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# Retail service innovations and their impact on retailer shareholder value: evidence from an event study

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## Abstract

To survive in the competitive retail landscape, retailers launch service innovations designed to grant additional value to consumers. This study investigates whether and in which circumstances retail service innovations create shareholder value, using stock returns to capture investors' point of view. An event study is used to analyze a broad, varied set of 350 service innovation announcements by publicly listed retailers. The study shows that the customer value benefit(s) aimed for by the retail service innovation (i.e., its level of convenience and engagement) has an impact on shareholder value. Moreover, this impact is contingent upon the stage of the consumer purchase process that the innovation targets, and upon the hedonic or utilitarian nature of the products offered by the retailer that initiates the innovation. The impact on retailer shareholder value is more positive for service innovations high on convenience that speed up and simplify the shopping process, when implemented at the purchase stage or by retailers offering utilitarian products. Service innovations high on engagement that focus more on non-transactional initiatives instead fare well in the post-purchase stage.

**Keywords** Retailing · Service innovation · Shareholder value · Event study

Retailers compete for shrinking shares of consumers' wallets, due to harsh economic conditions, a dramatically changed competitive retail environment, booming e-commerce, and new digital channels (e.g., social media, mobile channels), all of which have altered retail business models and shopping

behaviors (Grewal et al. 2009; Verhoef et al. 2009, 2015). One option, designed to differentiate a retail company from competitors and provide a better customer experience, is to launch service innovations in existing stores, in an attempt to offer consumers additional value. In line with Dotzel and Shankar (2019), we define a service innovation as an exploitation of an idea for a service that is *new to the firm* and intended to provide customers with *new benefits* (i.e., additional customer value). In contrast with product innovations, retail service innovations aim to improve consumers' purchase process, not the actual product that is offered (cf. Berry et al. 2006; Homburg et al. 2002).<sup>1</sup>

When retailers launch service innovations, they hope the benefits outweigh the costs of introducing and maintaining them. In this research, we focus on the impact of retail service innovation announcements on retailer shareholder value, using stock returns as input (Beckers et al. 2018; Sorescu et al. 2007). Investigating whether and in which circumstances service innovations create shareholder value is of vital interest to retail managers (Srivastava et al. 1998). Investors adjust

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<sup>1</sup> Some service innovations, like personalized advice, can improve products too, through the added service they provide. While this could be the outcome of the service innovations we consider, in this research, we do not focus on product innovations that directly alter the core benefits that the retailer delivers.

stock prices depending on their expectations on the incremental cash flow-generating abilities of the investment done by the company (Day and Fahey 1988). As the incremental cash flows and the associated risks are not directly observable or easily predictable, investors estimate the future expected incremental cash flows according to their expectations of how involved stakeholders will react to the innovation in the future (Sorescu et al. 2007).

The spectrum of retail service innovations that are introduced nowadays is broad. Examples include shops-in-shops, in-store cafés, in-store technologies, checkout-free stores, alternative delivery or payment methods, and personalized promotions. Retailers have a large set of service innovations to choose from (Inman and Nikolova 2017), yet, they lack a solid research basis for guiding their choices. We develop a framework of the impact of a set of service innovations that vary in the customer value benefit(s) they aim to provide on retailer shareholder value, while we take into account important contingencies.

Service innovations differ in terms of the customer value benefit(s) that they aim to provide (Berry et al. 2006; Grewal et al. 2020; Reinartz et al. 2019; Sorescu et al. 2011). In particular, service innovations might offer substantial convenience, by reducing the time and effort that consumers must exert to buy products (Grewal et al. 2020), and/or they might pursue greater engagement, by evoking emotional and psychological bonds that go beyond purchase (Beckers et al. 2018; Sorescu et al. 2011; Van Doorn et al. 2010). In line with Grewal et al. (2020), service innovations can score high (low) on both customer value benefits. The question arises whether service innovations that pursue convenience (with examples like self-scan tools, in-store kiosks, in-house deliveries, payment improvements) create more shareholder value than those that pursue engagement (with examples like in-store cafés, entertainment apps, online communities, in-store social media possibilities).

Additionally, we investigate whether the effect of the type of customer value benefit(s) that a retail service innovation aims to provide on shareholder value is contingent upon two factors: the stage of the purchase process that the retail service innovation targets and the nature of products offered by the initiating retailer that introduces the retail service innovation (e.g., Berry et al. 2006; Grewal et al. 2020; Reinartz et al. 2019). In line with prior research (Grewal and Roggeveen 2020; Lemon and Verhoef 2016; Verhoef et al. 2007), we distinguish between pre-purchase, purchase, and post-purchase stages. Each stage is part of the customer purchase journey that a consumer goes through (Lemon and Verhoef 2016), and service innovations are important touchpoints that can make up the customer experience (cf. Boyd et al. 2019). Our analysis will reveal whether the investors' estimation of future expected incremental cash flows for retail service innovations that aim to provide convenience and/or engagement

depends on the customer purchase stage the innovation targets. For example, consider an innovation that targets the purchase stage, when consumers already have made up their mind and are ready to buy a product. Would in this purchase stage a service innovation that simplifies and speeds up the purchase process (i.e., one that aims to provide convenience) enhance shareholder value more than a service innovation that aims to build emotional links with customers (i.e., one that aims to provide engagement)?

Then with regard to the retailer-related contingency factor, we investigate whether the impact on shareholder value of the customer value benefit(s) that service innovations aim to provide depends on the hedonic or utilitarian nature of the products the initiating retailer offers (Grewal et al. 2020). This analysis will, for example, reveal whether service innovations that aim to provide convenience relative to those that aim to provide engagement enhance the shareholder value more for retailers offering (primarily) utilitarian products, because benefits like monetary savings and frictionless shopping drive customers to patronize such stores. The analysis will also assess whether hedonic benefits, preferential treatment, and unique experiences enhance shareholder value more for retailers offering (primarily) hedonic products, where customers appreciate such engagement initiatives.

To answer our research questions, we use an event study and evaluate the impact of retail service innovation introductions according to retailer shareholder evaluations (stock returns), using a broad set of 350 innovations announced during 2011–2016 by U.S.-based, publicly listed retailers. The results reveal that service innovations that reduce frictions in the shopping process, by making it more convenient, generate more shareholder value than those that engage consumers in an attempt to enhance the bond with the retailer. Yet, there are important contingencies when service innovations with certain customer value benefit(s) lead to larger shareholder value. If a service innovation scores high on convenience, it generates more shareholder value in the purchase stage and for retailers that (primarily) sell utilitarian products, likely because investors expect larger future cash flows when customer value benefits are congruent with the goals consumers seek in that stage or at that type of retailer. In a similar fashion, more retailer shareholder value accrues for service innovations with higher engagement scores in the post-purchase stage, where future cash flows are expected to improve as the potential for non-transactional, beyond-purchase bonding is more pertinent at that stage.

We contribute to the literature in several ways. First, substantial research has investigated *consumers'* attitudes toward a specific service innovation, prior to its usage (e.g., self-service technology, Blut et al. 2016; mobile apps, Han et al. 2016; augmented reality, Rese et al. 2014), or changes in their attitudes and shopping behaviors while using it (e.g., virtual reality encourages word of mouth and attracts new customers, Hilken et al. 2017; mobile shopping apps increase the number of

orders, Wang et al. 2015). Inman and Nikolova (2017) built on customers' expected perceptions and reactions to service innovations to derive a *conceptual*, customer-centric decision calculus for retailers when considering a new shopper-facing retail technology. While it is important for a retail manager to know whether a service innovation is well perceived by its customers, how it changes attitudinal and behavioral outcomes and whether it is worth to adopt it, *empirical* insights into its *net* impact on *retailer shareholder value* after announcing the service innovation are crucial because this takes the expectations of an important stakeholder, being the investor, into account (Day and Fahey 1988).

Second, in studies that do empirically look at shareholder value, there is research by for instance Dotzel and Shankar (2019) and Dotzel et al. (2013) that uses an aggregate measure of the *total yearly level of innovativeness* (e.g., annual firm-level count of service innovations) whereas we calculate the shareholder value for *each announced service innovation separately*. Moreover, empirical research that looked at the effect of service innovations on stock returns usually considered one or a group of innovations that *all offer the same customer value benefit* (self-service technologies, Yang and Klassen 2008; branded mobile apps, Boyd et al. 2019; customer engagement initiatives, Beckers et al. 2018). We add to this literature by studying and *comparing a multitude* of retail service innovations and their impacts on shareholder value. We are also unique in that we look at two important contingencies, the targeted stage of the purchase process and the nature of the products offered by the initiating retailer, that have been neglected so far in prior empirical research.

Third, the contingencies that were neglected so far in prior empirical research were hinted at in prior literature that proposes *conceptual* classifications of different innovations (Grewal et al. 2020; Reinartz et al. 2019; Sorescu et al. 2011). We set the next step by *quantifying* the impact of the dimensions underlying these classifications on shareholder value and *empirically* investigating the moderating role of two important contingencies. We propose a theory-based framework of the effect of service innovations on shareholder value and thus offer an empirical assessment of the differential effects of the dimensions and the suggested moderating effects contained in prior conceptual classifications. We summarize prior literature that empirically assessed the impact of retail service innovations on shareholder value as well as the prior conceptual literature in Table 1.

Furthermore, this study offers some important managerial implications for retail firms that plan to introduce service innovations. Retailers, with their inherently limited resources, must prioritize their investments (Grewal et al. 2020), and investors are important stakeholders that observe such decisions. Our findings help reveal which customer value benefit type that the service innovation aims to provide (more convenience and/or engagement) and in which circumstances (the

stage of the purchase process the innovation targets and the nature of products offered by the initiating retailer) achieve the greatest shareholder value lifts. We thereby offer guidance on how to anticipate stock market reactions to announcements of a retail service innovation. Knowing the assessments of investors, retailers can use our findings to prioritize and substantiate their choices of service innovations.

## Conceptual framework

A stock return reflects investors' perceptions of the long-term effects of some event or action on firm performance (Sorescu et al. 2011), and in our case captures investors' expectations of the extent to which the innovation will contribute to future revenue streams, relative to the anticipated future costs associated with purchasing, developing, installing, and maintaining the innovation (Boyd et al. 2019). Building on prior conceptual studies (Grewal et al. 2020; Inman and Nikolova 2017; Reinartz et al. 2019; Sorescu et al. 2011), we expect service innovations to reduce operating costs after implementation (e.g., automation shifts responsibilities and costs from the retailer to the customer; Reinartz et al. 2019) and/or increase revenue generated by attracting new shoppers, retaining existing ones, or deepening relationships (e.g., personalization makes marketing efforts more relevant and unique; integration into consumers' routines encourages richer interactions; Reinartz et al. 2019). Therefore, investors likely anticipate increased future cash flows of service innovations, which leads to a positively adjusted firm's stock price. However, the extent of the positive effect on shareholder value is expected to vary substantially, as detailed in Fig. 1.

