggesting that a service is innovated through changes in different dimensions of the service. As an example, Edvardsson and Olsson (1996) suggested that service innovations consist of changes to service outcomes, processes, and resources. Similarly, den Hertog, van der Aa, and de Jong (2010) suggested that service innovations consist of at least one of the following service innovation dimensions: new service concept, interaction with customers, technological and/or organizational service delivery system, business partners, and revenue model. Meaning that changes in one or several dimensions together lead to one or several service innovations. Even though firms introduce changes to their services, these may not be perceived or considered novel or valuable by customers. For example, cost savings, increased efficiency, or other types of internal improvements are rarely noticed or valued by customers. In line with our definitions of service innovation and service innovativeness, we adopted the conceptual model of service innovativeness used in the Norwegian Innovation Index (Lervik-Olson et al., 2017) and in prior research (Keiningham et al., 2019).

The proposed conceptual model suggests that customers pay attention to and assess service innovations on the basis of changes to four distinct dimensions of the service: *servicescape*, *offering*, *delivery*, and *interaction*. This categorization is similar to Rust and Oliver's (1994) model of service quality that contains four service elements, of which three (environment, service product, and delivery) are quality elements centered around the physical product. Many of the proposed dimensions also coincide with den Hertog, van der Aa, and de Jong's (2010) categorization of dimensions of service innovations.

The *servicescape* dimension of service innovations is equivalent to Rust and Oliver's (1994) environment element related to the servicescape in both the physical (Bitner, 1992) and online aspects of

servicescape (Koernig, 2003; Mari and Poggesi, 2013). The visual and utility aspects of online and physical services are one of the first things customers easily observe.

Offering is related to how customers perceive and understand the changes to both the products and service of a given firm (Rust and Oliver, 1994). This dimension is related to what den Hertog, van der Aa, and de Jong (2010) call a new service concept, which includes both tangible and intangible elements of a novel solution to customer's needs.

Delivery is similar to the homonymous element in Rust and Oliver's (1994) model. It comprises changes to the delivery of the firm's tangible and intangible products. The dimension covers both organizational and technological aspects, including changes to the organization and technology used in service provision. Given our focus on customer perceptions, this dimension only covers the changes to service delivery that are visible to customers.

The three previous dimensions are more technical and do not consider the customer's role in service provision. To fully account for the changes to how service is delivered, how the service provider interacts with its customers during the service process must also be considered (Ravald and Grönroos, 1996; Groonroos, 2007). On the basis of this argument, we added *interaction* as the fourth dimension of service innovation. Interaction refers not only to person-to-person contact between the customer and the service provider but also to self-service interfaces in online channels and other touchpoints (den Hertog, van der Aa and de Jong, 2010).

Our conceptual model suggests that the more changes the customer perceives across the four dimensions of the service, the greater the perceived service innovativeness. Customers' assessments of innovativeness may also be influenced by consideration of how valuable the changes are to them (Zolfagharian and Paswan, 2009; Andreassen et al., 2017). Nevertheless, without changes occurring in the first place, the firm could not be perceived as innovative. In conclusion, noticeable changes to the service innovation dimensions are a necessary condition for perceived innovativeness in retail firms.

2.3. Service innovativeness and relative attractiveness

Being innovative is crucial for retailer competitiveness (Dotzel et al., 2013; Feng et al., 2020). Retailer competitiveness was operationalized through the relative attractiveness of a retailer, defined as the preference for one service provider over its competitors and their offerings (Andreassen and Lervik, 1999). Relative attractiveness involves a comparison with the perceptions of other alternatives; consequently, the preferred service provider among its competitors. It is of paramount importance for any service provider, as it predicts behavioral intentions and loyalty of customers (Andreassen and Lervik, 1999), which then further improve retailer competitiveness (Lee et al., 2010; Ramanathan et al., 2017). Prior studies on service innovativeness, such as Andreassen et al. (2017), stressed the importance of perceived service innovativeness by demonstrating its relationship to relative attractiveness. Being viewed as innovative helps retailers differentiate themselves in the marketplace (Gebauer et al., 2011) and effectively signals the capacity for creating novel valuable services to customers (Malhotra and Kubowicz, 2013; Lin, 2016, 2019).

2.4. Imposed service innovation

The short-term impact of the COVID-19 pandemic on retailing is significant and varies depending on the sector. Retailers of essential goods such as food and groceries have experienced increased demand, while retailers of non-essential goods such as apparel and footwear have faced a dramatic loss in sales and are fighting to stay in business (Roggeveen and Sethuraman, 2020). Given the restrictions on keeping physical stores open and the reduced demand due to customers' concern of contracting the infection, many retailers have been hit hard by the COVID-19 pandemic. They have been forced to rapidly adapt to the drastically changing situation and innovate to enable customers to continue using their services, for example, proposing safety measures and introducing changes that would help customers feel safe and limit the spread of COVID-19 (Berry et al., 2020; Bove and Benoit, 2020). Heinonen and Strandvik (2020) named these imposed service innovations, as they are largely reactive and forced upon the retailers by the circumstances. An *imposed service innovation* can be defined as customer perceptions on new processes or offerings that are put into practice as an enforced response to a sudden and unforeseen disruption (in this case the COVID-19 pandemic) and are adopted by and creates value for one or more stakeholders (see Gustafsson et al. (2020) and Heinonen and Strandvik (2020)). In contrast to the general definition of a service innovation, an *imposed service innovation* is reactive instead of proactive and is needed under immediate time pressure and need to address specific circumstances. In the case of COVID-19, these range from incremental service innovations such as frontline employees wearing face masks to radical service innovations, such as online cooking classes complementing regular restaurant services.

