

# You gotta serve somebody: the effects of firm innovation on customer satisfaction and firm value

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**Abstract** Marketing actions must create value for two key stakeholders: customers and investors. Nevertheless, these two stakeholders differ in their evaluations of firm actions in critical ways. As a result, most managers believe that there is a critical trade-off between serving customers and shareholders. Drawing upon the marketing–finance interface, the authors investigate how this trade-off unfolds to impact customer satisfaction and firm value in the context of innovation. Specifically, the present study demonstrates that creating value for customers and shareholders are not two completely distinct goals, as the business press and managers fear; innovation can create value for shareholders by satisfying customers. However, results also indicate that a crucial trade-off between satisfying consumers and creating value for investors is indeed present, as those same factors (i.e., firm’s branding strategy and level of market dominance, industry-level competitive intensity) that enhance the effects of innovation on customer satisfaction depress the effects of innovation on firm value, and vice versa. The authors discuss the implications of these important findings for research and practice.

**Keywords** Firm innovation · Customer satisfaction · Firm value · Branding strategy · Industry effects

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“You have to choose, therefore, between making shareholder value your primary goal [...] and making customer value your main goal.”  
(Martin 2010, p. 63)

Marketing actions must create value for two key stakeholders: customers and investors (Mizik and Jacobson 2003; Srivastava et al. 1998). Nevertheless, customers and investors differ in their evaluations of firm actions in critical ways; the same firm action may not be equally effective at generating value for customers and shareholders. For this reason, as illustrated in the quotation above, managers believe that there is a critical trade-off between serving customers and shareholders, in that creating value for customers takes away from creating value from shareholders and vice versa (also see Denning 2015).

As a key marketing action, firm innovation, namely the set of new products that a firm introduces in the marketplace (Sorescu et al. 2003), has attracted substantial research attention in marketing. Specifically, the direct and indirect effects of innovation on firm value (e.g., Rubera and Kirca 2012; Sood and Tellis 2009; Srinivasan et al. 2009) and customer satisfaction (e.g., Dotzel et al. 2013; Stock 2011) have been investigated extensively in prior literature (see Table 1 for a summary). However, the possible aforementioned trade-off between customer satisfaction and shareholder value maximization objectives has largely been neglected in the context of firm innovation in prior marketing literature. From a theoretical perspective, this trade-off arises because managers have limited resources that they need to allocate to marketing actions that create value for customers and shareholders. But, customers and shareholders may evaluate the same firm action in different ways (Srinivasan and Hanssens 2009) because they are very closely connected (Srivastava et al. 1998). With respect to innovation, customer and investor evaluations

**Table 1** Recent relevant research on firm innovation, customer satisfaction, and firm value

	Direct effect of innovation on customer satisfaction	Direct effect of innovation on firm value	Direct effect of customer satisfaction on firm value	Mediated effect of innovation on firm value via customer satisfaction	Total effect of innovation on firm value via customer satisfaction	Contingencies of the innovation–customer satisfaction and the innovation–firm value relationships
Kunz et al. (2011)	X					
Luo and Bhattacharya (2006)	X	X				
Cho and Pucik (2005)		X				
Lee and O’Neill (2003)		X				
McAlister et al. (2007)		X				
Sorescu and Spanjol (2008)		X				
Srinivasan et al. (2009)		X				
Tellis et al. (2009)		X				
Gruca and Rego (2005)			X			
Aksoy et al. (2008)			X			
Fornell et al. (2006)			X			
Morgan and Rego (2006)			X			
Dotzel et al. (2013)	X	X				External (Human-dominated industries)
This study	X	X	X	X	X	External (Industry competitive intensity) and Internal (branding strategy, and market dominance)

differ in three critical ways. First, investors evaluate firm innovation on the basis of cash flow expectations, future growth opportunities, and risk (Srivastava et al. 1998; Srinivasan and Hanssens 2009); consumers are concerned with the capability of a firm’s new products to satisfy their current needs (Pauwels et al. 2004). Second, investors’ evaluation of a firm’s innovation accounts for all the future returns, while consumers disregard future effects and are more focused on the satisfaction of their needs in the present. Third, investors assess the effect of an innovation on the whole portfolio of the firm’s products; consumers are much less concerned about the extent to which an innovation impacts other firm’s products, but are concerned more narrowly on individual product features (Mizik and Jacobson 2003).

In an effort to examine this trade-off between customer satisfaction and shareholder value maximization objectives in the context of firm innovation, we maintain that a better understanding of the real effects of a marketing action (in our case innovation) requires including both stakeholders in the

analysis. Drawing upon the market-based assets theory, we further suggest that creating a valuable market-based asset, such as customer satisfaction, is a way for innovation to create value for shareholders (Srivastava et al. 1998). Hence, we first incorporate the customer value versus shareholder value trade-off in our framework by recognizing that satisfying customers is a prerequisite to generating value for shareholders. In this way, we investigate how innovation influences firm value in the stock market directly and indirectly through a mediated effect via customer satisfaction (cf. Dotzel et al. 2013).

More importantly, to further investigate the nature of the trade-off between customer satisfaction and shareholder value maximization objectives in the context of firm innovation we focus on the role and nature of firm innovation as a critical marketing action under different conditions. Specifically, we focus on a set of internal (i.e., branding strategy, market dominance) and external factors (i.e., competitive intensity) to illustrate how customers and shareholders evaluate firm innovation in different ways to create trade-offs in maximizing

customer value or shareholder value for managers. In this way, we demonstrate how the differences between consumers and investors influence the effectiveness of innovation in satisfying customers and in creating value for shareholders. This is a clear departure from the previous literature, which has largely neglected the differences between consumers and investors in their evaluation of firm innovation. Our study is the first to bring to light the fact that, under specific internal and external conditions, it may be difficult for firms to maximally satisfy customers while also maximizing the value they create for shareholders through innovation.

We test our theoretical framework in an unbalanced panel of data that is composed of 85 firms from the manufacturing and service industries over a 12-year period (1999–2011) for a total of 648 firm-year observations. We complement our analyses with two additional analyses that contribute to our understanding of the trade-off involving customers and shareholders. First, we run a moderated mediation analysis, which allows us to comprehend the full picture of how innovation influences firm value through customer satisfaction and under each specific condition. Second, we run a configurational analysis, which helps us understand how the whole set of internal and external conditions under which the company operates influence the effects of innovation (cf. Vorhies and Morgan 2003).

Our study makes several contributions to the marketing literature. As summarized in Table 1, while several studies have investigated the innovation–customer satisfaction (e.g., Kunz et al. 2011), innovation–firm value (e.g., Sorescu and Spanjol 2008), and customer satisfaction–firm value relationships (e.g., Morgan and Rego 2006), the role of customer satisfaction as a critical market-based asset that bridges innovation to firm value has largely been neglected. To the best of our knowledge, the only notable exception is Dotzel et al. (2013) that focuses on service innovativeness, customer satisfaction, and firm value relationships. Our study compliments Dotzel et al. (2013) in four specific ways. First, Dotzel et al. (2013) focus on the direct effects of innovation on either customer satisfaction or firm value, with no mediation hypothesis for the innovation–customer satisfaction–firm value link. In our study, the mediating role of customer satisfaction is a key theoretical mechanism to investigate the nature of the trade-off between maximizing customer value and shareholder value in the innovation context. Second, Dotzel et al. (2013) study the critical differences between the types of service innovations, but they do not account for the differences between consumers and investors in their theoretical framework. These differences are instead critical for our theory development as we hypothesize that under the same conditions the effects of innovation depend on whether consumers or shareholders evaluate innovation. Third, Dotzel et al. (2013) explore the moderating effect of one

specific external factor (i.e., human-dominated industries), for one specific type of innovation (i.e., p-innovations). Differently, we focus on a much broader set of both internal and external factors as moderators, such as branding strategy, market dominance, and competitive intensity, which provide additional theoretical and managerial insights. Finally, Dotzel et al. (2013) examine service innovations with a focus on internet-enabled and people-enabled service innovativeness. Yet, the effects of innovation on firm value differ between products and service industries (Rubera and Kirca 2012). Our study provides a more complete picture of the trade-off between maximizing customer value and shareholder value in the innovation context with a larger sample of both service and product innovations.

Another important contribution of our study to the marketing literature relates to the identification of three critical conditions that have contrasting effects on the innovation–customer satisfaction and innovation–firm value relationships: a firm’s branding strategy, its level of market dominance, and the competitive intensity of the industry in which it operates. Our study demonstrates that a crucial trade-off between satisfying consumers and creating value for investors is indeed present under specific conditions; the same conditions that enhance the effects of innovation on customer satisfaction depress the effects of innovation on firm value, and vice versa. Our final contribution to the literature is related to the total effect of innovation on firm value. We find that innovation has a negative effect on firm value for firms following a house-of-brands strategy and for dominant firms. Hence, we provide evidence that innovation is not always beneficial for all firms. Finally, through a configurational analysis we show that innovation is not always a necessary condition to generate customer satisfaction or firm value; some firms, operating in certain industries, can still satisfy customers and create value in the stock market regardless of their level of innovation.

## Conceptual framework and hypotheses

From a theoretical perspective, market-based assets theory brings together the two seemingly independent streams of prior research that examine either the effect of innovation on customers or investors. With its focus on developing and managing market-based assets, “or assets that arise from the commingling of the firm with entities in its external environment”, and on the impact of these assets on firm value (Srivastava et al. 1998, p. 2), this theory explicitly links consumers and investors. Building on market-based assets theory, we first propose that innovation is a critical marketing action that increases firm value by contributing to create a critical market-based asset, i.e., customer satisfaction. Then, we present our moderation hypotheses that examine the effects of three key conditions that influence the impact of innovation

on customer satisfaction and firm value: branding strategy, market dominance, and competitive intensity. A central tenet of the innovation literature is that not all firms gain equally from innovation, but the effectiveness of innovation greatly depends on internal and external conditions (Sorescu et al. 2003; Rubera and Kirca 2012). A similar perspective is shared by the market-based assets theory, in that the value of firm actions strongly depends on the way they are combined with other firm assets and external conditions. Thus, our moderator selection is guided by two criteria: First, we focus on internal and external conditions that amplify the differences in the criteria that consumers and investors use when assessing the value of innovations. Second, because we are interested in examining the trade-off between satisfying consumers and creating value for investors, we focus on conditions that managers cannot change in the short-term, but are given to them. Focusing on moderators that are not directly under managerial control enables us to provide clear practical implications to managers about how to adjust their innovation efforts to balance the customer-stakeholder trade-off.