This conceptual framework suggests that the impact on shareholder value differs based on whether the innovation aims to provide the customer value benefit(s) of convenience or engagement, and depends on the stage of the customer purchase process targeted by the innovation (as an innovation characteristic) and the nature of the products offered by the innovating retailer (as a retailer characteristic). We also control for variables that directly affect retailer shareholder value and that are related to the announcement of the innovation or the retail setting where it gets introduced (see the Model section for further specifications). In what follows, we first explain the two customer value benefit types that retail service innovations can aim to provide, and next derive expectations on how the two contingencies play a moderating role.

## Customer value benefits and retailer shareholder value

Inspired by theoretical frameworks that classify digitization (Reinartz et al. 2019), service innovation (Sorescu et al. 2011), or in-store technology (Grewal et al. 2020) efforts

**Table 1** Overview of relevant literature on retail service innovations

Study	Study type	Setting		Service innovation		Nr of innovations	Aggregation level	Outcome variable	Customer value benefit type		Contingency factors on customer value benefit type
		Focus	Year	Nr of firms	Focus				Year	Convenience	
Dotzel and Shankar 2019	Empirical	Publicly-listed U.S. firms	2000–2007	119	Compare B2B and B2C service innovations	2263	Aggregate (annual firm-level)	Shareholder value			
Dotzel et al. 2013	Empirical	Publicly-listed U.S. firms	2000–2004	90	Compare e- (Internet) and p- (people) service innovations	1049	Aggregate	Shareholder value			
Yang and Klassen 2008	Empirical	Publicly-listed U.S. firms	1984–2004	60	Self-service service innovation	60	Individual (per service innovation)	Shareholder value			
Boyd et al. 2019	Empirical	Publicly-listed firms	2008–2014	N/N <sup>a</sup>	Branded mobile apps & design features	455	Individual	Shareholder value			
Beckers et al. 2018	Empirical	Publicly-listed U.S. European & Asian firms	1999–2014	67	Customer engagement initiatives and its contingencies	88	Individual	Shareholder value	(✓)	(word-of-mouth & voice initiatives)	
Sorescu et al. 2011	Conceptual	N/S <sup>b</sup>			Classification of innovations in business models	N/S	Individual	N/R <sup>c</sup>	✓	(efficiency & effectiveness)	
Reinartz et al. 2019	Conceptual	N/S			Identification of firm-level value creation sources	N/S	Individual	N/R	✓	(experience)	✓
Grewal et al. 2020	Conceptual	N/S			Typology of new and futuristic in-store technology	N/S	Individual	N/R	✓	(✓)	✓
<b>This study</b>	Empirical	Publicly-listed U.S. retailers	2011–2016	34	Type of customer benefit(s) a retail service innovation aims to improve & its contingencies	350	Individual	Shareholder value	✓	✓	✓

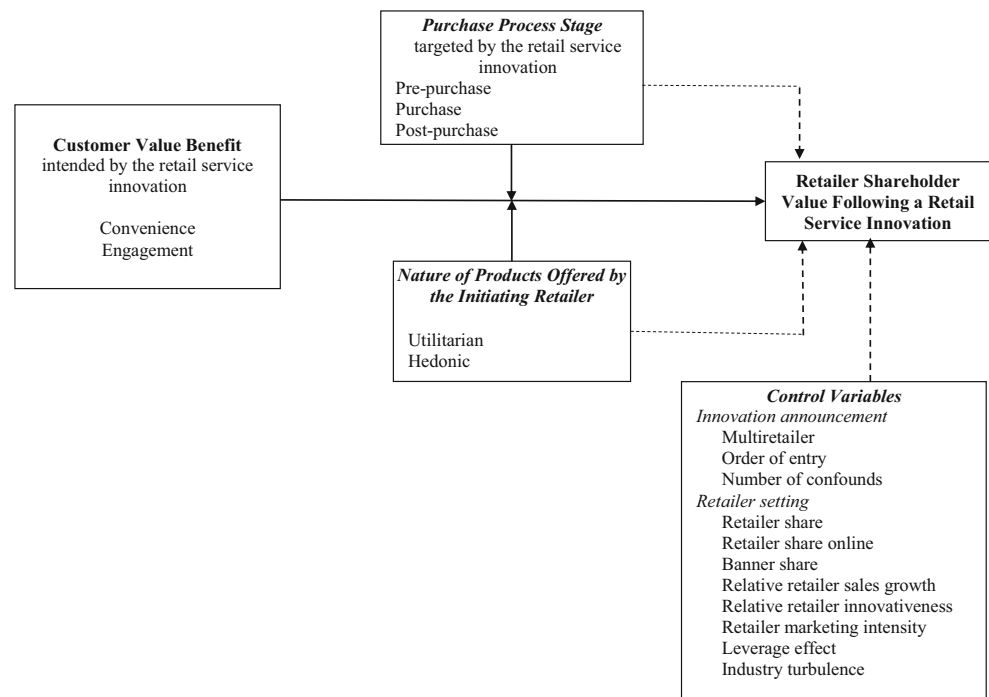
Notes: We did not include literature on channel additions and new physical store formats (e.g., Geyskens et al. 2002; Homburg et al. 2002; Lee and Grewal 2004) as this is not part of our scope. We also did not include the effects of retail service innovations on consumers' attitude and responses

<sup>a</sup> N/N = not known (these authors do not report the exact number of firms in their paper, but do mention they cover 83 industries)

<sup>b</sup> N/S = not specified (oftentimes the setting is not specified in conceptual papers, as the conceptualization is expected to be generalizable across different settings)

<sup>c</sup> N/R = not relevant (in conceptual papers, there is no outcome measure)

Fig. 1 Conceptual framework



(see also Table 1), we identify two types of customer benefits that retail service innovations aim to provide. Similar customer value benefits were also mentioned in other settings, for instance on how retail formats can evolve in the future (Gauri et al. 2021).

The first benefit is *convenience*, which reflects consumers’ time and effort perceptions (Berry et al. 2002), and its importance in the purchase process has been highlighted by prior work (Grewal et al. 2020; Verhoef et al. 2007). Service innovations that aim to provide convenience generally function to ease consumers’ shopping tasks, by allowing them to complete the tasks faster or with less effort. In doing so, these service innovations improve the efficiency of consumers’ shopping process by making it faster and simpler, as well as the effectiveness by facilitating the shopping task (Sorescu et al. 2011). In line with prior literature, we define convenience broadly, so that it transcends all stages of the shopping process (e.g., search, purchase, and use, Reinartz et al. 2019; decision, access, transaction, benefit, and post-benefit, Berry et al. 2002; see also Dekimpe et al. 2020). Service innovations that score high on convenience, for instance, help to find products quickly in the pre-purchase stage, facilitate fast checkout or instant payment in the purchase stage, and provide a digital receipt in the post-purchase stage. As these examples indicate, such service innovations might make shopping physically or mentally easier or simplify the work needed to complete a task (Reinartz et al. 2019; Rintamäki et al. 2006).

A second way to provide customer value is through customer *engagement* (Sorescu et al. 2011). This is defined as the

degree to which the retailer can design customer experiences that evoke emotional involvement, beyond the purchase (Sorescu et al. 2011; Van Doorn et al. 2010), and that leads to emotional or psychological bonds with the retailer or with other customers of the firm (Gill et al. 2017; Kumar & Pansari, 2016). In line with Sorescu et al. (2011), engagement innovations are additional (tangible or intangible) value tie-ins that create a multifaceted, emotionally stimulating shopping experience, aimed to bond consumers uniquely to the retailer.<sup>2</sup> This includes the voice initiatives like in-store social media (Beckers et al. 2018), but also green shipping possibilities, in-store cafés, or personalized recommendations (Sorescu et al. 2011). Such innovations aim to change the meaning of a brand in consumers’ minds and strengthen their loyalty and positive associations with the retailer (Sorescu et al. 2011). Engagement goes beyond mere customer satisfaction and represents an active form of involvement (Sorescu et al. 2011), which in turn strengthens customer value creation and produces stronger customer relationships (Beckers et al. 2018).

Both customer value benefit types can create value for consumers, which could generate higher future revenues for the retail firm. Service innovations that score high on convenience create value for consumers by delivering the core benefit in a more timely and/or effortless way (Berry et al. 2002, 2006). As time is a limited scarce resource (Berry et al. 2002; Jacoby et al. 1976), and as consumers have limited cognitive resources (Berry et al. 2002),

<sup>2</sup> We define customer engagement more broadly than Beckers et al. (2018) or Van Doorn et al. (2010), who limit it to word of mouth and customer voice.

consumers value and pursue service innovations that eliminate frictions in the purchase path. Such service innovations may appeal to new customers who start buying at a firm that offers this friction-free purchase process, as well as help in retaining existing customers who do not switch to the competition and/or spend more because of the frustration-free process. Yet, expected future revenues may also increase following the introduction of service innovations that score high on engagement. In such case, consumers get an extra service that they did not receive before or a service that gives rise to a more relevant, tailored product (Reinartz et al. 2019). Receiving these augmented benefits (Berry et al. 2006) could strengthen the relationships. Following the strong, loyal, committed, trusting customer relationship that such engagement initiatives build (Beckers et al. 2018; Gill et al. 2017), there is a greater chance for retailers to retain customers and to deepen relationships with them. This is likely to lead to customers buying more (frequently) and/or lifting customers' willingness to pay, resulting in higher expected future revenues. Further, firms that implement such service innovations convey to the market that they have a strategic interest in engaging with customers, which has been shown (in a context of mobile apps) to enhance shareholder value (Boyd et al. 2019).

In addition to the anticipated revenues derived from consumers in the future by these service innovations, both customer value benefit types can lower the expected future costs for the retailer too. Service innovations often free up personnel resources, such that those resources are available to help consumers in other (profit-generating) stages in the purchase process and/or lead to a reduction in labor costs (Dotzel et al. 2013). The reduction in operating costs can happen for service innovations that score high on convenience, where consumers take up tasks done by employees in the past (think of self-scanning) or where automation replaces the employee's task (think of the option to track the delivery status online). But these reductions in operating costs are not exclusive for service innovations high on convenience, and they can also occur for service innovations that score high on engagement, think of online communities or in-store media where customers act as a non-employed sales force (Beckers et al. 2018).

Taking the above into account, we expect that retail service innovations that score higher on a customer value benefit will influence shareholder value in a more positive way. Still, it is hard to predict a priori whether investors will anticipate that service innovations that score high on convenience will generate higher future cash flows compared to innovations that score high on engagement, or the other way around. We leave this an empirical question.

## Moderating role of purchase process stage and nature of products offered by retailer

In what follows, we argue how the stage of the purchase process targeted by the innovation (innovation characteristic) and the hedonic/utilitarian nature of the products offered by the initiating retailer (retailer characteristic) moderate the effect that each consumer value benefit has on the expected future cash flows.<sup>3</sup> We assume that the effect of the two moderators comes more from the expected future revenues than from the expected future saved or reduced costs: investors are likely to assess how customer value benefits build customer relationships (attracting, retaining or deepening) responsible for future revenues, because some benefits are more congruent with certain stages and retailers.