As for any service innovation, those imposed by COVID-19 can be termed innovations only if they create value and are noticeable by customers. The assessment of imposed service innovation requires actual changes to the services of the retailer. These actual changes are thus a necessary condition for the perception of imposed service innovations. However, the final assessment depends on additional factors such as customers' characteristics (Goldsmith and Hofacker, 1991; Hoffmann and Broekhuizen, 2010) and the focal retailer's innovativeness (Kunz et al., 2011; Barone and Jewell, 2013; Shams et al., 2015; Hubert et al., 2017).

As innovative service firms are proactively involved in developing service innovations that create value for customers and are capable of effectively adopting and introducing new ideas, they are better prepared when an urgency to introduce new services arises. Service firms with higher levels of innovativeness have a higher ability to reactively develop and introduce imposed service innovations to alter service provision to cope with the COVID-19 pandemic. This gives them a competitive advantage over less innovative service firms and improves their relative attractiveness (Gebauer et al., 2011). For example, if a retailer already provides a self-check-out cashier, then it is much easier to get customers to use it to limit the spread of COVID-19 than to develop and implement a whole new system. Accordingly, service innovativeness is expected to be related to imposed service innovations.

During the COVID-19 pandemic, the introduction of imposed service innovations obviously became imperative for retailers. If retailers show a lax attitude and are unreactive to the COVID-19 pandemic in service provision, customers are likely to view them negatively, particularly in relation to their competitors introducing significant imposed service innovations. According to Bove and Benoit (2020), any change caused by the COVID-19 pandemic can be viewed from the perspective of signaling theory as a safety signal. Communication through adjustment to the pandemic reality can lead to the reduction of customers' perception of the risk of infection (Bove and Benoit, 2020). Consequently, introducing imposed service innovations in response to the COVID-19 pandemic helps customers combat fear and increase the relative attractiveness of a service provider. We thus expect the perception of imposed service innovations to influence the relative attractiveness of retailers.

To summarize, we propose that the effect of perceived innovativeness on relative attractiveness is at least partially mediated by imposed service innovations. In other words, during the COVID-19 pandemic, the relative attractiveness of a retailer is affected not only by its service innovativeness but also by the extent to which it is perceived to have reacted to the circumstances by introducing imposed service innovations.

2.5. A framework for service innovation; service innovativeness and imposed service innovation in retailing

Based on the presented literature review, we developed a conceptual model that captures the (1) dimensions of service innovation, (2) service innovativeness, (3) imposed service innovation (by COVID-19 pandemic), and (4) relative attractiveness. Service firms perceived as highly innovative must constantly improve their offerings so that customers will continue to perceive them as innovative (Andreassen et al., 2017; Lin, 2019). Any lapse can hurt firms' image of innovativeness in the eyes of customers. Innovative service providers must thus be experts in constantly developing offerings and delivery options of higher value for their customers. The underlying logic behind the proposed conceptual model is that a customer perceives the service innovations through the proactive changes in four dimensions of the service (*servicescape*, *offering*, *delivery*, and *interaction*) and use these changes to evaluate the service innovativeness of the retail firm. As discussed in previous sections, a retail firm with high service innovativeness has higher relative attractiveness than their competitors. The effect of service innovativeness on relative attractiveness is mediated by imposed service innovation. High service innovativeness enables a retailer to make reactive changes (i.e. imposed service innovation) that further increases the relative attractiveness of the retailer due to, in this very case, mitigating the fear, see Fig. 1.

3. Methodology

The data used in the present study were obtained from the 2020 edition of the SII survey, conducted during fall 2020, when the COVID-19 pandemic was still a major concern for all retail firms. In addition to the existing questionnaire, we were allowed to include additional scales and questions regarding how retailing customers view innovations introduced in response to the COVID-19 pandemic. The survey covered Swedish retail firms, allowing us to test for differences between retail sectors. This is important, since retail firms have been hit hard by the COVID-19 pandemic and that different types of retailers have been affected differently (Roggeveen and Sethuraman, 2020). Unlike some other countries, Sweden allowed all retail stores to remain open, making it an ideal empirical context for our study, as customers could still visit stores in person as well as perform their shopping online. To study the effects of the COVID-19 pandemic, several specific questions relating to the imposed service innovation were added to the 2020 edition of the SII survey.

3.1. Sample and data collection

A professional market research firm was contacted to administer the online survey. The market research firm maintains a web panel of respondents with diverse backgrounds that is representative of the Swedish population. For the survey, invited were adult respondents who had shopped in store or online in one of the 28 selected retailers (e.g., H&M, IKEA, and ZARA), which were included in the survey on the basis of their market share to reach sufficient coverage of retail sectors. After indicating at which retailers the respondents had shopped, they were presented with a questionnaire on their perceptions of the retailer's service innovations and innovativeness. Data collection continued until obtaining approximately 200 responses per included retailer.