The first critical factor that affects the perceived value of innovations for customers and investors differently is the firm's branding strategy. As detailed earlier, investors are concerned with the entire portfolio of a firm's products, while consumers are concerned about the added value of the single product. Hence, a firm's branding strategy is a critical internal condition that determines the extent to which consumers and investors can assess the whole firm portfolio of new products rather than the added value of a single product (Aaker 2007; Rao et al. 2004; Rubera and Droge 2013). Second, a firm's market dominance affects the perceived value of innovation for customers and investors differently because, for investors, it influences the extent to which investors evaluate how new products may cannibalize a firm's existing products (Rubera and Kirca 2012). On the other hand, market dominance influences consumers' perceptions about the capability of the firm's products to satisfy their needs (Sorescu et al. 2003). Finally, we focus on the competitive intensity of the industry in which a firm operates. Competitive intensity influences the extent to which a firm can reap the benefit of its collective innovation efforts (Rubera and Kirca 2012) as well as the satisfaction that consumers get from a current product (Chen and MacMillan 1992). To the extent that investors are concerned with future returns, while consumers with the satisfaction of their current needs, competitive intensity affects the innovation-customer satisfaction and innovation-firm value relationships in different ways, as detailed subsequently. Figure 1 presents the conceptual framework that summarizes the relationships investigated in our study.

## Direct effects of firm innovation on customer satisfaction and firm value

**Innovation-firm value relationship** The existing marketing literature provides substantial support for the direct impact of innovation on firm value. Therefore, we only briefly summarize these arguments herein without any specific hypotheses (cf. Rubera and Kirca 2012). The value of a firm in stock markets is based on the firm's current cash flows, as well as the growth of and risks associated with future cash flows. Firm innovation has a direct positive effect on firm value because it increases potential cash flows by allowing the firm to keep pace with changing consumer preferences (Sood and Tellis 2005; Srinivasan et al. 2009). In addition, innovation reduces the volatility of cash flows by enabling the firm to complement their product portfolio with offerings that are able to address new customer segments or new needs and to stay ahead of the competition (Srinivasan et al. 2009). Finally, innovation signals a firm's ability to expand its product portfolio in the future, and thereby increases the residual value of the firm (Sood and Tellis 2009). Thus, investors value firm innovations largely because they consider innovation as an assurance that the firm will continue to generate cash flows in the future.

**Mediational role of customer satisfaction** In addition to its direct effects on firm value, innovation affects firm value because it generates superior customer satisfaction, a valuable market-based asset that in turn enhances firm value. Specifically, innovation generates customer satisfaction in three ways. First, by introducing a constant flow of new products in the market, innovative firms directly influence consumers' perceptions about the firm's ability to satisfy their needs (Luo and Bhattacharya 2006). Second, all else being equal, customers are likely to expect better value and, consequently, extract higher satisfaction from a product that is made by an innovative firm (Fornell et al. 1996; Mithas et al. 2005) because consumers perceive that a product introduced by an innovative firm is maximally effective at satisfying their needs (Mukherjee and Hoyer 2001). Third, consumers have heterogeneous preferences whose distribution is unknown *ex ante* to firms. Innovative firms can increase the likelihood of locating pockets of consumers with unmet preferences by increasing the sheer number of products introduced in the market (Sorenson 2000). A few products might fail, but each product increases the chance of satisfying consumers.

Customer satisfaction is a critical market-based asset that positively influences firm value through its effects on cash flows (Srivastava et al. 1998). Prior research indicates that customer satisfaction enhances and accelerates future cash flows (Aksoy et al. 2008; Tuli and Bharadwaj 2009; Luo

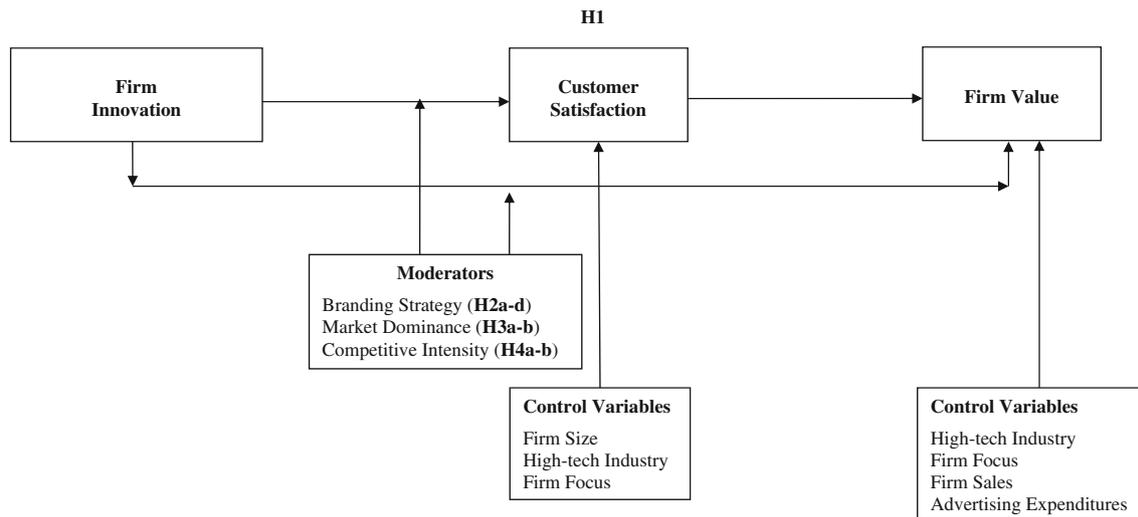


Fig. 1 Conceptual framework

et al. 2010). Also, customer satisfaction provides insulation from short-term shocks in the environment, thereby reducing the volatility of cash flows because satisfied customers are less likely to switch to competing offerings (Anderson et al. 1994). Further, customer satisfaction increases firms’ future cash flows because satisfied customers frequently buy that firms’ products (Gruca and Rego 2005). Satisfied consumers also convey positive information about the firm, thus enabling the firm to attract new customers more readily and at a lower cost (Grewal et al. 2010). Thus, building on the market-based assets theory (Srivastava et al. 1998), we propose that customer satisfaction is a mediational pathway through which the effect of innovation turns into enhanced firm value. Thus:

H1: Customer satisfaction mediates the relationship between innovation and firm value.

**Moderating effects of branding strategy**

Branding strategy is a critical tool for managers that significantly contributes to firm performance and shareholder value (Bharadwaj et al. 2011; Morgan and Rego 2009). We explore the moderating effects of three different branding strategies widely established in the marketing literature: corporate branding, mixed branding, and house of brands (Rao et al. 2004). In corporate branding, firms use only one brand name across all products (e.g., Dell). In house-of-brands, firms use individual brand names with no corporate identification for different products (e.g., Procter & Gamble with Crest, Tide, Bounty, etc.). Mixed branding is an intermediate strategy in which firms use their corporate name for certain products in addition to a set of house brands for others (e.g., Pepsi with Tropicana and Gatorade brands). According to Rao et al. (2004), different branding strategies represent a trade-off

between the benefits of economies of scale – attainable through corporate branding– and the benefits of customization – attainable through house brands targeted to different segments (Bahadir et al. 2008). In explaining how investors perceive this trade-off, Rao et al. (2004) note that investors “pay limited attention to the demand-side advantages” (p. 130) (i.e., customization) and that the branding strategy that maximizes value for investors is “inconsistent with the concept of market segmentation” (p. 139). Thus, branding strategy can be expected to have diverse effects on investors and consumers’ evaluations of a firm’s actions, such that customization benefits of branding strategy should be more relevant for consumers, while efficiency derived from economies of scale in branding company’s product and services is more critical for investors.

**Innovation–customer satisfaction relationship**

Firms adopting a house-of-brands strategy customize the brands for the specific needs of different segments (Bahadir et al. 2008). This strategy allows brands to connect directly to niche customers with a targeted value proposition (Aaker and Joachimsthaler 2000). Each brand in a house-of-brands strategy has a distinct image that helps companies effectively communicate the unique benefits of new offerings. Firms following a house-of-brands strategy can establish deeper connections with their customers because they can clearly position each new product on those benefits that are most consistent with the specific needs of their niche consumers. Given this specific focus on the needs of each consumer segment, it is easy for consumers to perceive the added value of new products. On the other hand, corporate branding requires the company to position products in such a way that they can satisfy a large pool of consumers with heterogeneous needs. Compromises have to be made in the positioning of a

given brand to accommodate its use in other product-market contexts (Aaker and Joachimsthaler 2000). Thus, with a corporate branding strategy, it is harder to communicate how a new offering can satisfy the needs of specific consumer segments (Aaker and Joachimsthaler 2000). Since satisfaction is a post-consumption evaluation dependent on perceived value (Anderson et al. 1994), innovation should thus generate the highest levels of customer satisfaction for firms following the house-of-brands strategy and the lowest levels of customer satisfaction for firms following the corporate branding strategy. Thus:

H2a-b: The positive effect of innovation on customer satisfaction is (a) lowest for firms adopting a corporate branding strategy; and (b) highest for firms adopting a house-of-brands strategy.