**Stage in the customer purchase process** Consumers' appreciation of convenience or engagement benefits provided by an innovation might vary with the stage of the purchase process. Following prior literature, we differentiate pre-purchase, purchase, and post-purchase stages (Lemon and Verhoef 2016; Puccinelli et al. 2009; Reinartz et al. 2019). These stages together form the customer purchase journey (Grewal and Roggeveen 2020).

In the *pre-purchase stage*, consumers engage in the search for and comparison of products, including need recognition, information search, and evaluation of considered products (Puccinelli et al. 2009; Reinartz et al. 2019). It starts the moment consumers recognize a need and ends when they are ready to make a purchase (Lemon and Verhoef 2016). Service innovations that score high on convenience or engagement might be equally effective in this stage. The former includes examples like finding products based on image recognition, digital mirrors, chat functions, in-store maps or other ways to improve price and product comparisons, while the latter includes examples like in-store mobile or virtual assistance, personalized help from employees or shopping carts with a video screen.<sup>4</sup> Service innovations that score high on convenience ease the identification of desired products, help in comparing products in a quick and efficient way, and/or speed the process of locating these products in the shortest possible way in a store. Such service innovations improve the shopping process and lead to less friction in product discovery and search efforts (Dekimpe et al. 2020). On the other hand, service innovations that score high on engagement may generate customer value in the pre-purchase stage too, by

<sup>3</sup> As we explain in the Data section, each service innovation is assigned to one purchase process stage only (cf. Lemon and Verhoef 2016) and retailers can offer primarily utilitarian, primarily hedonic or both utilitarian and hedonic products (Li et al. 2020).

<sup>4</sup> The examples we list here (and later) are the service innovations in our sample that were assigned to the pre-purchase stage and had the highest scores on convenience or engagement. See also Appendix and Figure 2.

triggering the start of a purchase process, leading customers to recognize a need or just providing shopping pleasure and enjoyment. Such innovations can inspire or provide consumers with information they had not actively sought but that may spark a new purchase process.

Both customer value types can thus induce customers to buy quicker and/or more, following respectively from the ease with which the purchase process gets initiated or from the strong bond and the customized and personalized marketing activities that are tailored to consumers' preferences (Reinartz et al. 2019). As a consequence, we have no a priori expectations of how investors differentially assess the future cash flows of service innovations differing in terms of the two customer value benefits provided to a consumer in the pre-purchase stage. We therefore leave this an empirical question.

During the *purchase stage*, consumers select, order, pay for, and receive products (Reinartz et al. 2019; Yuldasheva et al. 2020). They have made up their minds and want to finalize the process, quickly and effortlessly. Service innovations in this stage that score high on convenience include examples like delivery and ordering solutions, self-scanning, and initiatives that speed the checkout process or those that ease the payment, while service innovations in this stage that score high on engagement include examples like the customization of in-store products and online personalized promotions to redeem in store. We expect that in the purchase stage, consumers find service innovations that score high on convenience especially appealing, as they take away some of the frictions that consumers dislike in this stage. Indeed, prior literature has shown that long checkout times cause stress and dissatisfaction (Albrecht et al. 2017), and payment causes pain that consumers seek to minimize (Berry et al. 2002). Any inconveniences during this stage might spoil an otherwise satisfactory shopping experience and dissuade a customer from patronizing the retailer in the future (Seiders et al. 2000). Because service innovations that speed up and ease the shopping process help in converting consumers in the customer purchase journey to the closing of a deal more so than service innovations that focus on emotional bonding or connecting, we expect investors to take into account these larger future revenue streams, and thus to anticipate larger future cash flows for the former service innovations. Therefore,

**H1:** A service innovation aimed to provide convenience in the purchase stage will have a more positive impact on retailer shareholder value than one aimed to provide engagement at the same stage.

In the *post-purchase stage*, the focus lies on interactions after the transaction, such as service requests or customer–firm interactions (Lemon and Verhoef 2016; Reinartz et al. 2019). This post-purchase stage covers

all touchpoints that transcend beyond the purchase (Lemon and Verhoef 2016) and aims to strengthen customer loyalty or trigger consumers to reenter a new purchase cycle. Service innovations in this stage that score high on convenience include examples like reminders for refill, the storage of payment details, or solutions that ease the return of online orders, while service innovations in this stage that score high on engagement include examples like an entertainment app, an online community, or an in-store café. We expect the latter to exert particularly positive effects in the post-purchase stage, reflecting the congruence between the goal of the engagement service innovation that lies in emotionally bonding and strengthening the relationship, and what consumers seek in this final stage of the purchase process. Investors are thus expected to anticipate larger future cash flows in this stage for service innovations that aim at increasing engagement. Therefore,

**H2:** A service innovation aimed to provide convenience in the post-purchase stage will have a less positive impact on retailer shareholder value than one aimed to provide engagement at the same stage.

**Nature of products offered by the initiating retailer** Retailers that offer primarily *utilitarian* products tend to evoke a functional shopping process where consumers buy products out of need or for some practical use (Grewal et al. 2020).<sup>5</sup> These consumers strive to reach an effortless, simple, and speedy decision (Reinartz et al. 2019), where the purchase of the product is the ultimate outcome of the shopping trip. In such task-oriented settings (Babin et al. 1994), consumers want to make a purchase efficiently, without distractions, and with a minimum expenditure of energy (Albrecht et al. 2017; Li et al. 2020). Consequently, in such a goal-oriented setting, it can be expected that consumers prefer service innovations that serve the goal to complete the shopping task in an efficient and effective way. Li et al. (2020) indeed suggest that consumers purchasing utilitarian products prefer convenient information channels that support efficient search and product comparison efforts. Therefore, we expect that investors will anticipate larger cash flows when service innovations that aim to provide convenience are initiated by retailers offering primarily utilitarian products. Hence,

**H3:** A service innovation aimed to provide convenience by a retailer that offers primarily utilitarian products will have

<sup>5</sup> As some retailers offer both utilitarian and hedonic products, in our results section, we will also compare service innovations that aim at improving convenience and engagement for these type of retailers.



a more positive impact on retailer shareholder value than a service innovation aimed to provide engagement at the same retailer.

Retailers that offer primarily *hedonic* products instead encourage purchases associated with fun, enjoyment, and pleasure (Babin et al. 1994; Grewal et al. 2020). Consumers seek experiential goals, including pleasure, stimulation, adventure, variety, and entertainment, which they often attain from the shopping activity itself, not just the purchase of the product (Albrecht et al. 2017; Li et al. 2020). In such a recreational-oriented setting, consumers might prefer service innovations that involve an emotional connection. Li et al. (2020) indeed suggest that consumers purchasing hedonic products enjoy channels that foster non-transactional elements and enable bonds, with one another or the firm, like the fun- and entertainment-oriented social media channel. Therefore, consumers should appreciate service innovations that score high on engagement more than those that score high on convenience, when shopping at hedonic retailers as such innovations focus more on experiential attributes one seems to prefer in this setting (Grewal et al. 2020). We expect that investors will anticipate higher cash flows when service innovations that aim to provide engagement are initiated by retailers primarily focusing on hedonic products than for innovations that aim to provide convenience. Hence,

**H4:** A service innovation aimed to provide convenience by a retailer that offers primarily hedonic products will have a less positive impact on retailer shareholder value than a service innovation aimed to provide engagement at the same retailer.

## Methodology

To quantify the impact of a retail service innovation announcement on retailer shareholder value, we use an event study methodology which is well-established in the marketing literature (for an overview, see Sorescu et al. 2017). It relies on stock returns to quantify how investors assess the announcement of a service innovation, which offers several advantages compared with performance measures such as return on sales and return on assets. Stock returns are forward-looking metrics, which are difficult for managers to manipulate, and they provide a market-based view of the expectations that investors develop by trading off a retailer's expected long-term future revenue streams against anticipated or reduced costs (Day and Fahey 1988; Geyskens et al. 2002; Srinivasan et al. 2009). In line with Geyskens et al. (2002), Raassens et al. (2012), and

Homburg et al. (2014), we rely on the market model to calculate the expected return  $E(R_{it})$  for the shares of retailer  $r$  on day  $t$ <sup>6</sup>:

$$E(R_r) = \alpha_r + \beta_r R_{mt} + \varepsilon_{rt}, \quad (1)$$

where  $\alpha_r$  and  $\beta_r$  are retailer-specific parameters,  $R_{rt}$  is the stock return of the shares of retailer  $r$  on day  $t$  ( $t = -250, \dots, -30$ , where  $t = 0$  is the event date; cf. Geyskens et al. 2002; Raassens et al. 2012), and  $R_{mt}$  is the return of the market index  $m$  on day  $t$  (Brown and Warner 1985). The difference between the observed return  $R_{rt}$  and the expected return  $E(R_{rt})$  is the abnormal return  $AR_{rt}$  for the stock market shares of retailer  $r$  at day  $t$ :

$$AR_{rt} = R_{rt} - E(R_{rt}) = R_{rt} - (\hat{\alpha}_r + \hat{\beta}_r R_{mt}). \quad (2)$$

To account for information leakage (for  $t_1$  days *before* the event) and dissemination (for  $t_2$  days *after* the event) over time, we aggregate the abnormal returns over the  $[-t_1, t_2]$  event window into a cumulative abnormal return (CAR<sub>r</sub>):

$$CAR_r[-t_1, t_2] = \sum_{t=-t_1}^{t_2} AR_{rt}. \quad (3)$$

Then we calculate the CAR for each service innovation announcement (number of events =  $N$ ) and average them into a cumulative average abnormal return (CAAR):

$$CAAR[-t_1, t_2] = \sum_{r=1}^N CAR_r[-t_1, t_2]/N. \quad (4)$$

The length of the event window  $[-t_1, t_2]$  reflects significance of various estimated CAARs for different event windows of  $-3$  and  $+3$  days around the announcement (cf. Raassens et al. 2012) to determine the extent of information leakage and/or dissemination. We use the Patell (1976) statistic, which reduces the effect of stocks with large return standard deviations, to assess the significance of the CAARs (cf. Beckers et al. 2018; Raassens et al. 2012).