The selected retailers were divided into different subcategories where the key differentiator was how they were influenced by the COVID-19 pandemic based on the type of products they sold. The retailers were categorized as *grocery* (3 firms), *other retail* (e.g., apparel, footwear, and sports equipment; 22 firms), and *pure online retailers*, which had no physical stores (3 firms). In the initial analysis, additional categories were considered (i.e., separate groups for footwear and apparel) for other retailers, but because the results were similar for these groups, they were merged into the other retail group.

In total, 5655 customers responded to the survey (n = 596 for grocery, n = 4257 for other retail, and n = 602 for pure online retailers). Of the respondents, 54% were male (female, 46%), and their ages ranged from 18 to 94 years. Overall, the sample was comparable with the distribution of the Swedish population but with a slight bias toward older age groups.

3.2. Measurement

For the operationalization of the key theoretical constructs, existing

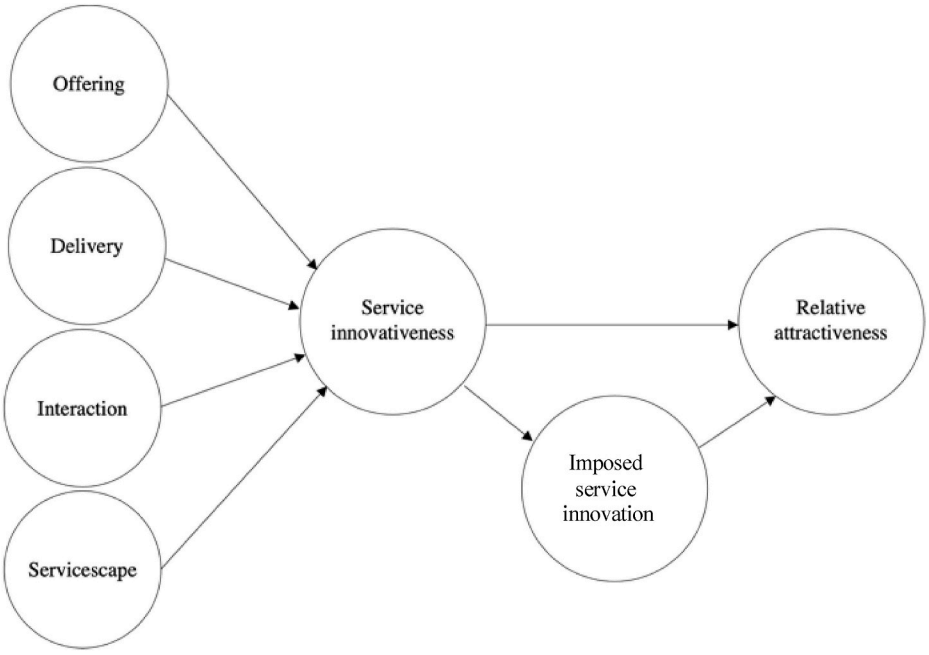


Fig. 1. Conceptual model.
Note: The arrows illustrate how physical retailers need to change to compete with e-retailers.

multiple-item scales were used (see Appendix A for the list of the included items). All constructs except imposed service innovation were already measured and validated by previous SII surveys and the Norwegian Innovation Index (Lervik-Olsen, Kurtmollaiev and Andreassen, 2017). All the variables were measured using 7-point Likert scales. In addition to the focal constructs, control variables such as demographics (age and sex) were captured in the survey.

In accordance with the study of Andreassen and Lervik (1999), relative attractiveness was operationalized as a three-item construct. The operationalization of service innovativeness has its origin in the study of Kunz et al. (2011) and has been further developed by Lervik-Olsen, Kurtmollaiev, and Andreassen (2017) and used in the study of van Riel et al. (2021). The operationalization of the four dimensions of service innovation is based on the two types of clues (mechanics and humanics) used to evaluate service encounters (Berry et al., 2006). The measurement of the specific four dimensions (offering, delivery, interaction, and servicescape) also have their origin in the literature (e.g., Bitner, 1992; Seiders et al., 2007). Further details about the scales can be found in Lervik-Olsen, Kurtmollaiev, and Andreassen's (2017) "Norwegian Innovation Index Methodology Report."

We further developed and tested a new scale for imposed service innovation based on changes that were introduced to improve service encounters during the COVID-19 pandemic. The scale was developed on the basis of existing service research on the implications of the COVID-19 pandemic on service industries, with emphasis on the retailing industry (Bove and Benoit, 2020; Roggeveen and Sethuraman, 2020). Accordingly, imposed service innovation was operationalized as a three-item construct, including consumers' perceptions of changes to reduce contagion, increase social distancing, and improve safety. The scale for imposed service innovation was further validated using factor analysis on an independent data set (n = 400) of retailers not fitting any of the three categories using SmartPLS (Afthanorhan, 2013; Ahmad and Afthanorhan, 2014). The results obtained included highly significant factor loadings for all items of approximately 0.95, and Cronbach's Alpha of 0.958 as well as composite reliability of 0.923 Hair et al. (2017). Those together with Heterotrait-to-Monotrait ratio values below 0.85 prove high validity and reliability of the new scale for imposed service innovation (Afthanorhan, 2013; Ahmad and Afthanorhan, 2014).