**Innovation–firm value relationship** In understanding the moderating effect of branding strategy in the innovation–firm value relationship, two causal mechanisms come into play. First, innovation increases firm value by generating cash flows through new product introductions. Second, innovation increases the residual value of the firm. As for cash flow generation, firms adopting a corporate branding strategy benefit from economies of scale in marketing, as well as from reduced advertising and promotion costs related to the introduction of new products (Hulberg 2006). On the other hand, firms adopting a house-of-brands strategy sustain significantly higher promotion and marketing costs when introducing new products. These costs are at a median level in the case of mixed branding strategy (Rao et al. 2004). This means that, all else being equal, the net cash flow that a firm generates with its innovations would be higher when it follows a corporate branding strategy, because lower promotion and marketing costs means higher net cash flows from the same level of innovation. On the other hand, promotion and marketing costs are highest for firms following a house-of-brands strategy, thus attenuating the net cash flow that a firm generates through innovation. Hence, firms following a corporate branding strategy should generate the highest level of cash flows, while firms following house-of-brands strategy should generate the lowest level of cash flows from innovation. This argument is consistent with the previous literature that has shown that firms following corporate branding strategy have higher Tobin's  $q$  than firms following a house-of-brands strategy “because of the supply-side advantages of a corporate-branding strategy” (Rao et al. 2004, p.130).

As for the residual value of the firm, Rao et al. (2004) claim that “although investors have increasingly come to

acknowledge the financial value of brands, it can be presumed that they are not familiar with which brands constitute firms' brand portfolios (p.139)”. In other words, investors may not be fully aware of all individual brands in the portfolio of a firm following house-of-brands strategy. Therefore, they may potentially overlook the innovations in some product categories. The difficulty of keeping track of the innovations of each individual brand may mask the benefits of innovations for investors, partially reducing the positive effect of innovation on residual value. This problem is less concerning for firms adopting a corporate branding strategy because their innovations are more easily observable and visible to investors. Thus, we hypothesize that:

H2c-d: The positive effect of innovation on firm value is (c) highest for firms adopting a corporate branding strategy; and (d) lowest for firms adopting a house-of-brands strategy.

### Moderating effects of market dominance

Market dominance is defined as the level of market power a firm yields, as determined by the firm's current position in the market, as well as the technological, financial, and market-related resources that the firm can bring to the market (Sorescu et al. 2003).

**Innovation–customer satisfaction relationship** The literature offers two contradicting perspectives about the moderating role of market dominance in the innovation-customer satisfaction relationship. Anderson et al. (1994) report a negative correlation between market share and customer satisfaction. The reasoning here is that firms with large market shares serve heterogeneous groups of customers and, hence, are less able to develop offerings that satisfy such a large group, regardless of their level of innovativeness. The innovation literature advances an opposing perspective. First, market dominance influences consumers' perceptions of firms' products. Indeed, dominant firms often enjoy a reputation effect over non-dominant firms (Chandy and Tellis 2000; Sorescu et al. 2003). Such reputation leads consumers to perceive that the innovations introduced by dominant firms fulfill their needs better than the innovations introduced by non-dominant firms (Walsh and Beatty 2007). Therefore, innovation should have a more positive effect on customer satisfaction when firms dominate their markets because consumers are more favorably disposed toward their products. Second, dominant firms have bigger resource endowments that allow them to convey the benefits of new products to consumers (Sorescu et al. 2003). The first perspective focuses on the firm's ability to develop new products to satisfy their customers. The second perspective instead focuses on the firm's ability to convince customers

of the value of its offerings. Since customer satisfaction is a subjective evaluation of the perceived value of an offering, the firm's ability to convince customers about the benefits of its products should be more important than its ability to develop products that meet heterogeneous needs. Hence, we propose that the superior capability to convey the benefits of their products should enable dominant firms to generate higher customer satisfaction from their innovations than non-dominant firms. Hence:

H3a: The positive effect of innovation on customer satisfaction is stronger at higher levels of market dominance.

**Innovation–firm value relationship** Because investors evaluate firm innovation on the basis of cash flow expectations and future growth opportunities, innovation should have a stronger effect on firm value for non-dominant firms. First, investors are more skeptical about the ability of non-dominant firms to grow and generate future cash flows because non-dominant firms have fewer resources available to endure and prosper in the market than dominant firms (Sorescu et al. 2003). Innovation reduces this skepticism by assuring that the firm will grow and increase its cash flows over time. Sending this signal should be more critical for non-dominant firms. Supporting this contention, Rubera and Kirca (2012) report that investors value the innovation of small firms (i.e., firms with small resource endowment) more than the innovation of large firms (i.e., firms with large resource endowments). Second, although new products represent an additional source of cash flow, they also cannibalize the cash flows generated by a firm's existing products (Chandy and Tellis 1998). Thus, cannibalization may reduce the value that investors attribute to a firm's innovation because it decreases investors' confidence in the firm's ability to earn positive cash flows in the future (cf. Rubera and Kirca 2012). Because dominant firms' products are typically market leaders, they are more likely to suffer from cannibalization than firms that occupy a niche position in the market. Hence, innovation should generate lower net cash flows and, consequently, a smaller firm value for dominant firms than for non-dominant firms. Thus:

H3b: The positive effect of innovation on firm value is lower at higher levels of market dominance.

### Moderating effects of competitive intensity

Competitive intensity, defined as the degree of competition in an industry (Kohli and Jaworski 1990), is an important characteristic of industry structure that significantly affects relationships between firm actions and consumers and investors

(cf. Luo and Homburg 2007; Morgan and Rego 2009; Rao et al. 2004).

**Innovation–customer satisfaction relationship** Introducing a higher number of products that might potentially satisfy consumer needs is one way through which innovative firms increase customer satisfaction. This strategy works only to the extent that a firm can introduce unique products that satisfy a segment of consumers whose needs are not served by rivals. As the number of competitors in a market increase, the chances of finding these segments decrease, thus limiting the advantage of using this strategy (Sorenson 2000). This consideration indicates that one of the causal mechanisms through which innovation influences satisfaction is less effective as industry competition increases. Second, innovation generates customer satisfaction because it signals to consumers that the firm is constantly trying to fulfill consumer needs. However, it is hard for consumers to keep track of all the innovations that a specific firm introduces in highly competitive markets because the overall number of new products that *all* companies introduce increases as competition intensifies. As the continuous introduction of new products that characterizes competitive industries reduces consumers' attention span to a single firm's innovation, the mechanism through which innovation influences satisfaction should be weaker at higher levels of industry competition. Finally, satisfaction occurs when firms exceed customer expectations (Fornell et al. 2006; Kotler 2000, p. 36). In highly competitive industries, consumers expect firms to constantly introduce new products (Chen and MacMillan 1992). Hence, all else being equal, innovation should generate lower satisfaction as the competitive intensity of the industry increases. Therefore, we hypothesize that:

H4a: The positive effect of innovation on customer satisfaction is weaker in more competitive industries.

**Innovation–firm value relationship** Highly competitive markets are characterized by frequent new product introductions that limit a firm's capability to generate cash flows from its innovations (Chen and MacMillan 1992). Investors may perceive that a constant flow of new product guarantees that the firm will be able to keep pace with competitors, grow over time, and continue to generate cash flows in the future. On the other hand, less competitive industries are characterized by fewer product introductions, and innovation is not as necessary to survive and prosper. Therefore, investors' evaluations should be more positively influenced by firm innovation when industry competition intensifies because innovation provides a reliable assurance that the firm will continue to generate cash flows in the future, while a similar assurance is nonessential in less competitive industries. Hence, we hypothesize that:

**Table 2** Summary of measures and data sources

Variable	Measure	Data source
Firm innovation	Number of new products	Capital IQ, Mintel Oxygen, Factiva, company's press release
Customer satisfaction	Latent variable indicated by customer satisfaction scores	American Consumer Satisfaction Index
Firm value	Tobin's q	COMPUSTAT
Branding strategy	Dummies for corporate branding and house-of-brands	<i>Brands and Their Companies</i> report
Market dominance	Common factor from a principal component analysis involving market share, assets, and profits	COMPUSTAT
Competitive intensity	Hirschman-Herfindahl index (reversed value)	COMPUSTAT
Firm size	Log of # of employees	COMPUSTAT
Firm focus	# of segments in which a firm operates	COMPUSTAT
Firm sales	Sales	COMPUSTAT

H4b: The positive effect of innovation on firm value is stronger in more competitive industries.

## Method

### Data

To test our conceptual framework empirically, we employed several major sources using the American Satisfaction Index (ACSI) as our sampling frame. The ACSI collects annual data from more than 65,000 U.S. consumers for products/services of more than 200 Fortune 500 companies. This index measures consumers' evaluations of their consumption experiences (Fornell et al. 1996). For our purposes, this sampling frame is appropriate because the companies and industries in the index broadly represent the U.S. economy. Moreover, this database has been used extensively in the marketing literature. Consistent with Morgan and Rego (2009), we remove utility firms from our dataset. In addition, we exclude private companies for which data on firm value is not available. The final dataset is a cross-sectional time-series, unbalanced panel of data that is composed of 85 firms over a 12-year period (1999–2011) for a total of 648 firm-year observations. Table 2 summarizes our variable operationalization and data sources.

### Measures

**Firm innovation** We measure firm innovation as the number of new products that a firm introduces each year in the market. We use the number of new products because consumers are rarely aware of other measures typically used in the innovation literature (i.e., R&D expenditures and patents). We collected announcements through Factiva. One of the authors and one research

assistant read the announcements and counted the number of new products that a firm announced each year. We counted only those products that a company planned to introduce within the next two months. Hence, we excluded pre-announcements as new product introductions in our dataset. We also cross-validated our measure through the company press releases available on their websites.

**Customer satisfaction** We measure customer satisfaction using the ACSI, which was developed by the University of Michigan, consistent with prior research (e.g., Aksoy et al. 2008; Dotzel et al. 2013; Gruca and Rego 2005). Each ACSI evaluation for a company is based on 250 customer interviews, with customers randomly selected from national and regional probability samples. Respondents are asked questions about 15 variables, which are then used as indicators of 6 latent constructs, including the overall ACSI, which can range from 0 to 100.

