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Firm Innovativeness and Its Performance Outcomes: A Meta-Analytic Review and Theoretical Integration

Drawing on the chain-of-effects model as a unifying framework, this meta-analysis indicates that firm innovativeness indirectly affects firm value through its effects on market position and financial position. In addition, the findings suggest that innovativeness has direct positive effects on financial position and firm value. Moreover, the meta-analysis provides evidence of reverse causality in the innovativeness–firm value relationship. Importantly, the results also reveal that the positive effects of firm innovativeness on market position and financial position are stronger for larger firms, for firms that invest more in advertising, for firms in high-tech industries, for innovativeness outputs and for radical innovations. Finally, the meta-analytic evidence also indicates that the relationship between innovativeness and firm value is stronger for smaller firms, for firms that invest more in advertising, for firms in low-tech industries, for innovativeness inputs, for innovativeness culture, and for radical innovations.

Keywords: firm innovativeness, market position, financial position, firm value, meta-analysis

Firm innovativeness refers to a firm's receptivity and inclination to adopt new ideas that lead to the development and launch of new products (e.g., Erickson and Jacobson 1992; Hurley and Hult 1998). In the business literature, few issues have been characterized by as much agreement as the importance of firm innovativeness to organizational survival and prosperity (Schumpeter 1942). In marketing, innovativeness has long been recognized as a critical asset that generates value in the marketplace and in the stock market (Rust et al. 2004). Accordingly, in recent years, an increasing body of research has examined how firms' innovative assets and actions (e.g., research-and-development [R&D] investments, patents, new product introductions) contribute to firm performance (e.g., Sorescu and Spanjol 2008; Srinivasan et al. 2009; Tellis, Prabhu, and Chandy 2009).

Despite this impressive body of work, several gaps in the field's understanding of the firm innovativeness–performance relationship remain, offering opportunities for further research. First, the extant literature on firm innovativeness is fragmented, as research on this topic has proceeded in parallel in many academic fields, such as marketing, strategic management, and international business, with little theoretical and empirical integration (Hauser, Tellis, and Griffin 2006).[1] The lack of integration across these research domains and disciplines limits the overall impact of the marketing literature on these related fields, and vice versa. Our study brings these seemingly distinct but naturally related streams of research on firm innovativeness and its performance outcomes into sharper focus through a quantitative meta-analytic synthesis.

Second, a critical issue that remains largely ignored in the literature is how innovativeness plays out in determining firm value in the stock market (Hanssens, Rust, and Srivastava 2009). Notably, the marketing literature has investigated the impact of innovativeness on different performance outcomes (i.e., market position, financial position, and firm value) (e.g., Sorescu and Spanjol 2008; Srinivasan et al. 2009). In addition, researchers have examined the relationship between firm innovativeness and performance for small (Nijssen et al. 2006), large (Mengüç and Auh

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[1]Previous attempts to consolidate research findings in this stream of literature have been qualitative (e.g., Hauser, Tellis, and Griffin 2006; Shane and Ulrich 2004; Walker 2004), focused on the drivers of firm innovativeness (see Damanpour 1991), or at the product level (Henard and Szymanski 2001; Szymanski, Kroff, and Troy 2007). To the best of our knowledge, our meta-analysis provides the most comprehensive, integrative empirical assessment of the performance implications of firm innovativeness in the literature.

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2006), young (Jansen, Van den Bosch, and Voldberda 2006), and old (Qian and Li 2003) firms in a variety of contexts, including high-tech (Wuyts, Dutta, and Stremersch 2004) and low-tech (Noble, Sinha, and Kumar 2002) industries and within and outside the United States (Ceccagnoli 2009; Zhou, Yim, and Tse 2005). However, the findings and unique insights from these studies are not cumulative. A theory-driven, comprehensive model that integrates these findings to examine the complex mechanisms through which innovativeness affects firm value is still missing.

Finally, the findings related to the performance implications of firm innovativeness vary substantially across studies (Sorescu and Spanjol 2008; Walker 2004; Wolfe 1994). For example, while the predominant view is that innovativeness is positively associated with performance (e.g., Srinivisan et al. 2009; Tellis, Prabhu, and Chandy 2009), researchers have reported nonsignificant or even negative effects for this association (e.g., Baum, Calabrese, and Silverman 2000; Mengüç and Auh 2006). The dominant approach to reconcile these divergent results has been through the use of methodological refinements and a variety of innovativeness and performance measures, as well as different sets of control variables in separate studies. However, these explanations are often offered post hoc, and contextual factors are less often incorporated in the development of hypotheses or in the study design.

We employ meta-analytic techniques for theory testing and extension purposes to address these important gaps in the literature because meta-analysis is an indispensable research tool for integrating and expanding the field's knowledge base (Hunter and Schmidt 1990). In this study, we integrate the fragmented literature on firm innovativeness using data obtained from 159 independent samples reported in 153 studies. Drawing on the chain-of-effects model (Rust et al. 2004), we propose and test a comprehensive framework, which suggests that innovativeness indirectly affects firm value through its effects on market position and financial position. While our findings support these predictions, our study also indicates that innovativeness has direct positive effects on financial position and firm value. Importantly, our study also provides evidence of reverse causality in the innovativeness–firm value relationship using a meta-analytic approach. The possibility of reverse causality has often been mentioned as one of the greatest concerns of any model relating marketing actions to firm value (Hanssens, Rust, and Srivastava 2009; Srinivasan and Hanssens 2009), but it has been rarely tested in the marketing–finance interface literature.

Finally, going beyond the main effects, we also extend the literature by investigating the moderating effects of firm-, industry-, and country-level factors on the impact of innovativeness on various performance outcomes. To date, the extant literature seems to have paid only scant attention to such moderated relationships. Our research provides strong evidence for the contingent nature of the relationships between innovativeness and performance outcomes; specifically, we uncover six factors that moderate these relationships: (1) type of performance (market position, financial position, or firm value), (2) firm size, (3) advertising intensity, (4) high-tech versus low-tech industry, (5) Western vs. non-Western countries, and (6) conceptualization of innovativeness (i.e., inputs vs. outputs vs. culture and radical vs. incremental innovativeness). Thus, our study also indicates that the conflicting findings in the literature can be attributed to the diversity of research contexts.

We organize the rest of this article as follows: First, we develop a comprehensive model to explain the direct and indirect effects of innovativeness on firm value. Next, we focus on the moderators of the innovativeness–performance relationship. Then, we explain the data collection procedures and present the results. We conclude with the theoretical and managerial implications.