3.3. Analyses

The data was analyzed using PLS structural equation modelling (SEM) (Chin, 1998), with the help of the SmartPLS3 software (Ringle et al., 2015). The choice of PLS was motivated by this study being exploratory, for which the use of PLS was recommended (Hair et al., 2011). Moreover, the data were commonly non-normal, again prompting the preference for PLS methods over the covariance-based SEM methods (Chin, 1998; Hair et al., 2011). To test for the possible differences in effects between the retailing subsectors, data was divided into three datasets (grocery, other retail, and online) and the same analyses were performed on each dataset. The models were assessed on the basis of path coefficients and the differences between each model.

3.3.1. Measurement model

The overall structural models were based on the conceptual model depicted in Fig. 1 and all constructs were operationalized as reflective constructs. We followed the practices suggested by Hair et al. (2011) to evaluate the measurement model. Indicator reliability was assessed by inspecting indicator loadings. These are reported in Appendix A. Outer loadings should be higher than 0.7 for sufficient reliability. Not all the indicator loadings of our model fulfil this criterion. However, indicators with loadings between 0.4 and 0.7 should only be removed if the average variance extracted (AVE) and composite reliability of the measured construct are below their threshold values (Hair, Ringle and Sarstedt, 2011; Hair et al., 2017). As the AVE and composite reliability values (reported in Table 1) were higher than the threshold values for all latent variables, we kept the indicators without distorting the results.

To further investigate the measurement model, reliability of all three models was inspected by calculating the Cronbach's alpha and composite reliability (CR) values for all the constructs. As shown in Table 1, both measures of reliability were higher than the suggested 0.70 threshold for all latent variables in all the models. This suggested their sufficient internal consistency. The AVE values for all the latent constructs were higher than 0.5, indicating satisfactory convergent validity (Hair, Ringle and Sarstedt, 2011).

Finally, discriminant validity was assessed initially by using the Fornell-Larcker criterion (Fornell and Larcker, 1981). As reported in Table 1, all the constructs fulfilled the Fornell-Larcker criterion of AVE being greater than its squared correlation with any other construct, which suggests sufficient discriminant validity. Following Henseler et al. (2015), discriminant validity was also assessed using the heterotrait-monotrait ratio method. The value for this measure was lower than the proposed value of 0.85 for all the constructs, which again demonstrated the sufficient discriminant validity of the measurement model. The confidence interval obtained from bootstrapping further indicated that all the constructs were different (Henseler, Ringle and Sarstedt, 2015).

3.3.2. Structural model

Before analyzing the structural models, we checked for the possible occurrence of collinearity by inspecting the variance inflation factors (VIF) for all endogenous latent variables in the models. The VIF values of all the inner model variables were within the suggested range of 0.2–5.0 (Hair et al., 2019) and mostly <3.

Predictive power is the primary criterion for evaluating structural model (Hair, Ringle and Sarstedt, 2011). The R^2 values of most endogenous variables, as reported in Table 2, indicate low or moderate predictive power (Hair, Ringle and Sarstedt, 2011; Hair et al., 2019). The acceptable R^2 value depends greatly on the research field; only one of the R^2 values were slightly lower than the criterion proposed by Hair et al. (2011), which was to be expected because the model for online retailers is used to test the boundary condition of the conceptual model. The effect size f^2 differs greatly between models and variables, ranging from 0.001 to 0.961 (Table 3). The lowest effect sizes in all the models are the effects of delivery on service innovativeness, interaction on service innovativeness in other retail sectors, and imposed service innovation on relative attractiveness in the case of online retail. This is in line with our predictions, which are discussed later in the paper.

The predictive quality of the models was also assessed for their predictive relevance using Q^2 (Hair, Ringle and Sarstedt, 2011). As shown in Table 2, the Q^2 values for all the endogenous latent variables were >0, which suggests acceptable predictive relevance for all variables in the models. The predictive relevance for relative attractiveness was high in all three models. By contrast, the predictive relevance for service innovativeness and imposed service innovation was moderate (Henseler, Ringle and Sarstedt, 2015).

3.3.3. Common method bias

As the data for both dependent and independent constructs were gathered from the same respondents, there is a risk of common method bias (CMB). We used two different tests to check for the presence of CMB. First, we conducted Harman's single-factor test, which indicated a lack of CMB, as the variance explained by the single factor (approximately 46.75%) was lower than the threshold of 50%. Second, we used the approach proposed by Kock (2015) where factor level VIF values ≥ 3.3 indicate the presence of CMB. The VIFs for all the latent constructs were between 1.424 and 2.795, which suggests that CMB is not a key problem for our study.

3.3.4. Endogeneity checks

Considering the exploratory characteristic of this study, it was

Table 1
Correlations and constructs' measurement model.