**Firm value** We use Tobin's q as our measure of firm value. Consistent with Sorescu and Spanjol (2008), we compute year-end measures of Tobin's q as the ratio of the market value to book value of firm assets. We estimate the market value of assets as the book value of assets plus the market value of common stock (obtained from CRSP), less the book value of common stock, less the amount of deferred taxes. We obtain financial data from the COMPUSTAT database.

**Branding strategy** We collect data on the firm's branding strategy on the basis of a review of the information provided in the companies' websites. In addition, we validate our measure by cross-checking the firm's brands listed in *Brands and Their Companies* report. Consistent with Rao et al. (2004), when a firm predominantly uses the corporate brand for its products but also owns a minor brand, we categorize the firm as adopting a corporate branding strategy.

**Market dominance** We employ a multidimensional conceptualization of market dominance by using three variables: market share, assets and profits. Following Sorescu et al. (2003), we use a principal factor analysis to generate a common factor that captures information from all three dimensions of dominance. The factor score associated with this common factor represents our measure of market dominance. We calculate market share as the ratio between companies’ sales and total industry sales. Profits are measured as return on equity. We obtain data for these variables from the COMPUSTAT database as well. We also scale assets and profits for the size of the firm and then perform a principal factor analysis to generate a different measure of market dominance. The correlation between the two measures is 0.56 ( $p < 0.05$ ) and the results remain the same with this alternative measure.<sup>1</sup>

**Competitive intensity** We use the Hirschman-Herfindahl index (HHI), namely the sum of the square of all suppliers’ market shares in an industry, as our measure of competitive intensity (cf. Morgan and Rego 2009). The HHI ranges from 0 (more competitive) to 1 (less competitive). Since the HHI measures industry concentration, we reversed the scale to get our measure of competitive intensity, so that higher values indicate a more competitive industry. We collected this data for each industry from COMPUSTAT.

**Control variables** We employ several control variables to minimize the possibility that alternative explanations account for our results. We control for firm size, measured as the log of the number of employees, and firm focus, defined as the number of segments in which the firm operates. Again, we collect data on these variables from COMPUSTAT. We also control for the effect of sales on Tobin’s q and obtain this data from COMPUSTAT.

**Model formulation**

**Accounting for endogeneity of innovation** A possible concern in estimating the effect of innovation on customer satisfaction and firm value is that the error terms of these two variables might be correlated with innovation. For instance, in the case of firm value, management’s propensity to innovate might be greater when there is an unexpectedly high end-of-year firm value (Sorescu and Spanjol 2008). To correct for this potential problem, we instrument innovation. Consistent with prior research (e.g., Sorescu and Spanjol 2008), we use the following variables to instrument innovation:  $Innovation_{it-1}$ ,  $Firm\ size_{it-1}$ ,  $Organizational\ slack_{it-1}$ , and  $Fixed\ asset\ intensity_{it-1}$ . These instrument variables are correlated to innovation at time t, but being lagged by one year (t-1), are not

correlated with the unexpected occurrences that could simultaneously affect innovation, customer satisfaction, and firm value during the current year (t). Given this property, we can instrument innovation by using the information contained in all four instruments (see Maddala 1992, p. 373). Instrumented innovation is the predicted value of the following model:

$$Innovation_{it} = \alpha_{I0} + \beta_{I1}Innovation_{it-1} + \beta_{I2}Size_{it-1} + \beta_{I3}Slack_{it-1} + \beta_{I4}Fixed\ asset_{it-1} + \varepsilon_{Iit} \quad (1)$$

Including  $Innovation_{it-1}$  and firm-level control variables also ensures that firm-specific effects are adequately accounted for in the model.

**Estimating customer satisfaction and firm value** Since firms are nested within industries and our predictors are both at the firm level (i.e., branding strategy and market dominance) and at the industry level (i.e., competitive intensity), we employed hierarchical linear modeling (HLM) to control for the unobserved heterogeneity using the Stata xtmixed procedure. We used a system of simultaneous regressions to examine the link between firm innovation, customer satisfaction, and firm value. This approach is necessary because customer satisfaction is both a dependent and independent variable, which raises endogeneity concerns. Further, because there is a significant overlap between the two regressions, the error terms are likely to be correlated. These concerns are minor with a system of simultaneous regressions. We estimated the following system of equations:

$$CS_{ijt} = \alpha_{CS0} + \beta_{CS1}INN_{ijt-1} + \beta_{CS2}CB_{ijt-1} + \beta_{CS3}HOB_{ijt-1} + \beta_{CS4}Dominance_{ijt-1} + \beta_{CS5}Intensity_{ijt-1} + \beta_{CS6}(Inn_{ijt-1} \times CB_{ijt-1}) + \beta_{CS7}(Inn_{ijt-1} \times HOB_{ijt-1}) + \beta_{CS8}(Inn_{ijt-1} \times Dominance_{ijt-1}) + \beta_{CS9}(Inn_{ijt-1} \times Intensity_{ijt-1}) + \beta_{CS10}Size_{ijt-1} + \beta_{CS11}Focus_{ijt-1} + v_{CS0j} + r_{CSij} \quad (2)$$

We then insert the predicted value of customer satisfaction ( $\hat{CS}$ ) in the following equation of Tobin’s q (TQ):

$$TQ_{ijt} = \alpha_{TQ0} + \beta_{TQ1} + CS_{ijt} + \beta_{TQ2}INN_{ijt-1} + \beta_{TQ3}CB_{ijt-1} + \beta_{TQ4}HOB_{ijt-1} + \beta_{TQ5}Dominance_{ijt-1} + \beta_{TQ6}Intensity_{ijt-1} + \beta_{TQ7}(Inn_{ijt-1} \times CB_{ijt-1}) + \beta_{TQ8}(Inn_{ijt-1} \times HOB_{ijt-1}) + \beta_{TQ9}(Inn_{ijt-1} \times Dominance_{ijt-1}) + \beta_{TQ10}(Inn_{ijt-1} \times Intensity_{ijt-1}) + \beta_{TQ11}Size_{ijt-1} + \beta_{TQ12}Sales_{ijt-1} + v_{TQ0j} + r_{TQij} \quad (3)$$

Where:

- are the parameters to be estimated;  $i, j,$  and  $t$  refer to firm, industry, and time, respectively;
- INN is the predicted value of innovation from Eq. 1;
- CB is a dummy that takes on a value of 1 when the firm adopts corporate branding and 0 otherwise;
- HOB is a dummy that takes on a value of 1 when the firm adopts a house-of-brands strategy and 0 otherwise;

<sup>1</sup> We thank the Area Editor for pointing out this relevant issue.

$v_{0c}$  is the random-effect at the industry-level, which is assumed to be independent and identically distributed (i.i.d.), with mean 0 and variance  $\tau_{00}$ ;

$r_{ij}$  is the error of the  $i^{\text{th}}$  firm in the  $j^{\text{th}}$  industry and is assumed to be i.i.d., with mean 0 and variance  $\sigma^2$

We also include year dummies to account for unobserved time-specific factors over time. We also use lagged independent variables for the firm value equation, because prior research (e.g., Srinivasan et al. 2009) has shown that investors do not immediately react to innovation, but rather take their time before fully appreciating a firm's innovation. Consistent with prior research (e.g., Luo and Bhattacharya 2006), we do not use lagged values of customer satisfaction in the firm value equation.

**Inflation factor for standard errors** We adopt instrumented innovation in Eqs. 2 and 3. Maddala (1992) explains that the  $\beta$  coefficients obtained in this manner are consistent, but their standard errors are biased toward zero. Thus, relying on these standard errors for inferences could over-reject the null hypothesis. Maddala (1992, p. 376) shows that standard errors can be corrected by multiplying them with an inflation factor,  $\psi$ , which is unique to each equation (Sorescu and Spanjol 2008). Following Maddala (1992), we computed the inflation factor as  $\psi = \sigma_u/\sigma_w$ , where  $\sigma_w$  is the standard deviation of residuals from Eq. 2 (Eq. 3) and  $\sigma_u$  is the standard deviation of a pseudo-residual of Eq. 2 (Eq. 3) with real innovation/customer satisfaction measure (rather than the instrumented variables). The inflation factors for customer satisfaction (1.00) and Tobin's  $q$  (0.93) were small. We use these inflation factors to compute the corrected standard errors and then the significance of the  $\beta$  coefficients.

## Results

In this section, we first review our results concerning the effects of firm innovation on customer satisfaction and firm

**Table 3** Determinants of innovation

	Innovation <sub><i>i,t</i></sub>
Intercept	-0.24 (0.53)
Innovation <sub><i>i,t-1</i></sub>	0.06 (0.22)**
Firm size <sub><i>i,t-1</i></sub>	0.70 (0.22)**
Organizational slack <sub><i>i,t-1</i></sub>	0.71 (0.37)†
Fixed asset <sub><i>i,t-1</i></sub>	-0.22(0.10)*
Dispersion parameter	0.60 (0.04)***
Log-likelihood	-2525.78
$\chi^2$	568.27 (4)***

†  $p < 0.10$ , \* $p < 0.05$ ; \*\* $p < 0.01$

value. We then provide the results of moderator analysis. Finally, we present the results of the marginal effect, moderated mediation, and configuration analyses.

## Determinants of innovation

We present in Table 3 the results of the first stage in which we instrument innovation, as described in Eq. 1. Innovation is a count variable whose variance is higher than the mean. Thus, a negative binomial model is better than a Poisson model because it adds a parameter to account for this over-dispersion. Also, because we have many zeros (13% of our sample), we use a zero-inflated negative binomial model, consistent with previous work on innovation (e.g., Sorescu and Spanjol 2008). We find that a previous year's innovation significantly influences innovation in the current year ( $b = 0.06$ ,  $p < 0.01$ ). Firm size ( $b = 0.70$ ,  $p < 0.01$ ), slack resources ( $b = 0.71$ ,  $p < 0.10$ ) and fixed assets ( $b = -0.22$ ,  $p < 0.05$ ) also influence innovation in the current year, thus suggesting that we use valid instruments. Also, the parameter for over-dispersion is significant ( $0.60$ ,  $p < 0.05$ ), supporting the choice of a negative binomial model over a Poisson model.