From Firm Innovativeness to Firm Value

The traditional explanation for the positive relationship between firm innovativeness and performance rests on Schumpeter's (1942) theory of profit extraction, which maintains that through innovation, firms gain a temporary quasi-monopoly position that enables them to extract rents. These "above-the-normal" rents can cease to exist for two reasons: imitation from competitors that erode the monopolistic position of the innovator or a new innovation that makes the focal firm's innovation obsolete. Firms can maintain their market power over time through a continuous stream of innovations and turn temporary gains from a single new product into persistent, superior performance with multiple product introductions. Thus, innovativeness positively contributes to firm performance by attenuating the natural forces of competition or changes in consumption patterns that tend to dissipate superior returns over time (Sharma and Lacey 2004).

Consistent with this perspective, research in marketing indicates that innovativeness has positive consequences for various performance outcomes, including a firm's market position, financial position, and firm value in the stock market (Pauwels et al. 2004; Sorescu and Spanjol 2008; Srinivasan et al. 2009). Market position refers to the revenue-based performance of firms in the marketplace (e.g., sales, market share, sales growth). Financial position represents the cost-based performance in the marketplace, which accounts for the cost component of firms' activities (e.g., overall profitability, return on assets [ROA], return on investment [ROI], return on equity [ROE]). Firm value refers to the firm performance in the stock market, which accounts for both current and future gains (e.g., stock market performance, Tobin's q, market capitalization, market-to-book ratio) (Rust et al. 2004).

In this study, our first objective is to propose and test a theoretically driven comprehensive conceptual framework that examines the complex mechanisms through which innovativeness affects firm value, as well as the relationships involving the various types of performance outcomes. To provide theoretical guidance to the meta-analysis, we build on the chain-of-effects model (Rust et al. 2004). Specifically, Rust et al. (2004) indicate that the strategic role of marketing includes setting strategic directions for the firm and guiding the development of marketing assets that can be leveraged within business processes to provide

sustainable competitive advantage. Accordingly, this model suggests that marketing assets affect firm value through their effects on market position and financial position, which are primarily short-term or backward-looking performance metrics (Anderson, Fornell, and Lehmann 2004; Pauwels et al. 2004). As such, the chain-of-effects model explains the variation in the value of the firm in stock markets with its current or short-term performance (i.e., indirect effects of innovativeness on firm value through market and financial position).

Nevertheless, the valuation of a firm in stock markets is also based on the expectations regarding the amount and volatility of future cash flows (Srinivasan and Hanssens 2009). This suggests that, in addition to the innovativeness → market position → financial position → firm value path, innovativeness should have a direct positive effect on firm value. Specifically, it should directly affect firm value because it guarantees future cash flows by allowing the firm to keep pace with changing consumer preferences (Sood and Tellis 2009). In addition, innovativeness reduces the volatility of future cash flows by enabling the firm to complement its product portfolio with offerings that target new customer segments (Srinivasan et al. 2009).

Finally, we expect that innovativeness affects firm value through a third path: its direct effect on financial position. Innovativeness reduces the costs of acquiring resources by providing firms with superior insights into and access to these resources (McGrath et al. 1996). Furthermore, innovativeness enables the firm to sense new opportunities in the marketplace (Penrose 1959). Firms with superior market-sensing capabilities can lower their average costs through more productive resource utilization (Morgan, Slotegraaf, and Vorhies 2009). Thus, innovativeness improves the firm's financial position through process-based advantages that, over time, make firms more efficient in their innovation efforts (Geroski, Machin, and Van Reenen 1993; McGrath et al. 1996). Figure 1 depicts the direct and indirect effects of innovativeness on firm value.

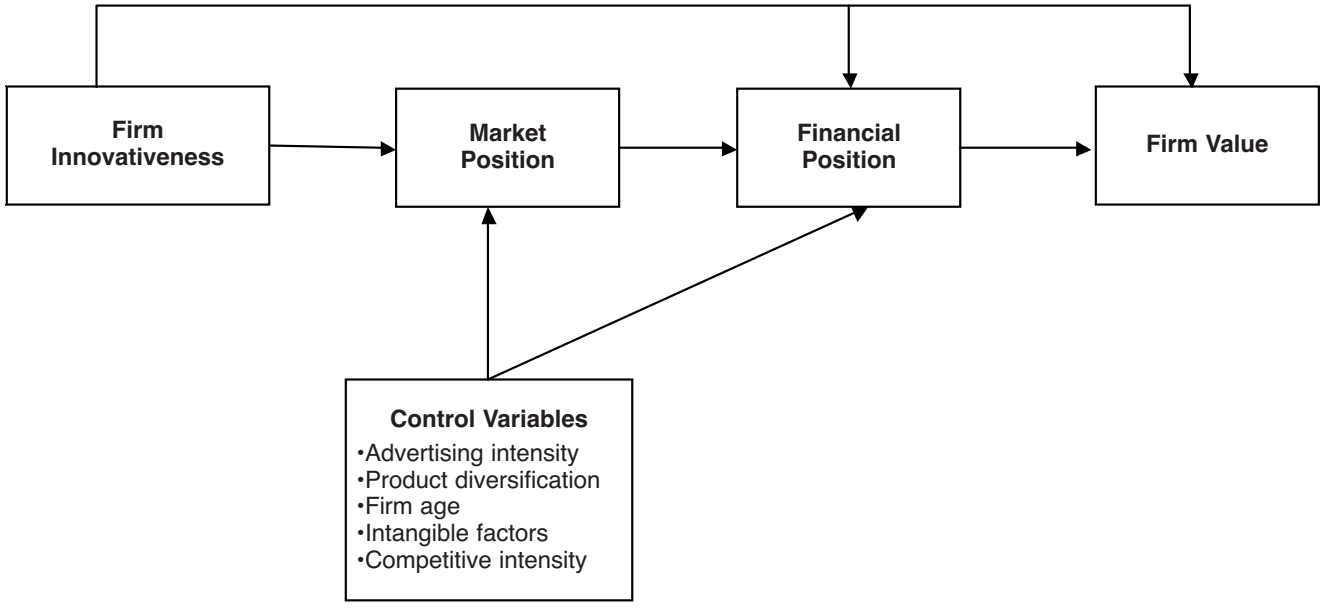
Moderators of Firm Innovativeness–Performance Relationships

In this section, we examine the factors that potentially moderate the effects of innovativeness on various performance outcomes. Consistent with the chain-of-effects model, we first distinguish three performance outcomes: market position, financial position, and firm value. As we detailed previously, market position represents current revenues but not costs, financial position incorporates the costs of innovativeness, and firm value accounts for both current and future gains from innovativeness. We expect that innovativeness has a more pronounced effect on firm value than on market position because the latter captures only the current performance of innovativeness, whereas firm value is more forward looking and reflects the future gains from innovativeness (Ceccagnoli 2009; Pauwels et al. 2004). Moreover, innovativeness should have a stronger impact on market position than on financial position because market position does not take into account the costly investments in R&D and skilled personnel necessary to support innovativeness, whereas financial position also incorporates the cost component of firms' innovative activities. Thus:

> H_1: Firm innovativeness has the most positive impact on firm value, followed by market position and then financial position.