	Cronbach's Alpha	CR	AVE	1	2	3	4	5	6	7
(1)Offering	0.946–0.954	0.965–0.970	0.902–0.916	0.950–0.957						
(2)Delivery	0.885–0.907	0.911–0.928	0.640–0.686	0.541–0.615	0.800–0.828					
(3)Interaction	0.958–0.975	0.973–0.984	0.923–0.953	0.444–0.516	0.694–0.796	0.961–0.976				
(4)Servicescape	0.886–0.959	0.930–0.980	0.816–0.960	0.350–0.418	0.649–0.735	0.570–0.733	0.903–0.980			
(5)Relative attractiveness	0.897–0.924	0.929–0.946	0.767–0.816	0.432–0.500	0.388–0.449	0.396–0.435	0.363–0.432	0.876–0.903		
(6)Imposed service innovation	0.955–0.964	0.971–0.976	0.918–0.932	0.312–0.392	0.337–0.503	0.322–0.526	0.412–0.530	0.390–0.483	0.958–0.966	
(7)Service innovativeness	0.926–0.938	0.953–0.960	0.871–0.889	0.434–0.482	0.439–0.487	0.443–0.476	0.442–0.513	0.730–0.761	0.467–0.522	0.933–0.943

Diagonal elements in the correlations part of the matrix are the square root of the AVE.

Table 2
Structural model properties.

		Model		
		Grocery	Other Retail	Online
R^2	Relative attractiveness	0.588	0.543	0.566
	Imposed service innovation	0.272	0.264	0.217
	Service innovativeness	0.369	0.334	0.297
Q^2	Relative attractiveness	0.474	0.414	0.438
	Imposed service innovation	0.247	0.240	0.201
	Service innovativeness	0.324	0.288	0.262

Table 3
Structural model properties – effect sizes.

f^2	Model		
	Grocery	Other Retail	Online
Offering - > Service innovativeness	0.092	0.054	0.082
Delivery - > Service innovativeness	0.002	0.006	0.001
Interaction - > Service innovativeness	0.023	0.004	0.023
Servicescape- > Service innovativeness	0.097	0.064	0.019
Imposed service innovation - > Relative attractiveness	0.024	0.023	0.004
Service innovativeness - > Relative attractiveness	0.867	0.721	0.961
Service innovativeness - > Imposed service innovation	0.375	0.358	0.280

important to check for possible omission of additional explanatory constructs in the models to rule out the influence of endogeneity. We analyzed the key relationships of the structural models (relative attractiveness, innovativeness, and imposed service innovation) by using the Gaussian copulas approach with the R software (Hult et al., 2018). The data in all models tested positive for non-normality, which is a requirement for using the approach. No endogeneity issues were identified in the grocery model. However, the results indicated potential endogeneity in the case of service innovativeness for the other retail model and imposed service innovation for the online retail model. Innovativeness is indeed an endogenous variable in the other retail model, and as we expected, the online model might be problematic. As the online model is only used to test the boundary condition of the conceptual model, we continued with the analysis.

3.3.5. Mediation

The proposed mediation effect of innovativeness on attractiveness through the imposed service innovation was tested using the mediation analysis procedure with the PROCESS (v.3.5) macro in the SPSS Statistics version 27 software (Demming et al., 2017).

4. Results

The results of the PLS analysis for the three retail subsector models are shown in Table 4. The importance of service innovation dimensions as antecedents of service innovativeness varies significantly across all three models. For both grocery and other retailers, the servicescape ($\beta_{grocery} = 0.337$, $p < 0.01$; $\beta_{other\ retail} = 0.284$, $p < 0.01$) has the largest effect on service innovativeness, followed by changes in offering ($\beta_{grocery} = 0.301$, $p < 0.01$; $\beta_{other\ retail} = 0.243$, $p < 0.01$). We found no significant effect of delivery ($\beta = -0.054$, $p = 0.374$) on innovativeness for grocery. The pattern of the antecedents of perceived innovativeness is notably different for online retailers. In the online retail model, the changes to service offering ($\beta_{online} = 0.286$, $p < 0.01$) had the greatest impact on innovativeness. The changes to service delivery appeared to have no effect on online retailers ($\beta = -0.046$, $p = 0.562$). In conclusion, these findings suggest considerable differences in how customers

Table 4
Path model.

		Model								
		Grocery			Other Retail			Online		
		β	t-value	p-value	β	t-value	p-value	β	t-value	p-value
Antecedents of service innovativeness	Offering - > Service innovativeness	0.301	6.600	0.000	0.243	11.944	0.000	0.286	5.533	0.000
	Delivery - > Service innovativeness	−0.054	0.905	0.374 ns	0.103	4.149	0.000	−0.046	0.579	0.562 ns
	Interaction - > Service innovativeness	0.171	3.015	0.003	0.072	3.437	0.001	0.237	3.192	0.001
	Servicescape- > Service innovativeness	0.337	6.515	0.000	0.284	13.834	0.000	0.192	2.816	0.005
Consequences of service innovativeness	Imposed service innovation - > Relative attractiveness	0.117	3.251	0.001	0.120	8.302	0.000	0.049	1.400	0.162 ns
	Service innovativeness - > Relative attractiveness	0.700	22.398	0.000	0.669	55.260	0.000	0.729	24.959	0.000
Influence of imposed service innovation	Service innovativeness - > Imposed service innovation	0.522	15.601	0.000	0.514	36.926	0.000	0.467	11.99	0.000

ns not significant (at 0.05).

perceive the changes to services in different retail subsectors and how these changes affect customers' perceptions of the innovativeness of these retailers.