## Hierarchical linear modeling analysis

Since we have an HLM model, we start investigating the proportion of variance that occurs at the industry level. Although we do not show it in Table 4, we estimate an unconditional (no predictors) model, which estimates the mean of customer satisfaction as the sum of a fixed part, which contains the grand mean, and a random part, which contains two random effects at the firm and at the industry level. We find that the firms studied have an average customer satisfaction of 77.04 ( $p < 0.01$ ). There is variation in customer satisfaction among firms within industries ( $\sigma^2 = 5.59$ ,  $p < 0.01$ ) and across industries ( $\tau_{00} = 3.77$ ,  $p < 0.01$ ). Importantly, the proportion of the total variance that occurs across industries (calculated as  $\frac{\tau_{00}}{\tau_{00} + \sigma^2}$ ) is 59.7%, which suggests that the use of HLM is particularly appropriate for our sample.

Similarly, we estimate an unconditional (no predictors) model for firm value. We find that firms have an average Tobin's  $q$  of 12.43 ( $p < 0.01$ ). There is variation in Tobin's  $q$  among firms within industries ( $\sigma^2 = 0.86$ ,  $p < 0.01$ ) and across industries ( $\tau_{00} = 1.35$ ,  $p < 0.01$ ). Importantly, the proportion of the total variance that occurs across industries is 38.9%, which further supports the use of HLM in our analysis.

## Mediating role of customer satisfaction

According to Baron and Kenny (1986), testing for mediation has four requirements: (1) the initial variable should

**Table 4** Results of the HLM mediated moderation analysis

	Model 1 DV: Firm value	Model 2 DV: Customer satisfaction	Model 3 DV: Firm value	Model 4 DV: Customer satisfaction
<b>Fixed effects</b>				
Intercept	2.17 (0.27)**	77.88 (1.14)**	-5.73 (2.93)	77.86 (1.12)**
Innovation	0.32 (0.09)**	0.56 (0.25)*	0.24 (0.11)*	0.68 (0.29)*
Customer satisfaction			0.10 (0.04)**	
Innovation * Corporate branding			0.40 (0.18)*	-0.99 (0.49)*
Innovation * House-of-brands			-0.71 (0.27)**	1.90 (0.93)*
Innovation *Dominance			-0.15 (0.07)*	0.43 (0.21)*
Innovation *Competitive intensity			2.56 (0.83)**	-4.62 (2.31)*
Corporate branding	0.31 (0.21)	0.63 (0.58)	0.53 (0.21)*	0.34 (0.60)
House-of-brands	-0.03 (0.26)	0.35 (0.67)	-0.08 (0.30)	1.02 (0.72)
Market dominance	0.28 (0.08)**	0.30 (0.19)	0.30 (0.07)**	0.30 (0.20)
Competitive intensity	2.26 (1.10)*	- 3.41 (3.30)	3.04 (0.08)**	-3.61 (3.29)
Size	-1.38 (0.68)*	-11.25 (0.16)**	-0.92 (0.77)	-10.88 (1.64)**
Firm focus	-0.06 (0.03)*	-0.09 (0.08)	-0.06 (0.93)*	-0.09 (0.08)
Sales	0.10 (0.17)		0.22 (0.17)	
<b>Random effects</b>				
Industry ( $u_{0j}$ )	0.81 (0.13)**	4.78 (0.70)**	0.73 (0.12)**	4.64 (0.68)**
Residual ( $\tau_{ij}$ )	1.31 (0.04)**	3.61 (0.10)**	1.27 (0.03)**	3.55 (0.09)**
Wald $\chi^2$ (df)	57.34 (18)	75.01 (17)**	95.39 (23)**	102.19 (21)**
$\Delta$ Wald $\chi^2$ ( $\Delta$ df)			38.05 (5)**	27.18 (4)**

\* $p < 0.05$ ; \*\* $p < 0.01$ . Year dummies are included in the analysis. Standard errors are reported in parentheses

be correlated with the outcome variable, (2) the initial variable should be correlated with the mediator, (3) the mediator should be related to the outcome variable when the initial variable is controlled for, and (4) the effect of the initial variable on the outcome once the mediator is taken into account should reduce to non-significance if there is full mediation. If the fourth condition is not met, there is partial mediation. The significance of the mediated effect can then be tested through a bootstrap procedure, which is superior to the traditional Sobel’s test, in that it does not assume that the mediated effect is normally distributed in the population (Preacher and Hayes 2008). The results of the HLM analysis are reported in Table 4.

Model 1 in Table 4 tests the first requirement of mediation, namely the path from innovation to firm value ( $b = 2.17, p < 0.01$ ). There is no difference in terms of customer satisfaction between firms following corporate branding and mixed branding strategies ( $b = 0.31, p > 0.05$ ), as well as between firms following house-of-brands and mixed branding strategies ( $b = -0.03, p > 0.05$ ). Dominant ( $b = 0.28, p < 0.1$ ) and small firms ( $b = -1.38, p < 0.05$ ) have higher firm value than their counterparts. Firm value increases as competitive

intensity ( $b = 2.26, p < 0.05$ ) increases and firm focus ( $b = -0.06, p < 0.05$ ) decreases.

Model 2 in Table 4 tests the second requirement of mediation, namely the path from innovation to customer satisfaction ( $b = 0.56, p < 0.05$ ). There is no difference in terms of customer satisfaction between firms following corporate branding and mixed branding strategies ( $b = 0.63, p > 0.05$ ), as well as between firms following house-of-brands and mixed branding strategies ( $b = 0.35, p > 0.05$ ). Also, market dominance ( $b = 0.30, p > 0.05$ ), competitive intensity ( $b = -3.41, p > 0.05$ ), and firm focus ( $b = -0.09, p > 0.05$ ) do not directly influence customer satisfaction. Smaller firms have higher levels of customer satisfaction ( $b = -11.25, p < 0.01$ ).

Model 3 in Table 4 supports the third requirement of mediation, in that we find that customer satisfaction is positively related to firm value ( $b = 0.10, p < 0.01$ ), even when we control for innovation. Also, we find that the effect of innovation on firm value is reduced when customer satisfaction enters the regression (fourth requirement) but still remains significant ( $b = 0.24, p < 0.05$ ), thus indicating that customer satisfaction *only partially* mediates the effect of innovation on firm

value. In sum, we find support for the classical steps required to establish the presence of a mediation effect (Baron and Kenny 1986). Then, we turn to test the significance of this mediation effect. We find that the mediated effect of innovation on firm value is equal to 0.07 (i.e.,  $0.68 * 0.10$ ). The bootstrap analysis reveals that this value is significant, as the 95% normal confidence interval, percentile confidence interval, and bias-corrected confidence interval with 1000 resamples do not contain a 0. Thus, we conclude that customer satisfaction mediates the effects of firm innovation on firm value, in support of H1.

### Moderators of the innovation–customer satisfaction relationship

Model 4 in Table 4 shows the results of moderator analysis for the innovation–customer satisfaction relationship. We find that the effect of innovation on customer satisfaction is the weakest for firms following corporate branding strategy ( $b = -0.99, p < 0.05$ ) and strongest for firms following house-of-brands strategy ( $b = 1.90, p < 0.05$ ), in support of H2a and H2b. Also, the effect of innovation on satisfaction increases as market dominance increases ( $b = 0.43, p < 0.05$ ), supporting H3a. Finally, the results indicate that competitive intensity negatively moderates the effect of innovation on customer satisfaction ( $b = -4.25, p < 0.05$ ), as in H4a.

### Moderators of the innovation–firm value relationship

Model 3 in Table 4 shows the results of moderator analysis for the innovation–firm value relationship. Supporting H2c and H2d, we find that the direct effect of innovation on firm value is strongest for firms following corporate branding strategy ( $b = 0.40, p < 0.05$ ) and weakest for firms following house-of-brands strategy ( $b = -0.70, p < 0.01$ ). Also, the direct effect of innovation on firm value decreases as market dominance increases ( $b = -0.15, p < 0.05$ ), supporting H3b. Finally, the effect of innovation on firm value increases as competitive intensity increases ( $b = 2.56, p < 0.01$ ), supporting H4b.

### Marginal effects analysis: the effect of innovation on customer satisfaction

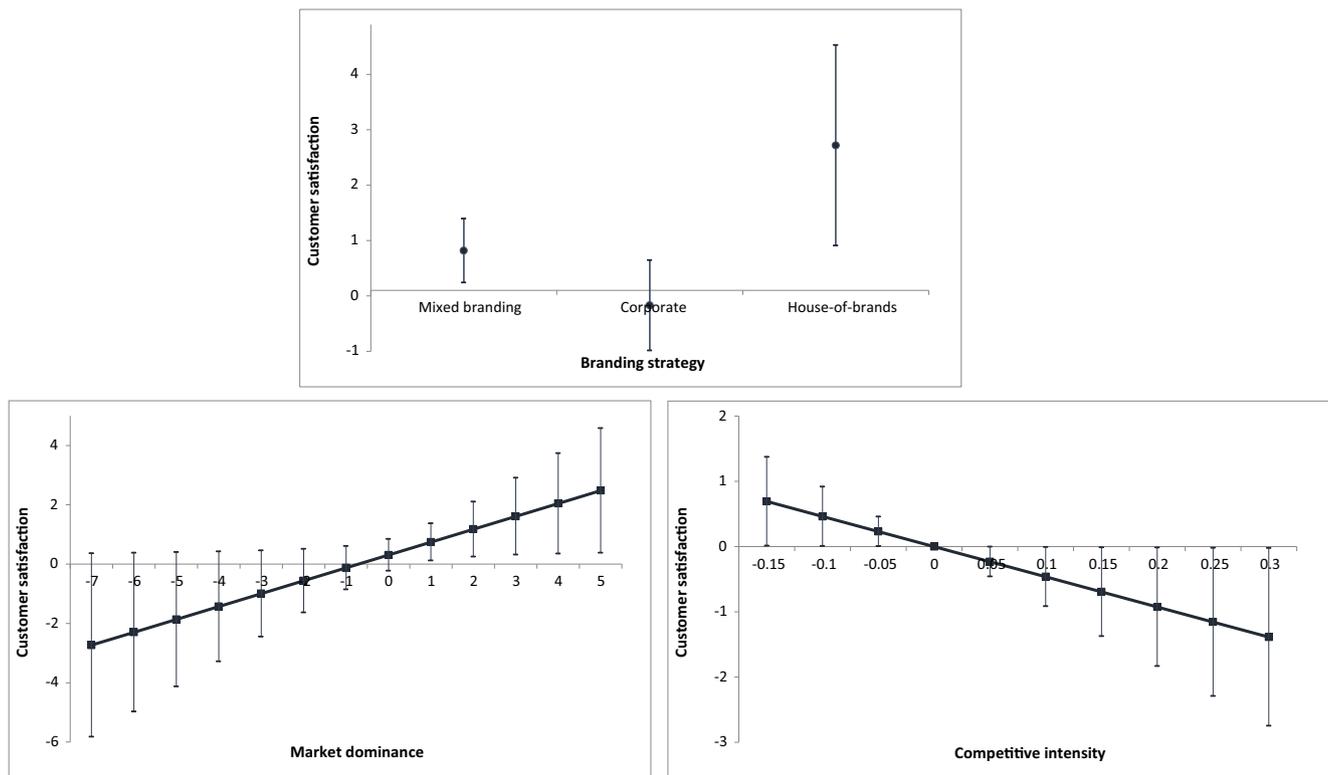
In order to understand how the effect of introducing new products on customer satisfaction depends on our moderators, we compute the marginal effects of innovation on customer satisfaction for firms adopting different