Moreover, we maintain that the disparate findings in the literature may be explained by examining the impact of innovativeness on market position, financial position, and firm value in different research contexts. Therefore, in addition to

FIGURE 1
From Firm Innovativeness to Firm Value



the main effects, we consider the possibility that the impact of innovativeness on performance outcomes can be stronger or weaker, depending on some contingencies. This approach is consistent with previous research that suggests that firms do not gain equally from innovativeness because their capability to appropriate the value of innovativeness depends on firm, industry, and country factors (Sorescu and Spanjol 2008; Tellis, Prabhu, and Chandy 2009). We explain the role of these factors in the following sections (see Figure 2).

Firm, Industry, and Country Factors

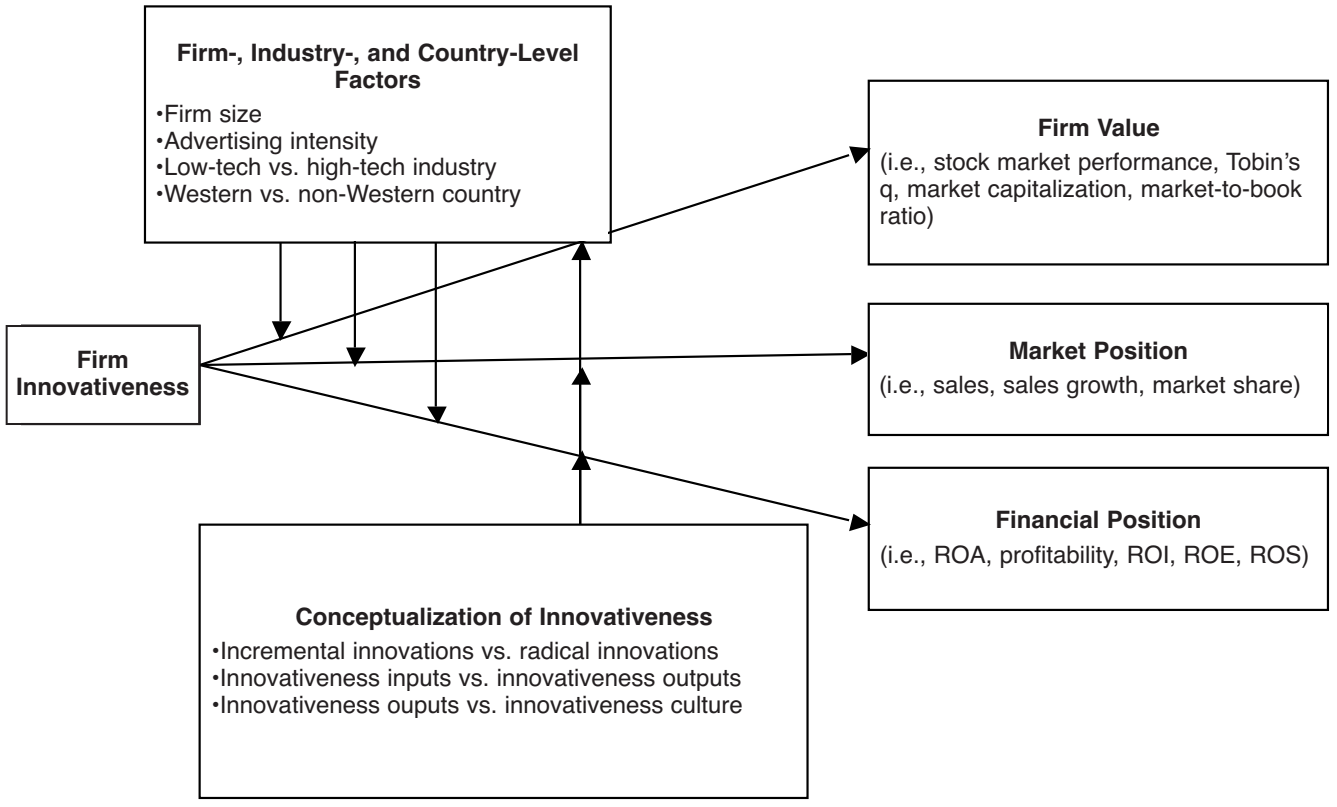
Firm size. Firm size refers to the scale and scope of operations (Aldrich 1972). We expect that larger firms are more likely to benefit from innovativeness in terms of market and financial positions (Sorescu, Chandy, and Prabhu 2003). Specifically, large firms can deploy more resources (e.g., sales support) to sustain their innovations in the marketplace, increasing the adoption rate of these innovations. They are also able to reach consumers more quickly than small firms because they have preferential access to distribution channels (Mitchell 1989). Finally, large firms often enjoy a reputation effect over small firms, which can cause consumers to perceive the purchase of the large firms' innovations as less risky (Chandy and Tellis 2000). Therefore, large firms can generate greater revenues than small firms as a result of their innovation efforts. Furthermore, large firms enjoy economies of scale that allow them to obtain inputs at lower prices than small firms, thus reducing the cost of operations. Higher increases in revenue expansion coupled with lower costs generate more significant improvements in the financial position of large firms compared with small firms for the same level of innovativeness. Thus:

H_2: The positive relationship between firm innovativeness and (a) market position and (b) financial position is stronger for larger firms.

In contrast, innovativeness should have a stronger impact on firm value for smaller firms. First, innovativeness is more critical for their survival and growth. Innovativeness assures investors that small firms have the capability to grow over time and increase their cash flows. A similar assurance is less critical for large firms (Sorescu, Shankar, and Kushwaha 2007). Second, stock returns are higher for small firms than for large firms because of higher salience of any single event in small firms. Large firms are better tracked by analysts and, in general, have a much smaller "surprise" element (Sood and Tellis 2009). Finally, large firms are more likely to lose from cannibalization because innovativeness often leads to increasing cash flows from the new products by reducing cash flows from other existing products (Srinivasan et al. 2004). This threat is reduced for small firms, which typically have fewer products in their portfolio. Because investors evaluate the effect of innovativeness on the whole value of the firm, they are more likely to put a premium on the innovativeness of small firms (Srinivasan et al. 2004). Thus:

H_{2c}: The positive relationship between firm innovativeness and firm value is stronger for smaller firms.

FIGURE 2
Moderators of the Firm Innovativeness–Performance Relationships



Advertising intensity. Advertising intensity, defined as the level of advertising targeted at a consumer audience (Tellis 2004), amplifies the positive effect of innovativeness on market position by facilitating consumers' timely adoption of innovations (Srinivasan et al. 2009). Advertising makes consumers aware of the existence of an innovation, educates them on how to use the new product, persuades them of its added value, and reduces perceived risk, thus increasing product trials (Erickson and Jacobson 1992). Evidence suggests that firms that invest more in advertising can better sustain innovativeness in the marketplace (Chandy and Tellis 2000; Srinivasan et al. 2009). As for financial position, advertising intensity creates a reputation premium that firms can use to command a higher price than competing products (Erickson and Jacobson 1992). Thus, by enlarging the gap between sales and costs, advertising intensity contributes to increase the effect of innovativeness on financial position.