In all three models, service innovativeness had a considerable impact on both the relative attractiveness of the retailer ($\beta \approx 0.7$, $p < 0.05$) and imposed service innovation ($\beta \approx 0.5$, $p < 0.05$). This suggests that irrespective of the retailer type, being innovative is positively related to the attractiveness of the retailer to customers in comparison with competitors. The service innovativeness of the retailer also significantly affects the customer's assessment of imposed service innovation.

We also tested for the mediation effects of imposed service innovation in all three models. The results of this analysis are reported in Table 5. In the grocery model, imposed service innovation significantly mediated the effect of innovativeness on relative attractiveness ($\beta = 0.061$, $p = 0.002$). A similar pattern was found for the other retail model, where imposed service innovation again significantly mediated the effect of innovativeness on relative attractiveness ($\beta = 0.062$, $p = 0.000$). These findings indicate a partial complementary mediation effect of service innovativeness on relative attractiveness in grocery and other retail. To check the boundary conditions, we tested the mediation effect on the online retailers sample but found no mediation effect of imposed service innovation on the relationship between innovativeness and relative attractiveness ($\beta = -0.023$, $p = 0.175$). This was to be expected because unlike retailers with physical stores, online retailers were not forced to make changes to their business model in response to the COVID-19 pandemic. The identification of this boundary condition shows the predictive relevance of the proposed model.

To summarize, the mediation analysis result suggests that the relative attractiveness of retailers during a COVID-19 pandemic is partly dependent on the extent to which customers perceive firms as having introduced imposed service innovations. In other words, simply being perceived as innovative is not sufficient for retailers to achieve relative attractiveness during the COVID-19 pandemic. However, this effect depends on the sector, as pure online retailers with no physical presence had little opportunity to introduce COVID-19 imposed service innovations.

5. Discussion

5.1. Theoretical implications

The present study contributes to retailing research by showing the role of service innovation and innovativeness in a crisis such as the current COVID-19 pandemic. Service innovations are a source of competitive advantage, but recent evidence suggests that their importance is even greater during times of crisis (Su et al., 2013; Heinonen and Strandvik, 2020). During the COVID-19 pandemic, service innovativeness may be the key differentiator between successful retailers and those that end up filing for bankruptcy. This empirical study shows the importance of taking a customer perspective on service innovation and innovativeness. From a signaling theory perspective, changes serve not only as actual improvements but also as signs of safety, which is valuable for customers (Bove and Benoit, 2020). The present research contributes to the understanding of the dimensions of service innovation that are viewed as innovative by customers and how service innovativeness can help retail firms perform imposed service innovation to change the service to adjust to restrictions and the safety needs of customers.

First, the present research shows the dimensions of service innovations that make customers perceive an organization as innovative. During the COVID-19 pandemic, changes to the servicescape and offering of a service make a physical retailer stand out. Dotzel, Shankar, and Berry (2013) previously suggested that in people-oriented industries (e.g., retail), changes in the existing physical market channels for service provision are still key for increasing firm value. During the COVID-19 pandemic, this has changed, especially in people-oriented industries. During the COVID-19 pandemic, changes in the virtual servicescape led customers to perceive a physical retailer as innovative. By contrast, for online retailers, changing the offering is key to being competitive and viewed as innovative. We can argue that the e-servicescape for online retailers has reached stability in the marketplace, as that is their primary

Table 5
Mediation analysis.

	Model								
	Grocery			Other Retail			Online		
	Effect	t-value	p-value	effect	t-value	p-value	effect	t-value	p-value
Service innovativeness - > Relative attractiveness	0.700	22.674	0.000	0.669	55.384	0.000	0.729	23.989	0.000
Service innovativeness- > Imposed service innovation - > Relative attractiveness	0.061	3.166	0.002	0.062	7.897	0.000	0.023	1.359	0.175 ns
Total	0.761	28.592	0.000	0.730	69.699	0.000	0.752	27.957	0.000

ns not significant (at 0.05).

market channel; therefore, only incremental innovation takes place in this dimension.