After identifying the CAR of the event window with the largest Patell Z-statistic, we use these CARs to explore cross-variation in the shareholder value effects of the large set of service innovations we consider. To do so, we regress the CAR of a retail service innovation announcement  $i$  initiated by retailer  $r$  as a function of the customer value benefits the service innovation aims to provide (i.e., its level of Convenience<sub>ri</sub> and Engagement<sub>ri</sub>), its moderating effects with the targeted stage of the customer purchase process (Pre-Purchase<sub>ri</sub> and Purchase<sub>ri</sub>) and the nature of the products

<sup>6</sup> Innovations are often introduced at the banner level (e.g., Walmart introduces separate service innovations for Asda and for Sam's Club), but we estimate our model at the retailer level, because stock returns are not available at the individual banner level. We do control for the share of the banner.

offered by the retailer (Utilitarian<sub>r</sub> and Hedonic<sub>r</sub>), the main effects of these moderating variables, and several other control variables at the innovation–announcement and initiating retailer level (Controls<sub>ri</sub>). We use a random effects model for the panel data with retailer-robust standard errors, as follows:

$$\begin{aligned}
 \text{CAR}_{ri}[-t_1, t_2] = & (\text{Convenience}_{ri}) * \beta_1 + (\text{Engagement}_{ri}) * \beta_2 \\
 & + (\text{Convenience}_{ri} * \text{Pre-Purchase}_{ri}) * \beta_3 + (\text{Engagement}_{ri} * \text{Pre-Purchase}_{ri}) * \beta_4 \\
 & + (\text{Convenience}_{ri} * \text{Purchase}_{ri}) * \beta_5 + (\text{Engagement}_{ri} * \text{Purchase}_{ri}) * \beta_6 \\
 & + (\text{Convenience}_{ri} * \text{Utilitarian}_{ri}) * \beta_7 + (\text{Engagement}_{ri} * \text{Utilitarian}_{ri}) * \beta_8 \\
 & + (\text{Convenience}_{ri} * \text{Hedonic}_{ri}) * \beta_9 + (\text{Engagement}_{ri} * \text{Hedonic}_{ri}) * \beta_{10} \\
 & + (\text{Pre-Purchase}_{ri}) * \beta_{11} + (\text{Purchase}_{ri}) * \beta_{12} + (\text{Utilitarian}_{ri}) * \beta_{13} \\
 & + (\text{Hedonic}_{ri}) * \beta_{14} + (\text{Controls}_{ri}) * \gamma + \alpha_r + \mu_{ri}
 \end{aligned} \tag{5}$$

where  $\alpha_r$  refers to random, retailer-specific effects to capture retailer heterogeneity (Greene 2003), and  $\mu_{ri}$  is an idiosyncratic error. To standardize the CARs in Eq. 5, we use the standard deviations of the abnormal returns over the estimation period to reduce heteroscedasticity, which may arise from variation in stock return volatility across retailers and/or events (cf. Raassens et al. 2012).

Several control variables, frequently used in prior event studies, capture aspects related to the service innovation that gets announced and the retail setting where the innovation will be introduced. The three announcement-specific variables include a dummy for whether the announcement occurs multiple times in our dataset (this happens when multiple publicly listed retailers partnered in the development or implementation of the service innovation); the order of entry, to reflect how shareholder value effects might differ between early and late adopters (e.g., Geyskens et al. 2002); and the number of confounding events that happen at the same day as the announcement (Borah and Tellis 2014; Boyd et al. 2019).

The variables related to the retail setting are as follows: (1) the retailer’s share, to control for the fact that shareholders may be more confident in service innovations initiated by stronger retailers (e.g., Beckers et al. 2018; Sorescu et al. 2003)<sup>7</sup>; (2) the retailer’s online share to factor in that innovations introduced by retailers that diversify their sales across online and offline channels could be perceived as less risky (e.g., Borah and Tellis 2014); (3) the banner’s share, to control for whether the retailers announce innovations only for some of their banners; (4) the retailer’s relative sales growth, defined as the past performance of the retailer relative to the performance of its competitors in the same industry, to account for shareholders’ perceptions that service innovations are more beneficial in markets where the focal retailer grows faster than its competitors (e.g., Homburg et al. 2014); (5) the retailer’s relative innovativeness, defined as the frequency with which

the retailer introduces service innovations, relative to the frequency exhibited by competitors in the same industry, which accounts for shareholders’ perceptions that service innovations benefit innovative retailers more (e.g., Dotzel and Shankar 2019); (6) the retailer’s marketing intensity, to account for higher returns as a result of better advertising, branding, pricing, or distribution (e.g., Borah and Tellis 2014); (7) the retailer’s leverage effect, to account for its financial flexibility (e.g., Warren and Sorescu 2017)<sup>8</sup>; and (8) industry turbulence, to control for higher innovation risk in markets where customers’ needs and wants change rapidly (e.g., Beckers et al. 2018).

## Data

### Sample

We define an event of interest as a public announcement of a service innovation offered by a publicly traded retailer. Retailers predominately function in business-to-consumer settings, so we focus on service innovations intended to provide end consumers with new benefits. We thus exclude process innovations designed to improve efficiencies in the supply chain. We also focus on service innovations introduced in existing retail stores, whether online or offline. Consequently, we exclude new channel introductions or store format introductions that were studied extensively by respectively Geyskens et al. (2002) and Lee and Grewal (2004), and Homburg et al. (2002). Finally, we only include service innovations offered for free to customers, not those for which customers must pay to be able to use.

This investigation centers on U.S.-based, publicly traded retailers tracked by Edge Retail Insight (formerly Planet Retail), a dedicated retail specialist that often provides marketing data for research (e.g., Geyskens et al. 2015; Gielens et al. 2008). It consolidates data, analytics, and content targeted to global brands and retailers. The company makes available all announcements made by retailers, by actively searching for and tracking announcements on retailers’ own company websites, press releases, blogs, and news websites. Because it identifies retail news very quickly, the platform provides one of the most accurate and complete sources of retail news. It typically cites the original source of news releases; when the announcement date in the source differs from the date reported by Edge Retail Insight, we use the date of the first announcement. If multiple sources report on a particular

<sup>7</sup> In contrast to Woodroof et al. (2019), we do not include retailer size (i.e., dollar sales) as a control variable, due to its high correlation with retailer share (both variables log-transformed produce a correlation > .80). But, in a robustness check where we replace retailer share with retailer size, the same substantive results were obtained.

<sup>8</sup> The leverage effect refers to how a 1% change in operating business translates into a percentage change in shareholder value, taking into account the retailer’s debt and non-operating assets (e.g., Schulze et al. 2012).

service innovation, the event date ( $t = 0$ ) is the date of the first one that appeared.<sup>9</sup>

The retailers in the sample feature Standard Industrial Classification (SIC) codes that start with 53 (general merchandise stores like JCPenney and Sears), 54 (food stores like Kroger and Safeway), 56 (apparel and accessory stores like Nordstrom and Foot Locker), 57 (home furniture and equipment stores like Best Buy and Bed Bath & Beyond), and 59 (miscellaneous retail store like CVS and Rite Aid) (Lee and Grewal 2004).<sup>10</sup> For the 55 retailers that we retain, we identify service innovation announcements across all available news sources in the Edge Retail Insight platform over a six-year period, starting from January 2011 until December 2016.<sup>11</sup>

When inspecting the announcements, we remove those with (1) unrelated news (e.g., earnings announcements); (2) temporary service innovations (e.g., opportunity to vote for which product will be discounted for a month); (3) further expansions of a previously announced innovation, such as to different countries, stores, or banners; (4) backward-looking announcements, referring to innovations that appeared in the past; (5) process innovations targeted at employees or channel partners (e.g., enhanced trolleys that help employees carry out tasks); (6) product innovations; (7) new channel or physical store format additions; (8) service innovations that require a payment (e.g., financial services); and (9) minor, non-innovative service add-ons that consumers regard as standard, given they are implemented by almost all competitors a very long time before (e.g., basic loyalty programs, acceptance of credit cards, home delivery, small website or app updates; cf. Homburg et al. 2014).

We identify 350 events in the six-year period (January 2011–December 2016) that we use to calculate the CARs. Among the 55 retailers in the initial list, 21 (38%) did not introduce a service innovation, so the estimation sample includes 350 announcements of 72 different service innovations introduced by 34 retailers (see the Appendix for an overview and indication of how often a service innovation got

announced, plus the scores on convenience, engagement; sorted by the stage in the purchase process). On average, each retailer announces 10.32 service innovations in the estimation period ( $SD = 12.01$ ,  $Min = 1$ ,  $Max = 54$ ). The most frequently announced service innovation is a new payment option in a physical store (30 events), followed by shop-in-shops involving third parties (20 events).

## Measures

**Dependent variable** We gather retailer and market daily stock returns (equally weighted) from the Center for Research in Security Prices (CRSP) (cf. Borah and Tellis 2014) to compute the CAR over the event window (Eq. 3) for each event in our sample.

**Customer value benefits** Five retail experts provided ratings of the 72 service innovations in terms of their convenience and engagement, using 7-point Likert scales (1 = “completely disagree” to 7 = “completely agree”). To ensure experts understood the customer benefits, we provided clear definitions. To test the reliability of the measures, we calculated intra-class correlation coefficients that indicate the degree of agreement among raters. We find good levels of interrater reliability for each dimension: .833 for convenience and .865 for engagement. In Fig. 2 and Appendix, we present the 72 service innovations according to these two dimensions. Service innovations might score high on both dimensions (e.g., shop-in-shops, digital mirror), high on convenience and low on engagement (e.g., stored payment details, self-scanning, digital map), low on convenience and high on engagement (e.g., in-store social media, in-store café), or low on both (e.g., electronic shelf label, online access to third-party sellers). In general, the service innovations in our sample score higher on convenience ( $M = 4.96$ ,  $SD = 1.09$ ) than on engagement ( $M = 3.46$ ,  $SD = 1.35$ ).

**Customer purchase process stage** The five retail experts also classified the 72 service innovations according to the stage of the customer purchase process that the innovation targets, based on where the service innovation is primarily used. Also here, we provided clear definitions of the different purchase stages. Service innovations that facilitate need recognition, search, comparison, or the evaluation of products are assigned to the pre-purchase stage (PRE in Fig. 2; Puccinelli et al. 2009; Reinartz et al. 2019); those that pertain to selection, ordering, promotion, payment, and delivery are purchase stage innovations (PUR; Boyd et al. 2019; Reinartz et al. 2019; Yuldasheva et al. 2020); and those that involve interactions after the actual purchase relate to the post-purchase stage (POST). We instructed the experts to take the correct point of view into account, as mentioned in the description. For instance, a pick-up point at a third-party is considered as part

<sup>9</sup> We took a random selection (10%) of the identified events and verified the announcement data in the Lexis-Nexis database, which also includes a broad selection of business and news publications (Beckers et al. 2018; Raassens et al. 2012). These results point out that Edge Retail Insights includes a larger scope of service innovation announcements and is much quicker in picking up news (for 31.43% there was a delay of on average 28 days). When the announcement was earlier in Lexis-Nexis (for 42.86%), the delay at Edge Retail Insights is limited to 3 days on average (median: 1 day). This falls within the event window that we retain (see below).

<sup>10</sup> A retailer can be active in more than one industry; the primary SIC code indicates its core market. We exclude non-traditional retailers in the building, materials, hardware, garden supply, and mobile home dealer (SIC 52), automotive dealers and gasoline service stations (SIC 55), and restaurant (SIC 58) sectors.