branding strategies, with different levels of market dominance and operating in industries with different levels of competitive intensity. These marginal effects can be interpreted as the amount of change in customer satisfaction caused by each product introduction. In this way, we compare the effect of introducing one product on consumer and investor responses for firms that pursue different branding strategies, with various levels of market dominance and for firms that operate in industries with different levels of competitive intensity. The results of these analyses are presented in Fig. 2.

In Fig. 2, we plot the marginal effects of innovation on customer satisfaction (left graph) for firms following mixed branding, corporate branding, and house-of-brands strategies. The graph reports the estimate of the marginal effects and the confidence intervals. Each new product introduction increases customer satisfaction by 2.62 for firms following house-of-brands; this effect is 3.5 times bigger than the benefit that firms following mixed branding obtain by a new product introduction, in that the marginal effect in this case is 0.72. Finally, a single new product has no effect for firms following corporate branding, as evidenced by the fact that the confidence interval in this case includes a 0. As for the marginal effects of innovation change at different levels of market dominance, we find that this effect is significant only for companies whose market dominance is higher than 1 (the negative values are due to the fact that we center the variables to perform our analysis). In our sample, 80% of the firms have a market dominance value less than 1, suggesting that innovation is able to influence customer satisfaction only for firms that really dominate their market. For firms with moderate or low levels of dominance, innovation is not able to make a difference. Similarly, Fig. 2 reports the marginal effects of innovation at different levels of competitive intensity. The graph shows that the marginal effect of innovation on customer satisfaction is negative (namely, it reduces customer satisfaction) for firms that operate in industries with high competitive intensity; specifically, when competitive intensity is greater than 0.05, for 25% of the firms in our sample.

### Moderated mediation analysis

The theoretical model that we test in Fig. 1 suggests that innovation influences firm value through two different routes: a direct route and an indirect route via customer satisfaction. Hence, computing the total effect of innovation on firm value requires summing up these



**Fig. 2** The effect of innovation on customer satisfaction (estimate and confidence interval)

two effects. Further, each of these two effects is moderated by three factors: branding strategy, market dominance, and industry competitive intensity. Using the estimated values of path coefficients from Eqs. 1 and 2 presented above, the total effect of innovation on firm value for different levels of market dominance can be expressed as follows (Preacher and Hayes 2008):

$$f(\hat{\vartheta} | \text{Dominance}) = \left[ b_{TQ2} \left( b_{CS1} + \hat{b}_{CS8} \text{Dominance} \right) \right] + \left( b_{TQ1} + \hat{b}_{TQ9} \text{Dominance} \right)$$

We test for the statistical significance of these moderated mediation effects through bootstrap analysis with 1000 resamples (Preacher et al. 2007; Rubera and Tellis 2014).

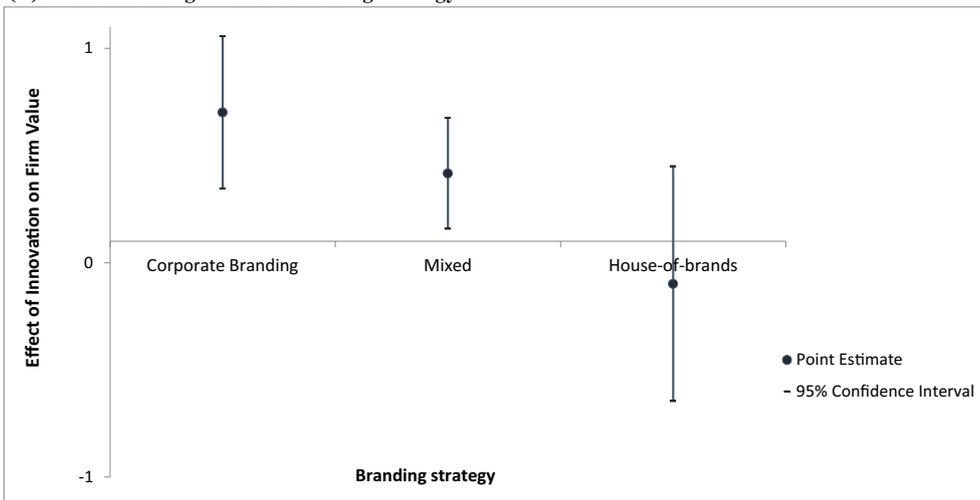
We graphically report the results of this analysis in Fig. 3. Panel A reports the total effect of innovation on firm value for firms following different branding strategies. We find that investors value the innovation of firms that follow corporate branding strategy at the

highest level since each new product introduction generates an increase of 0.6 in the firm’s Tobin’s q. Mixed branding strategy is the second-best strategy, as each new product introduction results in a Tobin’s q increase of 0.3. Firms following house-of-brands strategy obtain null returns in terms of firm value from their innovation activities because the total effect of a new product introduction is statistically not significant, albeit negative.

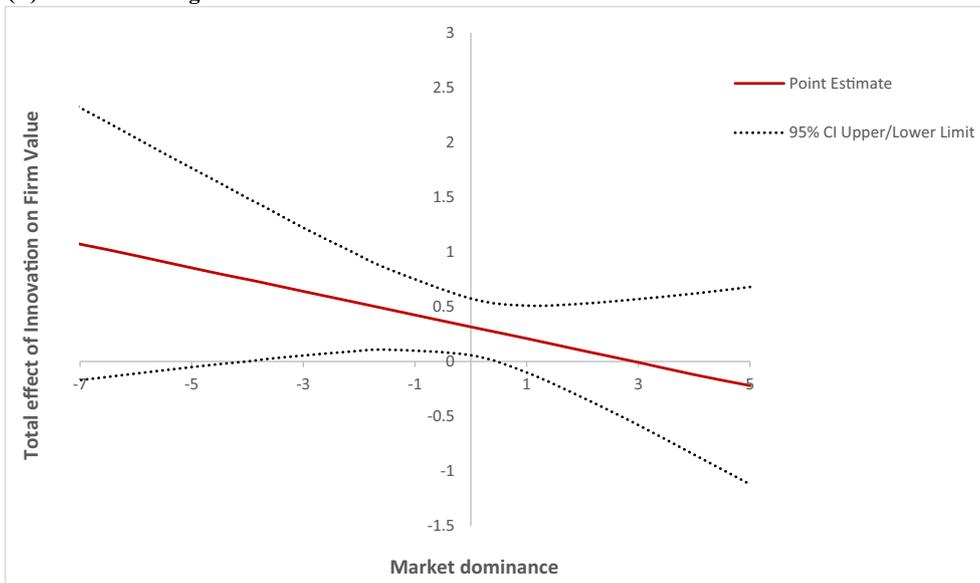
Panel B in Fig. 3 reports the total effect of innovation via customer satisfaction on firm value across all values of market dominance. The analysis reveals that innovation has a positive and significant total effect on firm value for firms with moderate levels of market dominance, which are almost 74% of the firms in our sample. Innovation has no total effect on firm value for firms with extremely low levels or high levels of market dominance (as shown in Fig. 3, the confidence interval of the bootstrapped effect of innovation contains 0).

Similarly, Panel C reports our findings pertaining to the total effect of innovation on firm value across all values of competitive intensity. Interestingly, we find that in industries with low competitive intensity, innovation has no total effect on firm value. The

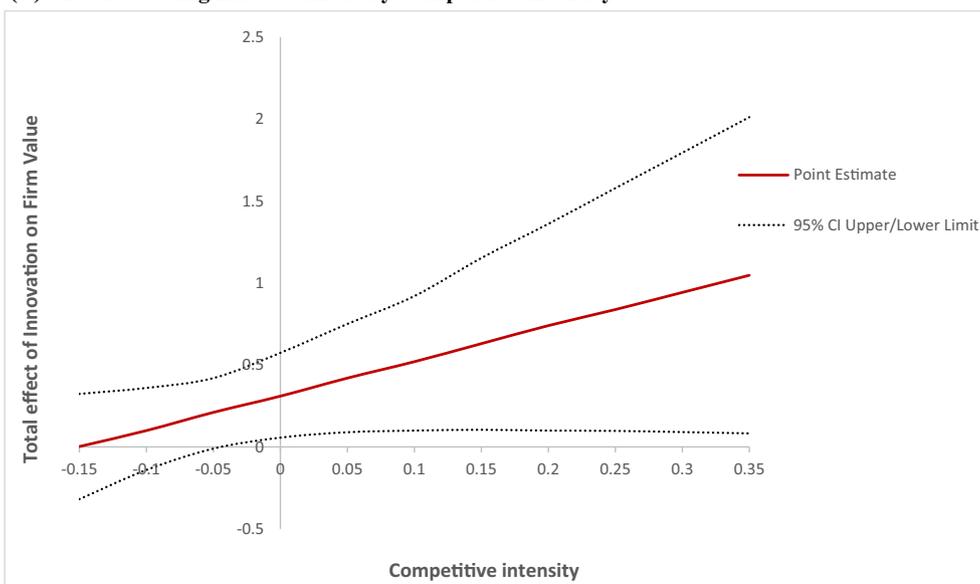
**(A) The Moderating Effect of Branding Strategy**



**(B) The Moderating Effect of Market Dominance**



**(C) The Moderating Effect of Industry Competitive Intensity**



◀ **Fig. 3** The total effect of innovation on firm value. **a** The moderating effect of branding strategy. **b** The moderating effect of market dominance. **c** The moderating effect of industry competitive intensity

implications of these findings for research and practice are presented in the Discussion section.