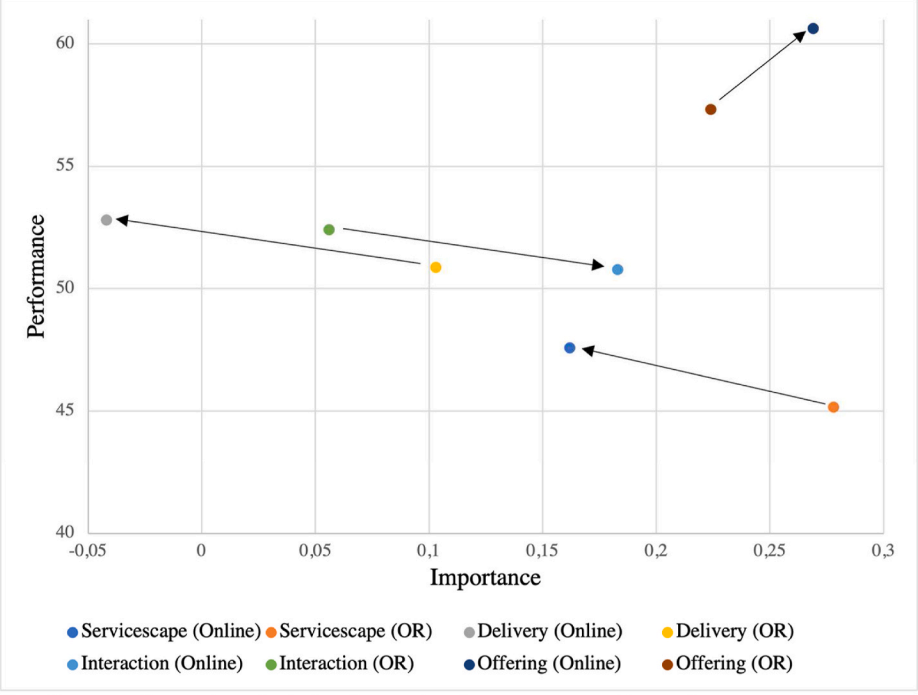
Second, the present research shows that retailers with higher service innovativeness had been in a good position to improve their relative attractiveness during the COVID-19 pandemic. In a qualitative study, Heinonen and Strandvik (2020) identified different types of imposed service innovation and argued that these were important for service firms to stay in business. The present research studied such innovations in a larger sample, and the findings suggest that service innovativeness facilitate the development of imposed service innovation to increase social distancing and improve the feeling of safety when shopping. This means that retail firms that have the ability to proactively address customer needs through service innovation also have the ability to reactively address demands posed by restrictions and regulations. Service innovativeness had a direct effect on relative attractiveness, but imposed service innovation partially mediated the effect of service innovativeness on relative attractiveness for grocery and other retail sectors. This effect is not present for online retailers, which shows that imposed service innovation has been more relevant for physical retailers. This is an important contribution, since it shows that the identified theoretical construct of imposed service innovation (Strandvik and Heinonen, 2020) has external validity and can be useful to further understand different types of service innovations.

5.2. Managerial implications

This study examines the role of service innovativeness in coping with crisis situations, such as the COVID-19 pandemic. Our findings confirm the importance of service innovativeness for the relative attractiveness of a service firm. Moreover, service innovativeness can help retailer to reactively address changing customer needs in a crisis. Therefore, even greater attention should be placed on service innovativeness as a strategic priority that can mitigate the negative consequences of crisis situations. Before the COVID-19 pandemic, many retailers focused on proactively developing service encounters with unique customer experiences involving fun and entertainment. However, after the COVID-19 pandemic, customers may evaluate the service encounter on the basis of how clean the store is and whether the store is spacious enough to allow social distancing (Roggeveen and Sethuraman, 2020).

The pandemic had varying effects on different retail firms; grocery stores had retained much of their turnover, whereas apparel and footwear retailers had lost much of their business. As seen in this study, the innovativeness of a physical retailer is driven by changes to the servicescape, directly influenced by the COVID-19 pandemic, which has limited the physical interaction between people. This may be a sign that developing an alternative servicescape, especially one that is online, provides the benefit of not only reaching customers but also overcoming the challenges of a crisis. This is not visible in e-retail, as by definition, e-retailers operate online with limited direct human interaction.

The situation can be viewed from the perspective of physical retailers, which have established stores as the key touchpoint for customers and now subsequently add and improve online servicescapes to interact with customers (Bolton et al., 2021). Beckers et al. (2021) suggest that these retailers have difficulties to compete with e-retailers due to a lack of professionalism online. The present study provides guidance on what physical retailers need to innovate to become more successful online, and to provide an innovative online channel. That is done with the help of Importance-performance map analysis (IPMA) which allows to enrich and interprate the analysis in PLS-SEM. It contrasts constructs' importance in shaping the construct being targeted, with the constructs' in question performance indicated with their latent variables scours (Ringle and Sarstedt, 2016). As such it allows to indicate aspects which needs to be prioritized to increase performance and allow to contrast different groups to draw conclusions on constructs' behavior between them. Fig. 2 depicts the developed IPMA (Ringle and Sarstedt, 2016), contrasting the key drivers of customer-perceived innovativeness for physical retailers (clothes and shoes) and online retailers. It provides an overview of what may shape the service innovativeness of physical retailers that want to compete with pure online retailers through further developing their online channel (Fig. 2). The arrows in Fig. 2 show how the perceived innovativeness might be viewed differently between the physical and online channel for a retailer. The IPMA results have several managerial implications. First, they show that after establishing an online servicescape, further changes



Note: The arrows illustrate how physical retailers need to change to compete with e-retailers.

Fig. 2. Comparison of IPMA for online and other retail firms.

in the online servicescape will not be viewed as innovative by customers. Instead, changes to the offering will drive the service innovativeness and competitive advantage of omni-channel retailers. Second, the results show that a further key to service innovativeness is transferring the feeling of a more personal interaction from the store touchpoint to the online touchpoint. The IPMA graph shows that the same level of performance cannot be achieved online as in the store and that new ways to interact with customers must be created. Here, virtual assistants, chatbots, and artificial intelligence can be used to create better interactions with customers. Recent research shows that an interaction with a firm online will not be viewed in the same way as an interaction with the same firm in a store; hence, the interaction should be designed differently (Bolton et al., 2021).