<sup>11</sup> We also identified events in the period January 2010–December 2010 (83 events in total). We use this information to operationalize the control variables order of entry (to assess whether the events in the estimation period are new announcements of service innovations not previously introduced) and the relative retailer innovativeness (to assess how innovative the retailer is compared to the market, for events that happen in 2011).

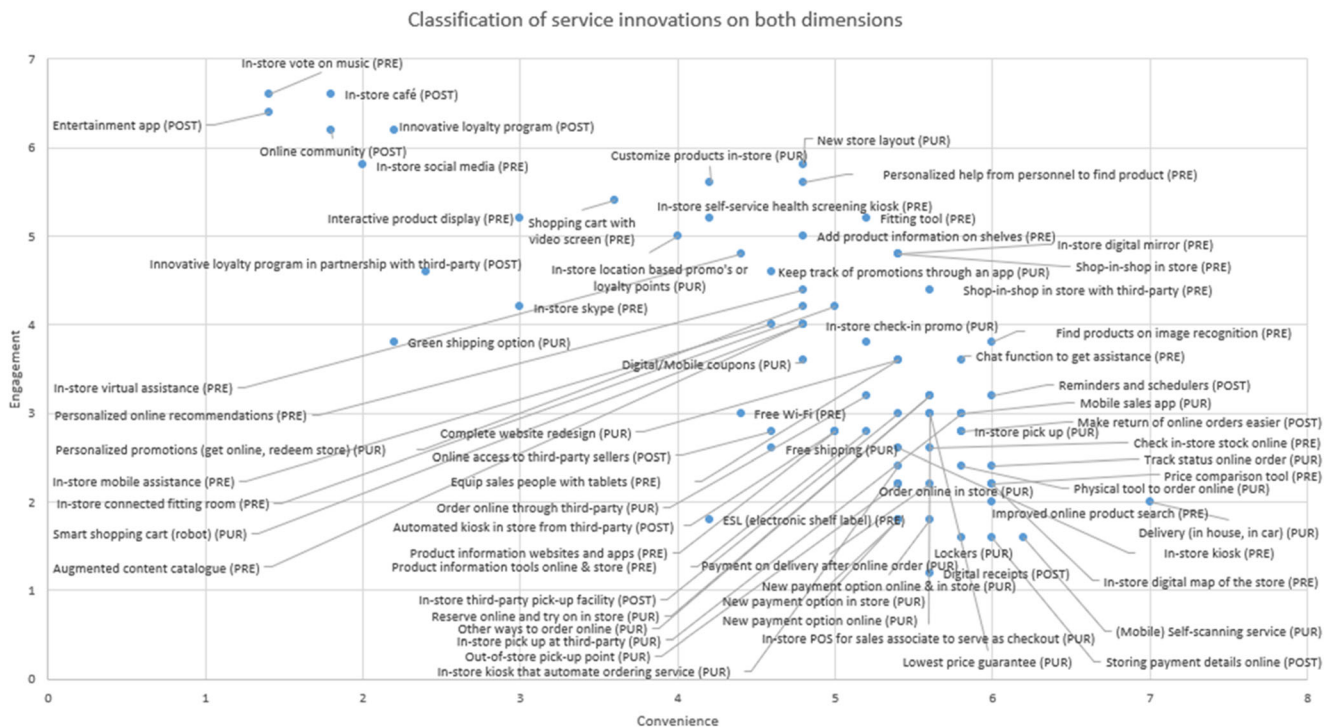


Fig. 2 Ratings of retail service innovation on engagement and convenience

of the purchase stage for the initiator of the pick-up point but is considered as part of the post-purchase stage for the facilitating third party. For 90.28% of the service innovations, there was a clear agreement among the five experts (i.e., at least 4 out of 5 agree). For the remaining 9.72%, we continued with the dominant purchase stage, but conducted a robustness check where we allow these service innovations to be linked to multiple stages (see Robustness Check section). Following the classification of the majority, service innovations are more common in the pre-purchase (40.3%) and purchase (41.7%) stages than the post-purchase stage (16.7%).

**Nature of products offered by the initiating retailer** Prior literature, for instance Li et al. (2020), has suggested that retailers can score high on either utilitarian or hedonic, or on both, depending on the nature of the products that are offered. Retail stores that primarily sell functional products, such that consumers derive little to no satisfaction from the shopping activity itself, are utilitarian (e.g., grocery stores, convenience stores, drug stores). Those that primarily sell products for which the shopping activity is chosen freely, without a strong need, and with recreational goals are hedonic retailers (e.g., clothing stores, shoe stores, furniture stores). Department or variety stores feature both more functional and more emotional products, so they are considered both utilitarian and hedonic.

**Control variables** To operationalize the control variables, we use data from Edge Retail Insight and CRSP data, along with Compustat data (for 2008–2016) to get financial statements.

All control variables are measured at the service innovation–retailer–industry level except for banner share, which is measured at the banner level. Table 2 provides a detailed description of the control variables. Table 3 contains an overview of the descriptive statistics and correlations between variables.

## Results

Before getting to the results of the main market valuation (CAAR, Eq. 4) and the factors that affect variation in stock returns (Eq. 5), we discuss the potential for selection bias and endogeneity.

### Controlling for selection bias and endogeneity

Retailers may make strategic choices to introduce specific service innovations that they expect to perform well. Failing to control for these maximizing, self-selected decisions would lead to biased estimates in the second-stage model (Eq. 5). We test for this sample selection bias in the panel data with a Hausman testing framework (Borah and Tellis 2014; Verbeek and Nijman 1992).<sup>12</sup> According to Verbeek and Nijman (1992), if the fixed- and random-effects estimators

<sup>12</sup> In line with Beckers et al. (2018) and Raassens et al. (2012), we use the choice of a specific type of service innovation (high/low convenience; high/low engagement; pre-purchase, purchase, or post-purchase stage) instead of the mere announcement of a service innovation. Identifying a sample of non-occurring service innovation announcements would be arbitrary.

**Table 2** Control variables and data sources

Variable	Measure	Data Source(s)	References
<i>Innovation announcement</i>			
Multiretailer	Dummy variable equal to 1 if the same service innovation announcement occurs multiple times in our sample, i.e., when multiple publicly listed retailers of our sample are mentioned in the same announcement, and 0 otherwise.	Edge Retail Insight	
Order of entry	The temporal rank order position of the service innovation introduced by a retailer, compared to the introduction of that service innovation by others in the sample, as of 2010. For example, a value of 3 means the retailer was third to launch that service innovation.	Edge Retail Insight	Adapted from Geyskens et al. (2002)
Number of confounds	Confounding events for the retailer on the announcement day. Following Borah and Tellis (2014), we include seven confounding events: declaration of dividends, signing of a contract (government & private), new product or other service innovation announcement, filing of a large damage suit, announcement of earning, end of lock-up period, and change in a key executive.	Edge Retail Insight CRSP	Borah and Tellis (2014); Boyd et al. (2019)
<i>Retailer setting</i>			
Retailer share	Ratio of the retailer's sales to the total industry sales (in dollars, based on values from one calendar year prior to the event). Industry is defined by two-digit SIC code.	Compustat	Homburg et al. (2014)
Retailer share online	Ratio of online retailer sales to the total retailer sales (in dollars, based on values from one calendar year prior to the event).	Edge Retail Insight	
Banner share	Ratio of banner sales to the total retailer sales (in dollars, based on values from one calendar year prior to the event). If the service innovation is launched at all banners of a retailer or no specific banners are mentioned in the announcement, banner share equals 1.	Edge Retail Insight	
Relative retailer sales growth	Average of the year-over-year retailer sales growth (in dollars) for the three calendar years prior to the announcement, divided by average of the year-over-year sales growth (in dollars) in the industry for the three calendar years prior to the announcement. Industry is defined by two-digit SIC code.	Compustat	Adapted from Homburg et al. (2014)
Relative retailer innovativeness	Ratio of the number of service innovations announced by the retailer during the 12 months before the event to the prior calendar year's retailer sales (in thousands of dollars) divided by ratio of the number of service innovations announced by the retailer's (publicly-listed) competitors during the 12 months before the event to the prior calendar year's total industry sales (in thousands of dollars). Industry is defined by two-digit SIC code.	Edge Retail Insight	Borah and Tellis (2014); Warren and Sorescu (2017)
Retailer marketing intensity	Ratio of marketing expenditures (in dollars) to total retailer assets, standardized by each two-digit SIC code (based on values from one calendar year prior to the event).	Compustat	Adapted from Borah and Tellis (2014)
Leverage effect	Ratio of the shareholder value (share price $\times$ common shares outstanding) minus non-operating assets (short-term investments) plus total debt (long-term debt due in one year + long term debt + preferred stock) to the shareholder value (from one calendar year prior to the event).	Compustat	Schulze et al. (2012)
Industry turbulence	Standard deviation of the total market sales (in dollars) across the three calendar years prior to the announcement divided by mean of the total market sales (in dollars) for those years. Industry is defined by two-digit SIC code.	Compustat	Homburg et al. (2014); Fang et al. (2011)

differ significantly, the selection process likely contains information about unobservable variables, because the two estimates suffer differently from the selection bias. A selection bias does not arise if the selection depends only on exogenous variables. Consider the retailer's decision to launch a pre-purchase innovation for example. To test for sample selection bias, we estimate Eq. 5 (without interactions) for pre-purchase innovations only (excluding variables related to the other customer purchase process stages), with retailer fixed effects and retailer random effects, then use a Hausman test to jointly test if the coefficients of all variables differ between models. With the null hypothesis of no sample selectivity, the estimates of

the fixed effects and random effects models are identical as both procedures are consistent. For the alternative hypothesis, the two estimators diverge as both are inconsistent, under different forms of selection bias. We follow the same procedure for purchase and post-purchase, low convenience and high convenience (based on median split), and low engagement and high engagement (based on median split) (seven times in total) (excluding the related variables). The Hausman test results in Table 4 indicate no sample selection bias (all  $p$ 's > .10).

We also follow recent studies in marketing (Lim et al. 2018) and include a Gaussian copula ( $\gamma$ ) as an

alternative approach to address potential endogeneity in the level of convenience and engagement aimed for by the innovations (cf. Park and Gupta 2012). To include a copula, we first must confirm non-normality using Shapiro-Wilk tests; we find concordant evidence (convenience  $z$ -value = .80;  $p < .01$ ; engagement  $z$ -value = .95;  $p < .01$ ). We add two copula terms that represent the correlation of convenience or engagement with the error term to Eq. 5. Similar to a control function approach, a significant copula term signals endogeneity, in which case its inclusion simultaneously controls for it (Wooldridge 2010). Including one correction term is sufficient to address a regressor's endogeneity, as well as any endogeneity in its interactions (Papies et al. 2017). We first estimate a model in which we include a copula for both convenience and engagement, but following Mathys et al. (2016) and Gielens et al. (2018), we then drop both copula terms, because neither is statistically significant ( $p > .10$ ).