### Configurational analysis<sup>2</sup>

In our moderation mediation analysis above, we test how the effects of innovation on customer satisfaction and firm value are contingent upon branding strategy, market dominance, and competitive intensity. Such a framework indicates how different strategic approaches may be appropriate for different sets of organizational and environmental conditions. In this section, we further examine how the overall conditions in which a company finds itself may influence the effect of innovation, using a configuration approach. This approach provides a more holistic perspective in regards to how innovation impacts consumer and investor reactions under a certain collective set of conditions (Vorhies and Morgan 2003).

A useful empirical technique that enables researchers to empirically analyze a configurational perspective is the Fuzzy Set Qualitative Comparative Analysis (fs-QCA) (e.g., Ordanini et al. 2014). Fs-QCA is a set-theoretic method that is uniquely suitable for configurational theory. Indeed, it explicitly conceptualizes each strategy as a configuration of factors, rather than disaggregating strategy into independent, analytically separate factors, and emphasizes that it is these very configurations that lead to a certain performance (Ragin 2000; Fiss 2007). Fs-QCA analyzes the effect of all binary combinations of factors (i.e., presence or absence) on an outcome (i.e., customer satisfaction, and Tobin's q in our study), rather than estimating the net effect of each single factor. In this way, it is possible to establish under which conditions innovation is necessary to generate customer satisfaction and Tobin's q. Further, Fs-QCA allows for multiple causation paths, in the sense that several different combinations of conditions may produce the same outcome, thus enabling researchers to identify *equifinality* in product configurations (Ordanini et al. 2014).

Since we have five factors that can influence customer satisfaction and Tobin's q (i.e., innovation plus the four moderator variables), we have  $2^5 = 32$  possible configurations. First, we calibrate and transform the original variables into fuzzy sets in order to determine the membership of each case to a specific set. In order to calibrate our continuous variables, we rank order these variables and

then standardize the ranking from 0 to 1, where 0 implies that the condition (i.e., innovation) is absent and 1 implies that the condition is present. Then, we identify which configuration is a sufficient condition for satisfaction/Tobin's q. To do this, we retain only those configurations that have a consistency score significantly greater than 0.80.

Among the configurations that pass this test, we retain only those configurations whose y-consistency (i.e., membership in the set "presence of Satisfaction/Tobin's q") is significantly higher than their n-consistency (membership in the set "absence of customer satisfaction/Tobin's q"). We use a Wald test to compare the two consistency scores. After identifying the configurations that are sufficient conditions for "Satisfaction" or "Tobin's q", we use the Quine-McCluskey algorithm (Ragin 2000) to logically reduce these configurations.

For each configuration and for the solution (i.e., all the configurations that are consistent with the presence of the outcome), we compute coverage and consistency measures. Consistency measures how often the single configuration (or the final solution as a whole) is a subset of the outcome "Satisfaction" or "Tobin's q", and reflect the frequency with which the configuration (or the final solution as a whole) can be considered a sufficient condition for Satisfaction. Coverage measures how much of Satisfaction is explained by each configuration and the solution as a whole, and it has a similar meaning to that of the magnitude effect (R-squared) in regression analyses. We report our results in Table 5.

As shown in Table 5, Section A, we find three configurations that lead to high customer satisfaction, namely, three different combinations of firm strategies and environmental conditions that equally lead firms to customer satisfaction. Configurations 1 and 2 indicate that, for firms that do not adopt a corporate branding strategy, innovation is a necessary condition, as it must be present in order to generate customer satisfaction. Configuration 1 requires that firms operate in contexts where competitive intensity is absent or at least moderate. The fact that a factor is not represented in a configuration, means that it is irrelevant whether that factor is present or absent. So, for instance, the fact that in Configuration 1 market dominance is not represented means that innovative firms that do not adopt a corporate branding strategy and operate in low-competition industries can generate customer satisfaction regardless of their level of market dominance. Configuration 2 requires that innovative firms that do not adopt a corporate branding strategy need to dominate their markets in order to generate customer satisfaction. Configuration 3 indicates that firms that adopt a mixed branding strategy generate customer satisfaction regardless of their level of innovation, market dominance, or the competitive intensity of their industries.

<sup>2</sup> We thank an anonymous reviewer for this suggestion.

**Table 5** Results of the fsQCA

(A) Customer satisfaction			
Configuration	<i>Customer Satisfaction</i>	Raw coverage	Consistency
1	INNOVATION– corporate branding– competitive intensity	0.32	0.92
2	INNOVATION – corporate branding–MARKET DOMINANCE	0.33	0.94
3	corporate branding– house-of-brands	0.52	0.68
	Solution coverage	0.56	
	Solution consistency	0.70	
(B) Tobin's q			
Configuration	Tobin's q	Raw coverage	Consistency
1	MARKET DOMINANCE –INNOVATION- corporate branding–HOUSE-OF-BRANDS	0.05	0.88
2	MARKET DOMINANCE – CORPORATE BRANDING– house-of-brands	0.47	0.81
	Solution coverage	0.51	
	Solution consistency	0.82	

Capital letters indicate that the condition must be present in the configuration; small letters indicate that the condition must be absent (or at low levels)  
If a factor is not reported in a configuration, it means that it is irrelevant, whether the factor is present or absent

Taken collectively, these three configurations explain 56% of customer satisfaction. Also, they can be considered a sufficient condition for customer satisfaction in 70% of the cases.

As for Tobin's q, we find two configurations that generate Tobin's q, as reported in Table 5, Section B. Configuration 1 shows that companies that adopt a house-of-brands strategy must innovate and dominate their market in order to achieve positive Tobin's q. Configuration 2 indicates that companies that adopt a corporate branding strategy must dominate their market to generate Tobin's q, regardless of their level of innovation. Taken collectively, these three configurations explain 51% of Tobin's q and can be considered a sufficient condition for Tobin's q in 82% of the cases.

## Discussion

Drawing upon market-based assets theory, this study investigates the impacts of firm innovation directly and through customer satisfaction on firm value indirectly. Moreover, we explore how a set of internal (i.e., branding strategy, market dominance) and external (i.e., competitive intensity) factors moderate the aforementioned effects of innovation on customer satisfaction and firm value. Using a cross-sectional time-series, unbalanced panel of data that is composed of 85 firms over a 12-year period (1999–2011) for a total of 648 firm-year observations, our analyses provide three sets of results:

- Customer satisfaction is an intermediate outcome that partially mediates the effects of firm innovation on firm value. Also, innovation has a direct positive effect on firm value that goes beyond its expected effects through customer satisfaction;
- The effects of innovation on customer satisfaction are stronger for firms that employ house-of-brands strategy, that dominate their markets, and that operate in less competitive industries.
- The effects of innovation on firm value are more pronounced for firms that follow corporate branding strategy, that do not dominate their markets, and that operate in competitive industries.

We now discuss the theoretical and managerial implications of these findings.

## Theoretical implications

**Mediating role of customer satisfaction** Over the last few years, the marketing–finance literature has extensively focused on the direct relationship between firm innovation and firm value (e.g., Rubera and Kirca 2012; Sorescu and Spanjol 2008). Similarly, several studies have also examined the direct effects of customer satisfaction on firm value (e.g., Aksoy et al. 2008; Fornell et al. 2006; Morgan and Rego 2006). Drawing upon the market-based assets theory, our study provides a better understanding of the total effect of innovation on firm value (cf. Dotzel et al. 2013). Specifically, we find that, beyond its direct effects, firm innovation has an indirect effect

on firm value through its effects on customer satisfaction. This finding means that investments in innovation help build a satisfied customer base and that customer satisfaction partially mediates the effect of innovation on investor response in the stock market. As such, we show that new product introductions not only affect current performance in the marketplace or in the stock market (Rubera and Kirca 2012) but they also help create a valuable customer-based asset, such as customer satisfaction, confirming the predictions of market-based assets framework empirically (Srinivasan et al. 2009).

**Moderating role of branding strategy, market dominance, and competitive intensity** Our contributions pertaining to the moderating roles of branding strategy, market dominance, and competitive intensity on innovation–customer satisfaction and innovation–firm value are centered on three theoretical implications. Our first contribution is the identification of the boundary conditions for the market-based assets framework. Specifically, our findings indicate that internal and external contingencies amplify the differences in the criteria that consumers and investors use when assessing the value of innovations. In the innovation context, we demonstrate that the effects of marketing actions (i.e., firm innovation in our case) and market-based assets (i.e., customer satisfaction) are conditional on a firm’s marketing strategies (Homburg et al. 2011), amount of resources available (Sorescu et al. 2003), and environmental competitiveness (e.g., Bharadwaj et al. 2011). As such, our study provides a direct answer to the call for research efforts that consider the moderating effects of both firm and industry factors in addition to the main effects of marketing actions and assets on firm value (e.g., Bharadwaj et al. 2011).