Advertising intensity also positively moderates the innovativeness–firm value relationship. Indeed, higher adoption rates translate into accelerated cash flow. Advertising creates entry barriers by discouraging potential competitors from entering the market (Srinivasan et al. 2009). This protection ensures that, at the same level of innovativeness, firms that heavily invest in advertising obtain more stable cash flows than other firms. In addition, advertising signals to investors that a firm has the discretionary funds necessary to sustain innovativeness and to generate cash flows in the future (Joshi and Hanssens 2010). Therefore, advertising intensity increases firm value by signaling to investors that innovativeness is credible and sustainable in the long run. Thus:

H_3: The positive relationship between firm innovativeness and (a) market position, (b) financial position, and (c) firm value is stronger for firms with high advertising intensity than for firms with low advertising intensity.

High-tech versus low-tech industries. Innovation is the critical element of competition in high-tech industries (i.e., industries with high dependence on science and technology), in which firms are forced to constantly introduce new products to meet rapidly changing consumer needs. Failure to innovate would cause the firm to exit the market. Firms do not have the same onus to consistently introduce new products in low-tech industries (i.e., industries with low dependence on science and technology), in which consumers are less sensitive to innovativeness (Mizik and Jacobson 2003). Accordingly, innovativeness should be more beneficial to improve the market position of firms that operate in high-tech industries (vs. those in low-tech industries). In addition, the greater revenue expansion associated with enhanced market position helps firms in high-tech industries achieve cost reduction through high volume. The cost reduction is smaller for firms in low-tech industries because innovativeness in low-tech industries cannot generate the same volume. Therefore, for the same level of innovativeness, firms that operate in high-tech industries should obtain a better financial position than firms in low-tech industries as a result of greater revenue and reduced costs. Thus:

H_4: The positive relationship between firm innovativeness and (a) market position and (b) financial position is stronger in high-tech industries than in low-tech industries.

In contrast, firms operating in high-tech industries present a high "technological mugging" risk—namely, the risk that innovativeness can be easily and quickly rendered obsolete by the frequent technological innovations that competitors introduce (Galbraith and Merrill 1991). For investors, this risk translates into short-term cash flows from innovativeness. The technological mugging risk is almost absent in low-tech industries (Galbraith and Merrill 1991). Thus, firms in low-tech industries can generate cash flows from their innovativeness for a longer time period than firms in high-tech industries. To the extent that the duration of cash flows influences firm value, innovativeness should generate greater firm value in low-tech industries. Thus:

H_{4c}: The positive relationship between firm innovativeness and firm value is stronger in low-tech industries than in high-tech industries.

Western versus non-Western countries. Prior research has shown that individualism and long-term orientation dimensions of national culture influence consumer dispositions to innovativeness (Dwyer, Mesak, and Hsu 2005; Steenkamp, Ter Hofstede, and Wedel 1999). Western countries are considered individualist and short-term oriented, whereas non-Western countries are typically collectivist and long-term oriented (Nakata and Sivakumar 1996; Troy, Hirunyawipada, and Paswan 2008). Specifically, consumers in individualist (i.e., Western) countries are more favorably disposed to innovations than consumers in collectivist (i.e., non-Western) countries (Dwyer, Mesak, and Hsu 2005; Steenkamp, Ter Hofstede, and Wedel 1999). In addition, consumers in short-term-oriented (i.e., Western) countries accept novel ideas more rapidly and value innovativeness more than consumers in long-term-oriented (i.e., non-Western) countries (Eisingerich and Rubera 2010). This reasoning suggests that innovativeness leads to better market position in Western than non-Western countries. In addition, higher revenues should translate into a better financial position for firms operating in Western than in non-Western countries. Finally, the innovativeness–firm value relationship should be stronger in Western countries because, similar to consumers, investors are likely to reward innovativeness more in Western countries:

H_5: The positive relationship between innovativeness and (a) market position, (b) financial position, and (c) firm value is stronger in Western countries than in non-Western countries.

Conceptualization of Firm Innovativeness

Firm innovativeness has been conceptualized in a variety of ways, which may account for the variation in the findings pertaining to its effects on performance (Sorescu and Spanjol 2008). In an effort to clarify this issue, we investigate the moderating role of three types of innovativeness that have generated substantial debate in the marketing literature: (1) innovativeness inputs (e.g., R&D expenditure, patents) and outputs (e.g., number of new products), (2) innovativeness culture (e.g., innovation orientation), and (3) radical and incremental innovations.

Innovativeness inputs versus innovativeness outputs. The difference between inputs (i.e., efforts made toward innovation) and outputs (i.e., consequences of innovation activities visible to consumers) of firm innovativeness is the subject of an ongoing debate in the literature (Geroski 1995; Tellis, Prabhu, and Chandy 2009). Innovativeness inputs do not necessarily turn into revenues because R&D expenditures do not routinely turn into actual products, and patents are not always implemented as innovations (Kochhar and David 1996). In contrast, outputs represent the revenue generation potential of innovativeness because they refer to actual new products that are available in the marketplace. Therefore, we expect that innovativeness outputs are more strongly associated with market position and financial position than innovativeness inputs. Accordingly:

H_6: The positive relationship between firm innovativeness and (a) market position and (b) financial position is stronger for innovativeness outputs than for innovativeness inputs.

The innovativeness–firm value relationship should be stronger for innovativeness inputs than for innovativeness outputs. This prediction relies on the widely accepted assumption in the finance and marketing literature streams that investors react strongly when new information about future cash flows becomes available and actions that are largely expected generate smaller responses (Srinivasan and Hanssens 2009). We maintain that information about inputs contains a greater surprise element than outputs, leading to enhanced firm value. Indeed, inputs capture the first moment in which investors become aware of firm's innovative activities. In contrast, new product introductions are frequently preceded by preannouncements or buzz around the new product, which reduces the surprise effect for investors. Investors are likely to have already incorporated the new product introductions in their expectations when information about the outputs is finally available (Pauwels et al. 2004). Consistent with this perspective, Sood and Tellis (2009) show that abnormal stock returns to innovation setup activities and preannouncements are greater than abnormal stock returns to final product introductions in the marketplace. Thus:

H_{6c}: The positive relationship between firm innovativeness and firm value is stronger for innovativeness inputs than for innovativeness outputs.