### Main market valuation of retail service innovations

Table 5 lists the CAAR (Eq. 4) for different event windows and corresponding Patell-Z statistics to assess their significance for the whole set of 350 service innovations, as well as a smaller set of 329 service innovations where 21 events with confounding events at the announcement date are eliminated.

The CAAR with the highest Patell (1976) statistic is CAAR[−3, +1], for both sets, so we adopt this event window for our further analyses. CAAR[−3, +1] has a positive value of .35% but fails to reach significance ( $p = .226$ ) when we consider all events; it is positive and significant when we eliminate the confounding events (.52%;  $p < .05$ ). The .35% (.52%) corresponds to a US\$8.00 (17.13) million increase in stock market value for a median retailer (in terms of shareholder value) in our sample due to the introduced service innovation. However, we also note the considerable variation in the returns. In our sample, 48.86% or 171/350 (51.98% or 171/329) of the innovations, indicated positive abnormal returns over the event period (average  $CAR_t[-3, +1] = 3.40\%$  (3.44%)), but the remaining 51.14% (48.02%) indicated negative abnormal returns (average  $CAR_t[-3, +1] = -2.65\%$  (−2.64%)). There is thus a considerable amount of variation in the CARs that we will explore in the next step.

### Factors affecting stock market evaluations of retail service innovations

Following Warren and Sorescu (2017) and similar to Boyd et al. (2019), we do not remove announcements that involve confounding events, though we control for the number of confounding events and thus estimate Eq. 5

on the event sample of 350. Table 6 contains an overview of the results. All the dummy variables are effect coded, and all the other variables are mean-centered, except for the control variable “number of confounding events”. In a model without interactions, the maximum variance inflation factor is 3.57, which is below the threshold of 10 (Hair et al. 2010), so multicollinearity is not a concern. Still, the correlation between the customer value benefit types, i.e., convenience and engagement, is rather high and negative (see Table 3), suggesting that managers tradeoff these two benefits to some extent. To verify whether this correlation impacts our results, we ran a number of checks that we report in the Web Appendix. These results confirm that our findings are robust.<sup>13</sup> We use the coefficients in Table 6 to test our hypotheses regarding the customer value benefits that service innovations aim to provide, in a variety of conditions, using a joint Wald chi-square test, taking into account all relevant terms. Table 7 reports the findings.

Innovations that score high on convenience as well as those that score high on engagement have a positive impact on shareholder value (Table 6:  $\beta_1 = .277$ ,  $p < .01$ ;  $\beta_2 = .147$ ,  $p < .05$ , respectively). Service innovations with higher convenience or engagement scores thus lead investors to assess the future expected incremental cash flows of the initiating retailer more positively. When we compare these effects, we find that innovations that score high on convenience outperform those that score high on engagement (Table 7:  $\text{diff} = .13$ ;  $\chi^2(1) = 4.36$ ;  $p < .05$ ). This suggests that investors' assessments of future expected incremental cash flows are in favour of service innovations that simplify or speed up the shopping process, and hence those that aim to provide more convenience.

Across the three customer purchase process stages, we find significant differences between convenience and engagement in the purchase stage ( $\text{diff} = .22$ ;  $\chi^2(1) = 4.34$ ;  $p < .05$ ), confirming H1, and in the post-purchase stage ( $\text{diff} = -.14$ ;  $\chi^2(1) = 3.09$ ;  $p < .10$ ), confirming H2, but not in the pre-purchase stage ( $\text{diff} = .04$ ;  $\chi^2(1) = .16$ ;  $p > .10$ ). The latter shows that for service innovations targeted at the pre-purchase stage, the level of convenience and engagement aimed for by the innovation does not matter and investors anticipate similar future cash flows for both customer value benefits. When the innovation targets the purchase stage where consumers have made up their mind and prefer a frictionless shopping process, an innovation that aims to provide more convenience is expected to generate more

<sup>13</sup> There is also a rather high correlation between purchase and pre-purchase (see Table 3), but this is driven by the fact that we only observe a limited set of post-purchase service innovations (53 out of 350).

**Table 3** Descriptive statistics and correlation matrix<sup>a</sup>

Variables	Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1 CAR <sub>t[-3,+1]</sub> <sup>b</sup>	0.00	0.05	-0.24	0.21	1.00																		
2 Convenience	4.96	1.09	1.40	7.00	0.07	1.00																	
3 Engagement	3.46	1.35	1.20	6.60	-0.05	-0.73	1.00																
4 Pre-purchase	36.29% <sup>c</sup>		0.00	1.00	0.03	0.11	0.15	1.00															
5 Purchase	48.57% <sup>c</sup>		0.00	1.00	0.00	0.28	-0.35	-0.73	1.00														
6 Multiretailer	5.43% <sup>c</sup>		0.00	1.00	0.01	-0.02	-0.08	-0.18	0.17	1.00													
7 Order of entry	5.94	6.27	0.00	29.00	0.04	0.06	-0.08	0.15	-0.01	0.06	1.00												
8 # Confounds	0.07	0.27	0.00	2.00	-0.14	0.04	-0.06	-0.03	0.02	-0.01	0.03	1.00											
9 Utilitarian	81.14% <sup>c</sup>		0.00	1.00	-0.02	-0.08	-0.04	-0.14	0.02	-0.01	-0.24	0.01	1.00										
10 Hedonic	77.71% <sup>c</sup>		0.00	1.00	0.02	0.14	-0.08	0.05	0.05	-0.02	-0.15	-0.05	-0.26	1.00									
11 Ln(retailer share) <sup>d</sup>	-2.29	1.16	-5.24	-0.53	0.07	0.08	-0.14	-0.01	0.02	-0.05	-0.01	-0.01	-0.14	0.08	1.00								
12 Retailer share online	0.14	0.28	0.00	1.00	0.01	0.17	-0.14	-0.04	0.00	-0.04	-0.01	-0.05	0.04	0.26	-0.01	1.00							
13 Ln(banner share) <sup>d</sup>	-0.36	0.80	-7.02	0.00	-0.06	0.02	-0.03	-0.03	-0.04	0.07	0.04	0.04	0.00	-0.07	-0.30	0.14	1.00						
14 Rel. ret. sales growth	0.99	11.95	-65.95	118.01	0.01	0.00	-0.08	-0.03	-0.02	-0.04	0.14	-0.05	-0.06	0.03	0.01	0.18	0.08	1.00					
15 Rel. ret. innovativeness	0.46	0.71	0.00	6.00	0.09	0.06	-0.02	0.11	-0.07	-0.01	0.04	-0.03	-0.38	0.11	0.43	0.09	-0.03	-0.03	1.00				
16 Ret. marketing intensity	-0.12	0.11	-0.87	0.30	0.03	0.06	-0.04	0.04	-0.06	0.04	0.06	0.05	-0.15	-0.29	0.10	0.18	0.04	-0.24	0.29	1.00			
17 Leverage effect	1.35	0.64	0.92	6.47	-0.08	-0.06	0.09	0.05	-0.05	-0.02	-0.06	0.03	0.18	-0.19	-0.20	-0.17	0.06	-0.10	-0.14	0.03	1.00		
18 Industry turbulence	0.05	0.05	0.01	0.24	-0.03	0.07	-0.04	-0.02	0.00	-0.01	0.13	0.00	0.15	-0.41	-0.04	0.17	0.12	-0.02	-0.09	0.25	0.07	1.00	

<sup>a</sup> Before mean-centering or effect coding

<sup>b</sup> This is the standardized CAR

<sup>c</sup> For dummy variables, we report the percentage of observations with a value of 1

<sup>d</sup> We take the natural logarithm of the retailer share and banner share to account for potential diminishing returns to scale (Geyskens et al. 2002; Warren and Sorescu 2017)

**Table 4** Hausman test results

Retail Service Innovations	N	Chi-Square (d.f.)	p value
Pre-purchase	127	2.47(12) <sup>a</sup>	.998
Purchase	170	3.71(13)	.994
Post-purchase	53	2.49(12) <sup>b</sup>	.998
Low convenience	168	7.02(13)	.901
High convenience	182	1.47(13)	.999
Low engagement	166	7.02(12) <sup>c</sup>	.856
High engagement	184	5.52(13)	.962

<sup>a</sup> The multiretailer variable is always 0 for the pre-purchase innovations, so we exclude it in these estimations (this explains why we have 12 rather than 13 degrees of freedom)

<sup>b</sup> The number of confounding events variable is 0 for 94.34% of the post-purchase innovations, so we exclude it in these estimations (this explains why we have 12 rather than 13 degrees of freedom)

<sup>c</sup> The multiretailer variable is 0 for 95.18% of the low engagement innovations, so we exclude it in these estimations (this explains why we have 12 rather than 13 degrees of freedom)

future cash flows than an innovation that aims to provide engagement. In the purchase stage, innovations that help in speeding and easing the purchase process are likely to result in more conversion, with stronger revenue-generating effects that investors seem to anticipate. An innovation that aims to provide engagement, in contrast, is judged to lead to more future expected cash

flows by investors than one that aims to provide convenience when targeted in the aftermath, which is a stage where consumers are more open to relationship and emotional bonding interactions.