Second, we show that these firm and industry factors have opposite moderating effects on the innovation–customer satisfaction and innovation–firm value relationships, indicating that companies generate different consumer and investor responses from their innovative efforts. As such, we identify a fourth, overarching condition, namely, the subject who evaluates firm innovation. Thus, our research adds an important dimension to the literature on the marketing–finance interface: although firm innovation matters for *both* consumers and investors, consumers and investors vary substantially in terms of their evaluation of firms’ innovative activities because they use different criteria to gauge their evaluations of a firm’s marketing actions. This finding has critical implications for the marketing literature, which in recent years has included the investor community as another relevant stakeholder for marketing research and practice. The implicit assumption has been that, by increasing value for consumers, marketing will automatically generate value for investors. Our study casts a shadow on this appealing picture, in that it shows,

under certain scenarios, a firm may not be able to use innovation to increase customer satisfaction and firm value at the same time. For instance, for the same level of innovation, firms that follow corporate branding strategy obtain lower customer satisfaction than firms that follow house-of-brands strategy, but the former end up having a higher Tobin’s *q*. As such, we show that the firms that extract the highest gains from innovation in the stock market are not necessarily the same firms that extract the highest gains from consumers. To the best of our knowledge, this is the first study that brings to the attention of marketing scholars the unintentional consequences of firm innovation and the trade-offs associated with attempting to satisfy consumers and investors simultaneously.

**Customer value–shareholder value trade-off** To further probe on the customer value versus shareholder value trade-off, we also examine and compare the effect of introducing one product on consumer and investor evaluations under different conditions (i.e., different branding strategies, various levels of market dominance, and industries with different levels of competitive intensity). This analysis focuses on the marginal effects of innovation on customer satisfaction and firm value. The findings show that just a small minority of firms (20% in our sample) are able to reap the benefits of innovation from both investors and consumers. In the vast majority of cases, firm innovation generates positive benefits from just one stakeholder (i.e., either the consumers or the investors). As such, our marginal effects analysis sheds light on a dark side of innovation that involves critical trade-offs in satisfying customers and investors.

Our configurational analysis further enables us to gain a full picture of the trade-off between maximizing customer value and shareholder value. We find that the appropriate co-alignment of firm strategies and environmental conditions that satisfy consumers can be achieved through three distinct configurations. Innovation is a necessary condition to satisfy customers in two of these configurations. On the other hand, two distinct configurations of internal and external conditions generate firm value. Innovation is a necessary condition in one of these. Most of note, we find that in none of the configurations associated with customer satisfaction or firm value must innovation be absent. This means that innovation is never harmful, at least when we consider investors and consumers as a firm’s primary stakeholders.

The configurational analysis also reveals that there is only one specific type of firm for which innovation is maximally effective at satisfying customers while creating firm value in the stock market: firms that dominate their market and that follow a house-of-brands strategy are the only type of firms that can reap the maximum benefit of innovation from both customers and investors (please refer to Configuration 2 for customer satisfaction

in Table 5a and Configuration 1 for firm value in Table 5b). This interesting finding based on our configurational analyses suggests that, although there is a trade-off between maximizing value for customers and shareholders for most firms, few of them can deal with this trade-off successfully. Specifically, we find that market dominance needs to be combined with a house-of-brands strategy in order to enable innovation to simultaneously satisfy customers and create value for shareholders. In all other cases, firms do face a trade-off between maximizing customer value and shareholder value, in that the configurations that are associated with customer satisfaction are different from the ones that are associated with firm value. This finding also highlights the importance of adopting a configurational approach that accounts for a large set of internal and external contingencies. Indeed, if we stopped at the moderated mediation analysis, we would have concluded that innovation is bad for firms that dominate their market, as the total effect of innovation on firm value (i.e., direct plus mediated via customer satisfaction) is negative for dominant firms. Only when we expand the picture to consider the joint effects of a broader set of contingencies in which a firm operates, could we discover the rare gems that can really benefit from innovation.

Building on the critical differences in the way which consumers and investors evaluate innovation, we expand this stream of literature by adding another contingency, namely, the nature of the stakeholder. Indeed, the stakeholder marketing literature indicates that assessing the effect of marketing actions for different stakeholders requires considering the differences across these stakeholders (Hult et al. 2011).

### Managerial implications

Managers and business press are concerned with the trade-off between creating value for customers and for shareholders: “You have to choose, therefore, between making shareholder value your primary goal, subject to meeting a basic customer value hurdle, and making customer value your main goal, subject to creating a minimum shareholder value” (Martin 2010, p. 63). Our findings clarify this concern. Innovation creates value for both customers and shareholders, as evidenced in the fact that innovation has a positive direct effect on customer satisfaction as well as firm value. Further, the mediated effect of innovation on firm value via customer satisfaction indicates that innovation can create value for shareholders also by satisfying their customers. Problems arise when we consider the bigger picture and, hence, the internal and external conditions in which firms operate. While it is possible to create value for shareholders by creating value for customers, our moderated mediation and configurational analyses reveal that it is not possible to maximize value for

both customers and investors. Hence, managers of innovative firms are warned to choose between the objectives of reaping the maximum benefit of innovation from customers or from shareholders.

Specifically, we analyze a set of internal and external conditions upon which managers have little control in the short-term. For instance, a firm’s branding strategy is often the result of a firm’s investments and acquisitions over the years, and it is difficult for managers to change it in the short run (Rao et al. 2004). Similarly, firms achieve market dominance over the years and the level of competitiveness in an industry is rarely under a manager’s control. Hence, the moderators that we investigate in this study represent a set of constraints for managers rather than levers that they can use to increase the impact of innovation on consumer and investor value. As we find that these conditions have opposite effects on consumer and investor responses, managers face the challenge of working within companies whose structural characteristics enable (inhibit) firms to convert innovation into customer satisfaction while at the same time hindering (facilitating) the conversion of innovation into firm value.

We offer one possible solution to managers: provided that it is hard to change these structural characteristics in the short-run, managers can partially solve the customer value -investor value trade-off by developing different communication strategies for consumers and investors. Since we have shed light on some of the possible causal mechanisms that make a condition helpful for one set of stakeholders and harmful for the other, managers can develop communication strategies that reduce the negative effect of each condition on, for instance, consumers while amplifying the positive effect on investors. For instance, firms following a corporate branding strategy need to realize that the effects of innovation on customer satisfaction are nullified (see Fig. 2). We theoretically ascribe this negative effect to the fact that having too many brands in the firm’s portfolio makes it harder for the firm to effectively communicate the benefits of a new product for each segment of consumers. In developing their launch campaigns, therefore, managers may benefit from developing different messages for each segment of consumers in order to communicate those product benefits that are most consistent with the specific needs of that niche, rather than generic launch campaigns that target multiple segments. On the other hand, in their communications with investors, managers who follow house-of-brands strategy may benefit from carefully presenting all the new products that each firm’s brand has introduced, as previous research has contended that investors can hardly keep up with all the innovation efforts of the multiple brands that constitute the portfolio of a firm (Rao et al. 2004).

In addition, our research shows that firms that operate in competitive industries have a natural disadvantage in leveraging innovativeness to build up customer satisfaction. We theoretically ascribe this negative effect to the fact that it is hard

for a firm's new products to stand out in a crowded market where companies frequently introduce innovations. Hence, managers of these firms may find it beneficial to invest more in innovation, in order to introduce a constant flow of new products so that the firm's innovative efforts can become more visible to customers. Also, they may benefit from strongly investing in launch campaigns that further increase the visibility of the new product introductions. Where can managers find these extra resources to support innovation and marketing efforts? The good news is that investors reward innovative firms in competitive industries, and managers in these firms can leverage investor support by raising the capital necessary to support their innovative and marketing efforts. In this way, managers can create a virtuous circle that enables their company to reap the benefits of innovation from both shareholders and customers.

### Limitations and directions for future research

Despite its contributions, this study has several limitations that should be borne in mind when interpreting the findings. First, since we use the ACSI database, our results are limited to a sample of large consumer product and service firms that are surveyed in this program. As we show that several internal and external contingencies have strong influences on the links between customer satisfaction and firm value, there is a need for more research on this topic using a broader range of industries and settings. Also, in this study we only focused on new product introductions and did not examine the effects of other types of innovations on firm value (e.g., process innovations, innovation inputs). Additional work could address the effects of other types of firm innovations on customer satisfaction and firm value in different industry contexts.

In addition to the need for further research to address these limitations, our study also suggests four promising new areas for research based on our results. First, our study is one of the first to empirically examine the theoretically important concept of customer satisfaction as a mediating variable in the innovation-firm value link. However, customer satisfaction provides only one possible mechanism through which firm innovation affects firm value. Future research should examine other market-based assets, such as customer loyalty and retention, which may potentially mediate the effects of innovation on firm value (cf. Srinivasan et al. 2009). Also, future research should examine other process variables through which innovation influences firm value. For instance, innovation might generate a sense of pride among employees, or raise organizational commitment and identification, which in turn may affect firm value.

Second, one of the most significant findings of our study is that consumers and investors reward firm innovation in different ways for firms that pursue various strategies in different

industries. Future research is warranted to investigate the extent to which differences exist between investors and consumers for other market-based assets in different market environments (e.g., emerging markets).

Third, the marketing literature has recently explored risk and stock volatility as measures of investor response. Sorescu and Spanjol (2008) have shown that radical innovations increase firm value, but also firm risk, which could jeopardize the welfare of consumers. Nevertheless, more research is necessary to investigate the role of risk in the customer satisfaction-firm innovation link, and the effects of different types of innovation on risk.

Fourth, we use the number of new products as our measure of innovation with no distinction between radical and incremental innovations. Future research is needed to understand how the model proposed here would change depending on another contingency, namely the level of radicalness of the innovation.

Finally, our study only focuses on the role of branding strategy as a firm strategy that has important performance implications for customer satisfaction and firm value. Given that the effects of new product introductions are highly contingent upon other firm strategies, future research is encouraged to examine the role of other marketing strategies (e.g., pricing, brand portfolio strategy) on relationships involving firm innovation, customer satisfaction, and firm value.

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