Innovativeness outputs versus innovativeness culture. Another ongoing dispute in the literature pertains to the real sources of performance gains stemming from innovativeness. In short, the product view maintains that performance gains are the result of specific product introductions in the market (Geroski, Machin, and Van Reenen 1993). The process view suggests that performance gains are the result of specific competitive abilities that go beyond introducing new products; these abilities lie in the cultural traits of innovative firms but are absent in noninnovative firms (Tellis, Prabhu, and Chandy 2009). Innovativeness culture refers to openness to new ideas as an aspect of firms' organizational culture (Hurley and Hult 1998). As such, innovativeness culture represents the firm's ability to constantly introduce new products, while innovativeness outputs refer to a specific innovation activity at a given time. Aligning with the product view, we maintain that innovativeness has a stronger relationship with market position when conceptualized as outputs rather than as an aspect of the organizational culture. This is not to say that firms with strong innovative cultures do not enjoy an advantage in the marketplace. However, in the end, it is a specific product introduction that generates revenues and not the firm's general commitment to innovation. Thus:

H_{7a}: The positive relationship between firm innovativeness and market position is stronger for innovativeness outputs than for innovativeness culture.

Conversely, we maintain that a process view can better explain the relationship between innovativeness and financial position. Indeed, innovativeness culture represents the extent to which a firm has developed specific abilities that make it more productive in the use of the resources necessary to innovate (McGrath et al. 1996; Szymanski, Kroff, and Troy 2007). Greater efficiency turns into lower costs and better financial position. Thus, we should observe a stronger innovativeness–financial position relationship when innovativeness is conceptualized as part of the organizational culture rather than as outputs. Similarly, innovativeness should be more strongly related to firm value when it is viewed as part of the organizational culture rather than as outputs. Specifically, firm value depends on the firm's capability to grow over time, generate constant cash flows, and protect its sources of competitive advantage from competitors. Innovativeness culture captures the sources of sustainable competitive advantage for firms, while innovativeness outputs represent the specific innovation activity of a firm at a given point in time. A temporary activity cannot protect the firm from competitive attacks for a long time (Hurley and Hult 1998). Thus:

H_7: The positive relationship between firm innovativeness and (b) financial position and (c) firm value is stronger for innovativeness culture than for innovativeness outputs.

Radical innovations versus incremental innovations. Finally, a third ongoing dispute in the marketing literature involves the performance implications of radical and incremental innovations. Radical innovations represent dramatic departures from existing products in terms of technology and provide substantially greater benefits for customers; incremental innovations involve the development of improvements in existing product lines (Chandy and Tellis 1998). Radical innovations have the potential to destroy the market positions of incumbents, enabling firms at the leading edge to dominate world markets (Tellis, Prabhu, and Chandy 2009). Radical innovations provide superior benefits (Kleinschmidt and Cooper 1991), which lead to enhanced consumer preferences for radical over incremental innovations. Thus, radical innovations should have a stronger positive effect on market position than incremental innovations.

Developing radical innovations is typically more costly than developing incremental innovations, which could negatively affect the financial position of a firm. However, radical innovations enjoy critical advantages over incremental innovations, which should offset these higher costs.

Indeed, consumers are willing to pay a premium price for radical innovations but not for incremental ones (Kleinschmidt and Cooper 1991). By commanding higher prices, firms can recover the costs of developing radical innovations, while still benefiting from the higher volume that radical innovations generate. The compound of revenue expansion and higher premium prices should make radical innovations more beneficial for a firm's financial position than incremental innovations, despite their cost implications.

Radical innovations also raise firm value by representing a platform for future product introductions and a guarantee that the firm will stay ahead of competition (Srinivasan et al. 2009; Tellis, Prabhu, and Chandy 2009). Radical innovations are typically difficult for competitors to imitate because they require the development of the latest technology (Sorescu, Chandy, and Prabhu 2003). In contrast, incremental innovations are easy to imitate and are not able to protect the firm from competitive attacks (Sorescu and Spanjol 2008). The difficulty of imitating radical innovations, coupled with the possibility of appropriating the benefits of innovativeness for a longer period of time, make radical innovations more beneficial for firm value than for incremental innovations. Thus:

H_8: The positive relationship between firm innovativeness and (a) market position, (b) financial position, and (c) firm value is stronger for radical innovations than for incremental innovations.

Methods

Database Development

We identified studies for inclusion in the meta-analysis through several approaches. First, we searched the ABI/INFORM Global database for studies that investigate issues related to firm innovativeness using the search terms "innovativeness," "new product(s)," and "innovation" in 15 marketing and management journals of widely acknowledged scholarly value according to Baumgartner and Pieters (2003) and Palich, Cardinal, and Miller (2000).[2] Second, we supplemented the electronic search with an issue-by-issue search of the abstracts of articles published in the same journals for studies published before 2010. Third, we posted requests on American Marketing Association and Academy of Marketing Listservs to elicit unpublished research to address the "file-drawer" problem (Rosenthal 1979). Finally, we examined the reference sections of all major narrative and empirical reviews of research published on related topics to identify any study that we might have overlooked (i.e., Damanpour 1991; Grinstein 2008; Shane and Ulrich 2004; Szymanski, Kroff, and Troy 2007; Walker 2004).

After identifying studies for potential inclusion in the data set, we evaluated the appropriateness of each study. We used several decision rules to determine the studies that would be retained for the meta-analysis. A study was eligible for inclusion if it met the following conditions: (1) innovativeness and performance constructs were both measured at the organizational level; (2) the Pearson correlation coefficient between innovativeness and performance, or sufficient statistical information that allowed the computation of a correlation coefficient with the formulas provided by Hunter and Schmidt (1990, p. 272), was reported (e.g., r, univariate F, t, χ^2); and (3) the studies were independent (i.e., reported correlation coefficients from different samples). Several of the studies could not be included in the meta-analysis because (1) they focused on the impacts of new product performance on various customer outcomes, such as customer satisfaction, loyalty, and retention; (2) the results were based on data used in other studies that were already included; or (3) their results were reported only in multivariate models.

Upon completion of the literature retrieval procedures, we obtained a total of 159 independent samples reported in 153 studies. To develop the final database, we followed the procedures in recent meta-analyses in the marketing literature (e.g., Henard and Szymanski 2001; Kirca, Jayachandran, and Bearden 2005). Specifically, we prepared a coding form specifying the information to be extracted from each study to reduce coding error (Lipsey and Wilson 2001; Stock 1994). The first author initially coded all the articles according to the definitions and criteria summarized in Table 1. We assessed the reliability of the coding process by having the second author independently code a sample of 35 randomly selected studies. The two coders initially concurred on approximately 90% of the coded data, and remaining discrepancies were resolved through discussion before reaching consensus. We further checked coding quality by having an independent investigator who is knowledgeable about the innovation literature code all the studies. The level agreement between the two coders was high (93%), and discussion between the coders helped clarify disagreements.