Regarding the nature of the products offered by the initiating retailer, we find no significant difference between convenience and engagement in a hedonic setting (diff = -0.02;  $\chi^2(1) = .10$ ;  $p > .10$ ) but a significant difference in a utilitarian setting (diff = .28;  $\chi^2(1) = 7.82$ ;  $p < .01$ ). In contrast with H4, we thus find that future cash flow expectations of investors are similar for service innovations that score high on convenience and for those that score high on engagement when initiated by a hedonic retailer. Experiential and emotional attributes thus appear as important in revenue-generating as friction-reducing innovations for these retailers. Yet, as we predict in H3, innovations that help consumers achieve a quick, effortless shopping process have a larger impact on shareholder value in a task-oriented, functional shopping context than those that score high on engagement. Among retailers with both utilitarian and hedonic products on offer, the comparison between convenience and engagement service innovations indicates that convenience has a more positive effect on shareholder value than engagement (diff = .25;  $\chi^2(1) = 12.67$ ;  $p < .01$ ), suggesting that for these retailers investors weigh a service innovation that aims to provide

**Table 5** Abnormal returns from retail service innovation announcements

Event Window	Average Abnormal Return (%)		Patell Z Statistic	
	All events (n = 350)	Events without confounding events (n = 329)	All events (n = 350)	Events without confounding events (n = 329)
t=(-3,0)	0.27%	0.43%	1.07	1.65*
t=(-3,1)	<b>0.35%</b>	<b>0.52%</b>	<b>1.21</b>	<b>1.81**</b>
t=(-3,2)	0.30%	0.48%	1.04	1.65*
t=(-2,3)	0.33%	0.50%	1.03	1.59 <sup>†</sup>
t=(-2,0)	0.23%	0.37%	0.86	1.32
t=(-2,1)	0.31%	0.46%	1.01	1.48 <sup>†</sup>
t=(-2,2)	0.26%	0.41%	0.84	1.33
t=(-2,3)	0.30%	0.43%	0.82	1.27
t=(-1,0)	0.28%	0.37%	0.92	1.21
t=(-1,1)	0.35%	0.46%	1.07	1.37
t=(-1,2)	0.31%	0.42%	0.9	1.21
t=(-1,3)	0.34%	0.44%	0.88	1.15
t=(0,0)	0.10%	0.18%	0.29	0.54
t=(0,1)	0.18%	0.26%	0.43	0.70
t=(0,2)	0.14%	0.22%	0.26	0.54
t=(0,3)	0.17%	0.24%	0.25	0.48

<sup>†</sup>  $p < .15$ , \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ , two-sided



**Table 6** Determinants of CARs to announcements of retail service innovations

	Estimate	SE	t-value
<b>Focal Variables</b>			
<i>Customer Value Benefit</i>			
Convenience ( $\beta_1$ )	0.277	*** 0.09	2.95
Engagement ( $\beta_2$ )	0.147	** 0.07	2.13
<i>Customer Value Benefit * Customer Purchase Process Stage</i>			
Convenience*Pre-Purchase ( $\beta_3$ )	0.226	* 0.13	1.77
Engagement*Pre-Purchase ( $\beta_4$ )	0.136	0.12	1.18
Convenience*Purchase ( $\beta_5$ )	0.356	*** 0.12	2.93
Engagement*Purchase ( $\beta_6$ )	0.181	0.11	1.59
<i>Customer Value Benefit * Nature of Products Offered by the Initiating Retailer</i>			
Convenience*Utilitarian ( $\beta_7$ )	0.020	0.07	0.30
Engagement*Utilitarian ( $\beta_8$ )	-0.117	*** 0.04	-2.84
Convenience*Hedonic ( $\beta_9$ )	-0.121	0.08	-1.50
Engagement*Hedonic ( $\beta_{10}$ )	-0.104	* 0.06	-1.72
<b>Control Variables</b>			
<i>Innovation Announcement</i>			
Pre-purchase ( $\beta_{11}$ )	0.129	0.10	1.28
Purchase ( $\beta_{12}$ )	0.088	0.08	1.11
Multiretailer ( $\gamma_1$ )	0.041	0.07	0.59
Order of entry ( $\gamma_2$ )	0.005	0.01	0.55
Number of confounds ( $\gamma_3$ )	-0.554	*** 0.13	-4.23
<i>Retailer Setting</i>			
Utilitarian ( $\beta_{13}$ )	0.058	0.10	0.57
Hedonic ( $\beta_{14}$ )	0.065	0.09	0.73
Ln(retailer share) ( $\gamma_4$ )	0.041	0.07	0.56
Retailer share online ( $\gamma_5$ )	-0.502	0.33	-1.50
Ln(banner share) ( $\gamma_6$ )	-0.157	*** 0.04	-4.37
Relative retailer sales growth ( $\gamma_7$ )	0.004	0.00	1.21
Relative retailer innovativeness ( $\gamma_8$ )	0.041	0.05	0.85
Retailer marketing intensity ( $\gamma_9$ )	0.371	0.45	0.82
Leverage effect ( $\gamma_{10}$ )	-0.122	** 0.05	-2.45
Industry turbulence ( $\gamma_{11}$ )	0.359	0.67	0.54
<b>Intercept (<math>\alpha</math>)</b>	0.009	0.14	0.06
<b>Overall R<sup>2</sup></b>	12.14%		
<b>N</b>	350		

\*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ , two-sided

Note: Before estimation, all dummy variables are effect coded, and all other variables are mean-centered, except for the number of confounds control variable

convenience more in its ability to generate future incremental cash flows than one that aims to provide engagement.

For the control variables, we find non-significant effects for multiretailer announcements and order of entry. Other confounding events lower shareholder value

(Table 6:  $\gamma_{\text{confound}} = -.554, p < .01$ ). In terms of the retailer setting where the innovation gets introduced, we find non-significant effects for the retailer's overall and online share, relative sales growth, relative innovativeness, marketing intensity, as well as turbulence in its primary industry. Banner share has a significant negative effect ( $\gamma = -.157, p < .01$ ). Similar to Gielens et al. (2008), a retailer's leverage effect to account for its financial flexibility has a negative effect ( $\gamma = -.122, p < .05$ ).

## Robustness checks

To verify the validity of our results, we conduct a series of robustness checks that we summarize in Table 8.

**Alternative samples** The dataset contains 350 events grouped into 72 service innovations (see Appendix). To ensure the results are not driven by one specific service innovation, we drop each innovation one by one, then reestimate Eq. 5. For 94.84% (478/(72 × 7)) of the cases, the difference between convenience and engagement (overall, in different purchase process stages, and for different types of retailers in terms of the nature of the products offered) remains robust in sign and significance. We also test the sensitivity of our results to the elimination of 56 minor, non-innovative service additions. If we include these minor events, the CAAR[-3, +1] decreases from .35% to .25%. When including them in the moderation analysis, together with an effect-coded dummy variable for whether the event is minor ( $\beta_{\text{minor}} = -.13; p < .05$ ), the same substantive findings are obtained, except for the difference between convenience and engagement innovations targeted at the post-purchase stage. Adding minor events thus seems to create noise in our sample, so it is better to exclude them.

**Test for outliers** To ensure our results are not driven by outliers, we winsorize the 10 smallest and largest observations for the dependent variable and continuous explanatory variables (Ruppert 2006). We then estimate Eq. 5 with winsorized variables. The results remain substantively the same, with the exception of the difference between convenience and engagement in the post-purchase stage, which becomes insignificant. In a similar spirit, we trimmed the sample by dropping the three smallest and three largest observations for the dependent variable (i.e., 1% at each tail) and reestimate Eq. 5. The results remain again substantively the same, although the overall difference between convenience and engagement in the post-purchase stage becomes less significant ( $p = .11$ ).

**Table 7** Effects of convenience vs. engagement on shareholder value

	Difference (Convenience – Engagement)		Wald Chi-squared test
<i>Overall</i> <sup>a</sup>	0.13	**	4.36
<i>Customer Purchase Process Stage</i> <sup>b</sup>			
Pre-purchase	0.04		0.16
Purchase	0.22	**	4.34
Post-purchase	–0.14	*	3.09
<i>Nature of Products Offered by Retailer</i> <sup>c</sup>			
Utilitarian	0.28	***	7.82
Hedonic	–0.02		0.10
Utilitarian & hedonic	0.25	***	12.67

\*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ , two-sided

<sup>a</sup> The  $\beta_1$  ( $\beta_2$ ) parameter from Table 6 for convenience (engagement) reflects the impact of the level of convenience provided by the innovation (vs. engagement) on shareholder value for the ‘average’ service innovation, given that we use effect coding for the binary moderating variables (i.e., purchase process stage and nature of products offered) and mean-centering for all focal and continuous control variables (except for ‘number of confounds’)

<sup>b</sup> To test the difference between convenience and engagement per purchase stage, we take into account all relevant coefficients. For instance, in the pre-purchase stage, we test whether  $\beta_1 + \beta_3^*(1) + \beta_5^*(-1)$  (i.e., the impact of convenience in the pre-purchase stage) is higher than  $\beta_2 + \beta_4^*(1) + \beta_6^*(-1)$  (i.e., the impact of engagement in the pre-purchase stage). We follow a similar procedure for the other stages

<sup>c</sup> To test the difference between convenience and engagement for a utilitarian, a hedonic or a retailer that offers both utilitarian and hedonic products, we follow the same procedure as in <sup>b</sup>. Retailers that have both hedonic and utilitarian products have a score of 1 on utilitarian and of 1 on hedonic

**Table 8** Robustness checks

	Focal Model	Alternative Sample		Outliers		Alternative Return Model	Alternative Purchase Stage Classification	Additional Control Variables		
		72 Subsamples <sup>a</sup>	Adding Minor Events	Winsorizing	Trimming			Available to All Customers (based on announcement)	Immediately Available for All Customers (based on service innovation)	Number of Involved Retailers
<b>Convenience vs. Engagement</b>										
<i>Overall</i>	+	67 ✓	✓	✓	✓	✓	✓	✓	✓	✓
<i>Customer Purchase Process Stage</i>										
Pre-purchase	n.s.	all ✓	✓	✓	✓	✓	✓	✓	✓	✓
Purchase	+	70 ✓	✓	✓	✓	✓	✓	✓	✓	✓
Post-purchase	–	53 ✓	$p=.68$	$p=.22$	$p=.11$	✓	✓	✓	✓	✓
<i>Nature of Products Offered by Retailer</i>										
Utilitarian	+	all ✓	✓	✓	✓	✓	✓	✓	✓	✓
Hedonic	n.s.	all ✓	✓	✓	✓	✓	✓	✓	✓	✓
Utilitarian & hedonic	+	all ✓	✓	✓	✓	✓	✓	✓	✓	✓
<i>Additional Control Variable</i>			–					+	n.s.	+

Notes: ✓ indicates that the effect is significant ( $p < .10$ , two-sided) and of the same sign as in the focal model, or insignificant as in the focal model

<sup>a</sup> “all” indicates that the interpretation of ✓ holds for all the 72 subsamples tested, and a number indicates for how many subsamples the interpretation of ✓ holds

**Alternative expected return model** To ensure the results are not driven by the choice of model for the expected returns, we also compute abnormal returns using a market-adjusted model (Brown and Warner 1985), in which the abnormal return is the difference between the stock return and the return of the market index:

$$AR_{rt} = R_{rt} - R_{mt}. \quad (6)$$

When we estimate Eq. 5 using the market-adjusted model, we obtain the same substantive findings as resulted from the more common market model.

**Alternative purchase stage classification** For 7 out of the 72 service innovations in our sample (9.72%), there is no clear agreement among the five experts as to the targeted stage in the purchase process. To control for this, we reestimate our model where we allow these 7 service innovations to be linked to more than one purchase stage (a purchase stage dummy variable equals one when at least one expert identified it as that purchase stage in the classification). This robustness check confirms the stability of our findings. The same substantive findings are obtained.