5.3. Limitations and directions for further research

This research has several limitations that open avenues for further research. First, the study was performed in a Nordic context and should be replicated in other regions to determine if innovativeness has a similar role in countries that have addressed the COVID-19 pandemic differently. The number of infections, restrictions, and COVID-19-related regulations differ between regions and countries and may influence both customers in their needs and judgement and retailers in implementing changes. Second, the present study focused on triggered by COVID-19 pandemic imposed service innovations to handle safety, social distancing, and the reduction of infections. However, it does not focus in detail on what exact innovations retailers have implemented. Understanding the detailed effects of different types of service innovations would add to the knowledge created by this research. Finally, the research design did not allow for the identification of the causality among the key theoretical constructs, thus warranting further research studies on the topic.

APPENDIX A. MEASURES

		Grocery			Other retail			Online		
Construct	Indicators	Mean	SD	Loadings	Mean	SD	Loadings	Mean	SD	Loadings
Relative attractiveness	To what extent:									
	does [firm X] have better prices than other similar companies	3.60	1.488	0.84	4.39	1.267	0.776	4.551	1.267	0.831
	does [firm X] offer better quality goods/services than other similar companies	4.022	1.371	0.907	4.165	1.223	0.893	4.331	1.302	0.881
	does [firm X] have a better reputation than other similar companies	4.099	1.397	0.928	4.259	1.226	0.912	4.455	1.196	0.906
	is [firm X] more attractive than other similar companies	4.109	1.465	0.94	4.366	1.277	0.916	4.596	1.287	0.911
Service innovativeness	To what extent do you agree with the following statements:									
	[firm X] changes the market with its goods/services	3.713	1.432	0.936	3.915	1.359	0.931	4.126	1.457	0.94
	[firm X] is very creative/innovative company	3.861	1.441	0.952	4.062	1.335	0.941	4.287	1.42	0.954
	[firm X] is a pioneer in its industry	3.721	1.516	0.941	3.94	1.408	0.927	4.159	1.418	0.923
Imposed service innovation	Due to COVID-19, to what extent do you feel that there have been changes at the company [firm X] connected to:									
	measures to increase social distance	4.683	1.431	0.949	4.142	1.347	0.95	3.595	1.669	0.971
	measures to reduce the spread of infection	4.676	1.44	0.975	4.207	1.329	0.97	3.666	1.71	0.979
	actions against COVID-19 that make me feel safe as a customer	4.577	1.498	0.961	4.22	1.364	0.954	3.872	1.708	0.947
Offering	In recent months, to what extend there has been a change in terms of									
	how [firm X's] goods and/or services match your wishes	4.5	1.509	0.942	4.413	1.468	0.946	4.628	1.505	0.96
	how [firm X's] goods and/or services meet your needs	4.698	1.501	0.962	4.53	1.454	0.96	4.688	1.507	0.959
	[firm X's] total market offering	4.542	1.464	0.949	4.381	1.44	0.943	4.605	1.485	0.953
Delivery	In recent months, to what extend there has been a change in terms of									
	the way [firm X] delivers its goods/services	3.99	1.534	0.891	4.021	1.491	0.902	4.286	1.792	0.898
	the way [firm X] presents its goods/services	4.062	1.55	0.917	4.068	1.506	0.911	4.168	1.691	0.916
	how easy it is to use [firm X's] goods/services	4.463	1.617	0.852	4.438	1.583	0.882	4.575	1.789	0.876
	how fast can [firm X] deliver its goods/services	4.213	1.505	0.865	4.268	1.516	0.884	4.648	1.767	0.874
	how much effort you need to put into buying [firm X's] goods/services	3.497	1.557	0.651*	3.466	1.514	0.566*	3.457	1.648	0.694*
	how much effort you need to put into being able to use [firm X's] goods/services	3.47	1.545	0.633*	3.409	1.516	0.562*	3.463	1.685	0.677*
Interaction	In recent months, to what extend there has been a change in terms of									
	how [firm X] treat you as a customer	4.161	1.769	0.952	4.174	1.712	0.966	4.003	1.809	0.972
	how [firm X] take care of you as a customer	4.193	1.77	0.975	4.173	1.702	0.98	4.066	1.801	0.984
	how [firm X] communicate with you as a customer	4.086	1.666	0.955	4.093	1.672	0.959	4.071	1.752	0.973
Servicescape	In recent months, to what extend there has been a change in terms of									
	visual aspect of websites	3.564	1.398	0.93	3.674	1.412	0.935	3.831	1.625	0.978
	physical interior	3.758	1.583	0.852	3.755	1.465	0.867	NA	NA	NA
	digital solutions	3.664	1.392	0.926	3.7	1.4	0.94	3.877	1.63	0.982

*Values below threshold of 0.7 however still appropriate as they are bigger then 0.4 and their deletion does not improve composite reliability or AVE substantively.

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