Data Analysis

After compiling the data, we adjusted the effects from each study for measurement error by dividing the correlation coefficient by the product of the square root of the reliabilities of the two constructs (Hunter and Schmidt 1990). Next, we transformed the reliability-corrected correlations into Fisher's z-coefficients. Subsequently, we averaged the z-coefficients and weighted them by an estimate of the inverse of their variance (N – 3) to give greater weight to more precise estimates with greater sample sizes. Finally, we transformed the z-scores back to obtain the revised correlation coefficients (Hedges and Olkin 1985). We also calculated the fail-safe sample size (N_{FS}) using Rosenthal's (1979) method to assess the possibility of publication bias or the file drawer problem (i.e., the number of unpublished

[2]We included the following journals in the searches: *Academy of Management Journal*, *Industrial Marketing Management*, *International Journal of Marketing Research*, *Journal of Business Research*, *Journal of International Business Studies*, *Journal of Management*, *Journal of Management Studies*, *Journal of Marketing*, *Journal of Marketing Research*, *Journal of Product Innovation Management*, *Management Science*, *Marketing Science*, *Journal of the Academy of Marketing Science*, *Organization Science*, and *Strategic Management Journal*.

TABLE 1
Variables for the Hypothesized Relationships Included in the Meta-Analysis

Variable	Definition	Coding Criteria/Examples
Market position	Revenue-based performance of firms in the marketplace	Measures that emphasize current revenues that do not directly reflect costs (i.e., sales, market share, and sales growth)
Financial position	Cost-based performance in the marketplace that accounts for the cost component of firm's activities	Measures that entail the costs of operations (i.e., overall profitability, ROA, ROI, ROE, and ROS)
Firm value	Firm performance in the stock market	Measures that comprise stock market outcomes (i.e., stock market performance, Tobin's q, market capitalization, and market-to-book ratio)
Firm size	Scale and scope of organizational operations (Aldrich 1972)	Small firms: fewer than 500 employees; large firms: more than 500 employees (American Small Business Association)
Advertising intensity	Level of advertising targeted to an audience of consumers (Tellis 2004)	Advertising expenditures/sales (McAlister, Srinivasan, and Chung 2007)
High-tech industries	Industries with high dependence on science and technology (National Science Foundation)	Aerospace, biotechnology, communication equipment, computers and office machinery, pharmaceuticals, and semiconductors
Low-tech industries	Industries with low dependence on science and technology (National Science Foundation)	Appliances, banking, construction, entertainment, and food
Innovativeness inputs	Efforts made toward innovation (Geroski 1995)	R&D intensity/expenditures (e.g., McAlister, Srinivasan, and Chung 2007), number of patents (e.g., Tellis, Prabhu, and Chandy 2009)
Innovativeness outputs	Consequences of innovation activities visible to consumers (Geroski 1995)	Number of new products /service introductions (e.g., Zhou, Yim, and Tse 2005)
Innovativeness culture	Openness to new ideas as an aspect of firms' organizational culture (Hurley and Hult 1998)	Innovativeness culture (e.g., Mengüç and Auh 2006) Propensity for innovation (e.g., Nijssen et al. 2006) Innovation orientation (e.g., Olson, Slater, and Hult 2005) Innovation focus (Eisingerich, Rubera, and Seifert 2009)
Radical innovations	A new product that incorporates a substantially different core technology and provides substantially higher customer benefits relative to existing products in the industry (Chandy and Tellis 1998)	Pioneer innovation (e.g., Srinivasan et al. 2009) Exploratory innovation (e.g. Jansen, Van den Bosch, and Voldberda 2006) Breakthrough innovation (e.g., Sorescu and Spanjol 2008) Radical innovation (e.g., Tellis, Prabhu, and Chandy 2009
Incremental innovations	Product improvements in existing products that usually aim at satisfying the needs of existing customers (Chandy and Tellis 1998)	Service/product improvement (e.g., Leiponen 2008) Exploitative innovation (e.g., Jansen, Van den Bosch, and Voldberda 2006) Incremental innovation (e.g., Sorescu and Spanjol 2008)

studies with null results needed to reduce the cumulative effect across studies to the point of nonsignificance) (Lipsey and Wilson 2001).

Path analysis. To investigate the effects of innovativeness on market position, financial position, and firm value, we first constructed a meta-analytic correlation matrix. Specifically, we calculated mean correlations adjusted for sample size for each pair of constructs in our model to obtain a correlation matrix (Viswesvaran and Ones 1995). For a construct to be included in this multivariate analysis, multiple study effects that relate a particular construct to every other construct in the model should be available. Therefore, our meta-analytic path analysis required that, in addition to estimating the average correlations between the innovativeness and firm value, we also estimated the average correlations between innovativeness and market position, financial position, and control variables (i.e., advertising intensity, product diversification, firm age, intangible resources, and competitive intensity). We then used this correlation matrix as input to a structural equation modeling analyses using the full-information maximum likelihood method. In the structural equation modeling estimation process, we fixed error variances for the indicators at zero. We tested for the precision of parameter estimates through the harmonic mean (N = 5441), which we determined using the sample sizes across effect size cells comprising each entry in the correlation matrix. All relationships included data from at least five samples (Ns = 998–36,814).

Hierarchical linear modeling analysis. In the last step of our analysis, we tested the hypothesis of homogeneity of the population correlations using the Q-statistic [$Q = \Sigma(n_i - 3)(z_i - z)^2$] that has a chi-square distribution with k – 1

degrees of freedom (Hedges and Olkin 1985, p. 235). A significant Q-value suggests that study-level effect size estimates do not estimate a common population effect size, and the subsequent search for the moderating effects is warranted. The homogeneity tests for of the correlations involving the innovativeness–overall performance (χ^2_{376} = 6255.80, $p < .01$), innovativeness–market position (χ^2_{158} = 3949.69, $p < .01$), innovativeness–financial position (χ^2_{140} = 1121.91, $p < .01$), and innovativeness–firm value (χ^2_{76} = 750.79, $p < .01$) relationships were significant, indicating that moderator variables may explain the heterogeneity in the effect sizes. To examine the nature of this heterogeneity, we employed hierarchical linear modeling to perform our analysis by regressing dummy-coded variables on the Fisher z-transformed correlations, as Troy, Hirunyawipada, and Paswan (2008) suggest. In this way, we accounted for within-study error correlation between effect sizes.[3] To test H_1, we estimated the following equation:

$$(1) \qquad P_{ij} = \alpha_0 + \sum_{k=1}^{15} \alpha_k X_{kij} + u_{1j} + e_{1ij},$$

where P_{ij} are the z-transformed correlations between innovativeness and firm performance in study j; α_0 is a constant; α_k are the parameters to be estimated; X_{kij} are dummy variable matrices of the moderators, with the following study characteristics and measurement factors as control variables: objective versus subjective measures of innovativeness, objective versus subjective measures of performance, manufacturing versus service industry, publication outlet (i.e., management vs. marketing vs. international business journals), and year of publication; u_j are the study-level residual error terms; and e_{ij} are the measurement-level residual error terms. To test H_2–H_8, we specified the following models:

$$(2) \qquad MP_{ij} = \beta_0 + \sum_{k=1}^{13} \beta_k X_{kij} + u_{1j} + e_{1ij},$$

$$(3) \qquad FP_{ij} = \gamma_0 + \sum_{k=1}^{13} \gamma_k X_{kij} + u_{2j} + e_{2ij}, \text{ and}$$

$$(4) \qquad FV_{ij} = \delta_0 + \sum_{k=1}^{11} \delta_k X_{kij} + u_{3j} + e_{3ij},$$

where MP_{ij}, FP_{ij}, and FV_{ij} are the z-transformed correlations between innovativeness and market position, financial position, and firm value in study j, respectively; β_0, γ_0, and δ_0 are constants; β_k, γ_k, and δ_k are the parameters to be estimated; X_{kij} are dummy variable matrices of the moderators and control variables; u_j are the study-level residual error terms; and e_{ij} are the measurement-level residual error terms. Note that in Equation 4, there are two fewer moderators due to data limitations (i.e., no effects for the innovativeness–firm value relationship in non-Western countries and for subjective measures of firm value). Importantly, we carefully examined possible multicollinearity among the moderators. The maximum correlation between the moderators in the four equations was .16. We then regressed the effect sizes (z-values) on our moderators; in the equations, the minimum tolerance is .7, and the maximum variance inflation factor is 1.95. These findings indicate that multicollinearity is not a problem in our analyses. Thus, we kept all the moderators in our model. Finally, we examined the plot of the residuals and found support for the normality, linearity, and homoskedasticity assumptions of the hierarchical linear modeling analysis.

[3]Consistent with previous meta-analysis in marketing, we estimate the model using the maximum likelihood method, in which we used an imputation method of replacing missing values with series means (e.g., Szymanski, Kroff, and Troy 2007; Troy, Hirunyawipada, and Paswan 2008).

Results

Table 2 reports the reliability-corrected mean correlations between firm innovativeness and various performance outcomes. Importantly, the bivariate results reveal that innovativeness is positively associated with market position (r = .18, $p < .01$), financial position (r = .15, $p < .01$), and firm value (r = .16, $p < .01$). For these relationships, the fail-safe sample sizes (i.e., publication bias) were 2560, 1766, and 1220, respectively, indicating that the positive overall correlations found in the bivariate analyses are not susceptible to a file-drawer problem (Rosenthal 1979).

From Innovativeness to Firm Value: Path Analysis Results

Table 3 presents the meta-analytic correlation matrix employed in our path analysis to test the relationships involving the direct and indirect effects of firm innovativeness on market position, financial position, and firm value. As Table 4 summarizes, the path analysis results were consistent with our predictions, and the overall fit statistics for the initial model were satisfactory (χ^2 = 70.08, d.f. = 6, $p < .01$; root mean square error of approximation [RMSEA] = .04; normed fit index [NFI] = .97; comparative fit index [CFI] = .97; adjusted goodness-of-fit index [AGFI] = .98; and root mean square residual [RMSR] = .02). Specifically, and consistent with the predictions of chain-of-effects model, the innovativeness–market position (β = .12, $p < .01$), market position–financial position (β = .16, $p < .01$), and financial position–firm value (β = .29, $p < .01$) path coefficients are significant after controlling for advertising intensity, product diversification, firm age, intangible resources, and competitive intensity. Moreover, our results demonstrate that innovativeness has direct positive effects on financial position (β = .10, $p < .01$) and firm value (β = .12, $p < .01$).

Although the statistical fit of our model to the proposed model in Figure 1 was above acceptable levels, we examined the modification indexes to determine whether any alternative model could provide a better fit to data. Consistent with the modification indexes, the model was revised to include a path from advertising intensity to firm value. Importantly, prior literature provides theoretical support for this link (e.g., Joshi and Hanssens 2010). The goodness-of-

TABLE 2
Overview of Firm Innovativeness-Performance Relationships

Relationships	Number of Effects[a]	Total Sample Size	Corrected Mean[b] r	SE	95% Confidence Interval	Availability Bias[c]
Innovativeness–market position	159	36,814	.176*	.005	.166 to .186	2560
Sales	101	25,684	.169*	.006	.157 to .181	1287
Market share	31	4,972	.128*	.014	.100 to .156	110
Sales growth	23	5,562	.166*	.014	.140 to .193	121
Innovativeness–financial position	140	33,544	.146*	.006	.135 to .156	1766
Overall profitability	37	8,037	.076*	.011	.054 to .098	90
ROA	47	10,738	.159*	.010	.140 to .178	344
ROI	13	3,006	.180*	.018	.144 to .216	52
ROE	15	5,614	.197*	.013	.171 to .223	97
ROS	12	2,571	.152*	.020	.113 to .191	34
Innovativeness–firm value	77	35,368	.162*	.005	.166 to .187	1220
Tobin's q	29	10,103	.188*	.010	.168 to .207	248
Market capitalization	20	7,211	.234*	.011	.211 to .257	182
Stock returns	14	5,470	.127*	.014	.100 to .153	52
Market-to-book ratio	11	11,790	.162*	.009	.144 to .180	614

*$p < .01$.
[a]The table includes information regarding relationships for which at least ten study effects were available.
[b]The corrected mean correlation coefficients (r) are sample size–weighted, reliability-corrected estimates of the population correlation coefficients.
[c]Availability bias refers to the number of unpublished studies reporting null results needed to reduce the cumulative effect size across studies to the point of nonsignificance (Lipsey and Wilson 2001; Rosenthal 1979).

fit indexes and path coefficients in Table 4 suggest that the model fit improved substantially with the inclusion of this path ($\chi^2 = 46.70$, d.f. = 5, $p < .01$; RMSEA = .04; NFI = .98; CFI = .98; AGFI = .98; and RMSR = .01) ($\chi^2_{difference} = 23.38$, d.f. = 1, $p < .01$). Overall, the results based on the path analyses in the revised model also provide strong support for our predictions based on the chain-of-effects model, as well as for the direct effects of innovativeness on financial position and firm value.

Robustness analysis: reverse causality. Hanssens, Rust, and Srivastava (2009) suggest that a firm's past performance can also affect marketing actions; therefore, successful firms may have more resources available to invest in innovativeness. Accordingly, we tested for possible reverse causality by investigating the links from (1) firm value, (2) financial position, and (3) market position to firm innovativeness, while controlling for firm size. Following the procedure detailed in Orlitzky, Schmidt, and Rynes (2003) to test reverse causality using meta-analytic data, we first created another correlation matrix in which we included only studies that examine the relationship between market position, financial position, and firm value measured at time t and subsequent firm innovativeness measured at time t + 1. Then, we used this correlation matrix as input to regress the market position, financial position, firm value, and firm size variables on innovativeness. Our findings suggest the presence of reverse causality as firm value ($\beta = .10$, $p < .01$), financial position ($\beta = .09$, $p < .01$) and market position ($\beta = .39$, $p < .01$) influence innovativeness. To assess the extent to which reverse causality affects our findings, we reran the path analysis including studies that report correlations between (1) prior innovativeness (measured at time t) and subsequent market position, financial position, and firm value (measured at time t + 1) and (2) contemporaneous (cross-sectional) associations. Table 5 reports the results, which are similar to our findings reported previously.