**Additional control variables** Based on reviewer suggestions, we take into account whether service innovations are available to all customers of a given retailer or only to a small subset of customers. We take the viewpoint of shareholders and code based on the information available in the announcement whether the innovation will be accessible for a limited sub-set of customers only (a selected set of outlets/markets, for instance) or whether the innovation will be/become available for all customers (in the near future). This variable is positive and significant (.086,  $p < .05$ ), implying that service innovations that are directly (vs. only gradually) available to all customers have a larger impact on the retailer's shareholder value. In the same spirit, we extend Eq. 5 with an extra variable that differentiates between service innovations that are rolled out in one go or not (that is, those that are online or app-based vs. those where technology or investments are needed per store). This variable turns out to be insignificant (.002,  $p > .10$ ). In addition, we reestimate Eq. 5 where we explicitly take into account the number of retailers involved in the service innovation announcement. In 10.29% of the events, another retailer was involved. This variable turns out to be significant (.036,  $p < .05$ ), meaning that shareholder value increases more when more retailers are involved in a service innovation announcement. The substantive findings for tests with these additional control variables are identical to the main model.

## Discussion

Retail managers feel pressured by dramatic changes in the current retail landscape, imposing disruptions on how they do business and provide value to consumers. Many retailers pursue service innovations to provide more value for consumers and, ideally, to improve their stock returns. In contrast with product innovations, for which success is easy to measure using market share (Lamey et al. 2018), the success of service innovations is more challenging to determine. Prior studies highlight some positive effects of service innovations on consumers' attitudes and shopping behaviors (Hilken et al. 2017; Wang et al. 2015), but those outcomes do not guarantee that investors react in a positive way, as these investors take the whole set of potential consumer and firm benefits and costs into account. Introducing a service innovation is a double-edged strategy, invoking both potential benefits and likely costs at the retail firm level.

To the best of our knowledge, this study is the first to examine the net financial impact of a broad range of retail service innovation announcements, that vary on the type of customer value benefit(s) they aim to provide, on retailer shareholder value (measured via stock returns), as well as to shed light on some contingency factors that drive this impact. We thus extend sparse prior empirical research on the impact of service innovations on retailer shareholder value by building on existing conceptual frameworks (Grewal et al. 2020; Inman and Nikolova 2017; Reinartz et al. 2019; Sorescu et al. 2011) and empirically testing a generalizable model that reveals whether and in which conditions retail service innovations positively impact investor reactions.

Our first key finding is that the introduction of a retail service innovation has far from uniform effects on shareholder value. Even if half of the service innovations in our sample increase the retailer's stock return, the other half yield a negative stock market response. In line with signaling theory, investors appear to use the limited information available to make inferences about a retailer's future expected incremental cash flows (Spence 1973). Service innovations can signal competitiveness, with positive implications for a retailer's financial well-being, but investors also might recognize that a service innovation can demand costly investments for its development, launch, maintenance, and marketing. Still, our findings confirm that service innovations that generate more consumer value benefits lead to more positive shareholder value, irrespective of whether the innovations mainly provide more convenience or encourage more engagement. Investors thus seem to consider the

potential future revenue streams generated from consumers who are more likely to benefit (and thus start shopping, return and/or expand their spending) when service innovations offer more convenience and/or more engagement.

Still, retailers must overcome their resource limitations when deciding which service innovation to introduce (Grewal et al. 2020) and prioritize which customer value benefit(s) they will pursue. Our findings suggest that, across the two consumer value benefits, retail service innovations that score higher on convenience generate more retailer shareholder value than those that score higher on engagement. Yet, there are important contingencies that should be taken into account. The congruence between the customer value benefit aimed for by a service innovation, and the purchase process stage targeted by the innovation, as well as the congruence between the benefits provided and the nature of the products offered by the initiating retailer both enhance the positive impact of these innovations on shareholder value. This suggests that investors anticipate more future cash flows in cases where the service innovation is consistent with the goals of that purchase stage or with the nature of the initiating retailer. In the purchase stage, consumers seek a quick, effortless shopping process, leading both them and investors to value service innovations that aim at helping to achieve these goals, which essentially are those innovations that improve the conversion in the purchase process. Examples of retail service innovations that increase convenience and generate stronger positive impact on shareholder value in the purchase stage include self-scanning, payment or delivery options, and tools to simplify the order process. In the post-purchase stage, consumers' focus shifts to non-transactional aspects, including relationships with the firm, leading to stronger preferences by consumers—and thus stronger anticipation of future cash flows by investors—for engagement benefits, offered by post-purchase innovations like in-store cafés and entertainment apps.

For a retailer that primarily—or also—offers utilitarian products, investors value service innovations that move people through the stages of the purchase process in an efficient and effective way. Supermarkets, convenience stores, hypermarkets, and variety stores all score high on the utilitarian dimension. For them, investments in innovations that speed and ease search, comparison, and evaluation efforts in the pre-purchase stage (e.g., in-store kiosk with product information, digital map of the store); simplify choice, ordering, payment, and delivery tasks in the purchase stage (e.g., payment and delivery solutions); and reduce frictions in the post-purchase stage (e.g., storing payment details online) lead to

higher shareholder value. We do not find a similar moderating effect of the hedonic setting though, such that service innovations that score high on either engagement or convenience work equivalently well in these stores. For hedonic retailers, investors thus appreciate both initiatives that bond consumers by triggering experiential and emotional value, as well as those that make the shopping process smooth and quick.

## Limitations and further research opportunities

We close by noting some limitations of our study, which present avenues for further research. First, stock prices are a generally accepted measure of financial performance in (product) innovation research (e.g., Borah and Tellis 2014; Sood and Tellis 2009), though the potential for biased investor responses remains. Continued research might investigate the impact of service innovation introductions on other performance metrics, such as realized cash flows or retailer equity. Second, our sample includes U.S.-based publicly listed retailers covered by Edge Retail Insight. Future research might cross-validate the results for other retailers from other countries. Third, the business press seems to imply that most retailers invest in service innovations, but we find that 21 of the 55 retailers in our sample did not announce a single service innovation introduction between 2011 and 2016. Dotzel et al. (2013) argue that the level of service innovativeness depends on retailer characteristics such as size, age, and the costs of goods sold relative to sales. Further empirical research is needed to investigate what drives a retailer's decision to introduce at least one service innovation. Fourth, Sorescu et al. (2018) propose that major product innovations might reflect stock market bubbles, marked by rapid increases and subsequent declines in stock prices, which create windows of opportunity for innovative firms to raise equity and accelerate the diffusion of the innovation. Further research is needed to identify the relationship between (retailer) service innovations and stock market bubbles. Fifth, we mostly argue from the revenue-generating angle where investors assess the degree to which consumers are attracted, retained and/or their baskets are expanded following the introduction of a service innovation. The implicit assumption is that saved or incurred costs did not drive hypothesized differences, an assumption that could be explicitly tested in future research. Last, it would be possible to extend the number of moderators and investigate whether the stock return impact of convenience and/or engagement benefits aimed to be provided to customers by an

innovation depends on other contingency factors like the positioning a retailer holds (for instance, value-based vs. premium-oriented) or the industry structure where it is active. We encourage researchers to continue contribut-

ing insights to enable the development and assessment of retail service innovations that create positive outcomes for shoppers, investors and the implementing retail firm.

## Appendix

### Overview of retail service innovations

	Number of announcements	Convenience score (1-7 scale)	Engagement score (1-7 scale)
<b>Retail service innovations at the pre-purchase stage</b>			
Add product information on shelves (e.g., info on eating healthy)	5	4.8	5
Augmented content catalogue	9	4.8	4
Chat function to get assistance	3	5.8	3.6
Check in-store stock online	4	5.6	2.6
Equip sales people with tablets to provide customers product info	7	5.4	3.6
ESL (electronic shelf label)	1	4.2	1.8
Find products based on image recognition	5	6	3.8
Fitting tool	2	5.2	5.2
Free Wi-Fi	2	4.4	3
Improved online product search	6	6	2
In-store connected fitting room	3	5	4.2
In-store digital map of the store	2	6	2.2
In-store digital mirror	1	5.4	4.8
In-store kiosk that provides product information	8	5.4	2.6
In-store mobile assistance	9	4.6	4
In-store self-service health screening kiosk	1	4.2	5.2
In-store Skype	1	3	4.2
In-store social media	1	2	5.8
In-store virtual assistance	2	4.4	4.8
In-store vote on music	1	1.4	6.6
Interactive product display	1	3	5.2
Personalized help from personnel to find product	2	4.8	5.6
Personalized online recommendations	4	4.8	4.4
Price comparison tool	3	6	2.2
Product information tools that are both online and in store	2	5.2	2.8
Product information websites and apps	17	5	2.8
Shop-in-shop in store	3	5.4	4.8
Shop-in-shop in store together with third-party	20	5.6	4.4
Shopping cart with video screen (entertainment & promos)	2	3.6	5.4
<b>Retail service innovations at the purchase stage</b>			
Complete website redesign	5	5.4	3.6
Customize products in-store	2	4.2	5.6
Delivery (in house, in car trunk)	4	7	2
Digital/mobile coupons	8	4.8	3.6
Free shipping	8	4.6	2.6
Green shipping option	1	2.2	3.8

(continued)

	Number of announcements	Convenience score (1-7 scale)	Engagement score (1-7 scale)
In-store check-in promo	5	5.2	3.8
In-store kiosk that automates ordering service	2	5.4	2.4
In-store location-based promo's or loyalty points (e.g., beacons)	13	4	5
In-store pick up	4	5.8	2.8
In-store pick up at third-party	4	5.8	3
In-store POS for sales associate to serve as checkout	1	5.6	3
Keep track of promotions through an app	3	4.6	4.6
Lockers	5	5.8	1.6
Lowest price guarantee	1	5.6	3
Mobile sales app	9	5.8	3
(Mobile) self-scanning service	6	6.2	1.6
New payment option in store	30	5.4	1.8
New payment option online	1	5.4	1.8
New payment option online and in store	4	5.6	1.8
New store layout	7	4.8	5.8
Order online in store	3	5.4	2.2
Order online through third-party (e.g., Facebook, gaming console)	11	5.2	3.2
Other ways to order online (e.g., with picture of shopping list)	8	5.6	3.2
Out-of-store pick up point	9	5.4	2.2
Payment on delivery after online order	3	5.6	2.2
Personalized promotions (get them online and redeem in the store)	3	4.8	4.2
Physical tool to order products online (e.g., one-click button)	2	5.8	2.4
Reserve online and try on in store	3	5.6	3.2
Smart shopping cart (robot)	2	4.8	4
Track status online order	3	6	2.4
<b>Retail service innovations at the post-purchase stage</b>			
Automated kiosk in store from third-party	6	5	2.8
Digital receipts	3	5.6	1.2
Entertainment app (e.g., free game)	2	1.4	6.4
Innovative loyalty program (e.g., fitness tracker to earn points)	8	2.2	6.2
Innovative loyalty program in partnership with third-party	6	2.4	4.6
In-store café	9	1.8	6.6
In-store third-party pick up facility	2	5.4	3
Make return of online orders easier (e.g., lockers, curbside)	2	5.8	2.8
Online access to third-party sellers	6	4.6	2.8
Online community	3	1.8	6.2
Reminders and schedulers (e.g., reminder for refill)	3	6	3.2
Storing payment details online	3	6	1.6
<b>Sum</b>	<b>350</b>		

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