Results of Moderator Analyses

Table 6 presents the results of our moderator analyses. We find that firm innovativeness has a stronger effect on firm value than market position ($\beta = .10$, $p < .01$), but it has similar effects on market position and financial position ($\beta = -.01$, $p > .05$). Thus, H_1 is only partially supported.

Consistent with our expectations, we found that the relationship between innovativeness and market position is stronger for larger firms ($\beta = .13$, $p < .05$) (H_{2a}); for firms that invest more in advertising ($\beta = .27$, $p < .05$) (H_{3a}), in high-tech industries ($\beta = .19$, $p < .05$) (H_{4a}), and in Western countries ($\beta = .25$, $p < .01$) (H_{5a}); for innovativeness outputs ($\beta = .14$, $p < .01$) (H_{6a}); and for radical innovations ($\beta = .24$, $p < .05$) (H_{8a}). In contradiction to H_{7a}, we found no difference between innovativeness culture and innovativeness outputs.

Our findings regarding the innovativeness–financial position relationship indicate that innovativeness leads to stronger financial position in larger firms ($\gamma = .09$, $p < .05$) (H_{2b}), firms that invest more in advertising ($\gamma = .04$, $p < .05$) (H_{3b}), and firms in high-tech industries ($\gamma = .16$, $p < .05$) (H_{4b}). Moreover, our findings suggest that this relationship is stronger for innovativeness outputs ($\gamma = .22$, $p < .01$) (H_{6b}), innovativeness culture ($\gamma = .16$, $p < .05$) (H_{7b}), and radical innovations ($\gamma = .14$, $p < .05$) (H_{8b}). However, contrary to our prediction in H_{5b}, we observed no difference between Western and non-Western countries.

Furthermore, our meta-analysis provides critical insights regarding the contingent nature of the relationship between innovativeness and firm value. Specifically, our study indicates that this relationship is stronger for smaller firms ($\delta = -.21$, $p < .01$) (H_{2c}), firms that invest more in advertising ($\delta = .36$, $p < .01$) (H_{3c}), and firms in low-tech industries ($\delta = -.33$, $p < .01$) (H_{4c}). Finally, our results reveal that the innovativeness–firm value relationship is stronger for innova-

TABLE 3
Meta-Analytic Correlation Matrix

	1	2	3	4	5	6	7	8	9
1. Firm value	1.00	25 (6855)	33 (15,968)	77 (35,368)	12 (4473)	10 (6121)	10 (6075)	15 (7061)	8 (2150)
2. Market position	.120	1.00	41 (10,711)	159 (36,814)	18 (4196)	43 (15,958)	34 (11,137)	16 (5545)	27 (8434)
3. Financial position	.309	.174	1.00	140 (33,544)	22 (7527)	44 (14,781)	20 (10,409)	23 (6771)	19 (5414)
4. Firm innovativeness	.164	.140	.136	1.00	35 (9339)	87 (32,729)	81 (24,430)	86 (20,714)	67 (22,421)
5. Advertising intensity	.089	.071	.071	.089	1.00	21 (7416)	6 (1933)	10 (7549)	8 (1126)
6. Product diversification	–.048	.112	–.010	.008	–.048	1.00	14 (6097)	6 (3363)	16 (8886)
7. Firm age	–.010	.140	–.010	.060	.023	.211	1.00	9 (4916)	21 (7937)
8. Intangible resources	.104	.123	.121	.112	.106	.092	–.001	1.00	5 (998)
9. Competitive intensity	–.013	.052	–.044	.008	.034	.055	.061	–.004	1.00

Notes: Off-diagonal entries in the lower left contain the average sample size weighted correlation (r) values. Off-diagonal entries in the upper right show the number of samples and the total sample sizes (Ns in parentheses) from which the mean correlations were derived.

TABLE 4
Path Analysis Results

	Initial Model		Revised Model	
	Path Coefficient	**t-Value**	**Path Coefficient**	**t-Value**
Innovativeness–market position	.12	8.79**	.12	8.79**
Market position–financial position	.16	11.49**	.16	11.49**
Financial position–firm value	.29	22.63**	.29	22.35**
Innovativeness–financial position	.10	7.83**	.10	7.83**
Innovativeness–firm value	.12	9.42**	.12	9.02**
Control Variables				
Advertising intensity–market position	.05	3.77**	.05	3.77**
Product diversification–market position	.08	5.79**	.08	5.79**
Firm age–market position	.11	8.36**	.11	8.36**
Intangible factors–market position	.10	7.30**	.10	7.30**
Competitive intensity–market position	.04	2.92**	.04	2.92**
Advertising intensity–financial position	.04	3.17**	.04	3.17**
Product diversification–financial position	–.03	–1.89*	–.03	–1.89*
Firm age–financial position	–.03	–2.11*	–.03	–2.11*
Intangible factors–financial position	.09	6.53**	.09	6.53**
Competitive intensity–financial position	–.05	–3.55**	–.05	–3.55**
Advertising intensity–firm value	—	—	.06	4.84**
χ^2 (d.f.)	70.08** (6)		46.70** (5)	
RMSEA	.04		.04	
NFI	.97		.98	
CFI	.97		.98	
AGFI	.98		.98	
RMSR	.02		.01	

*$p < .05$.
**$p < .01$.
Notes: Error variances for each construct indicator were fixed at zero, and we used the harmonic mean (n = 5441) for estimation purposes (Viswesvaran and Ones 1995).

tiveness inputs ($\delta = -.13$, $p < .01$) (H_{6c}), innovativeness culture ($\delta = .12$, $p < .05$) (H_{7c}), and radical innovations ($\delta = .22$, $p < .01$) (H_{8c}). Due to data limitations, we could not test H_{5c}, which pertains to the moderating effect of country factors on the innovativeness–firm value relationship. This issue certainly warrants additional research, as we detail in the "Discussion" section.

Robustness analysis: omitted-variables bias. We tested for omitted-variable bias following Szymanski, Kroff, and Troy's (2007) recommendations. We coded six omitted variables that are theoretically related to the relationships involving firm innovativeness, market position, financial position, and firm value. The following omitted variables could lead to a negative bias: (1) customer orientation, which positively affects performance (Narver and Slater 1990) but might reduce innovativeness (Christensen and Bower 1996); (2) competitor orientation, which positively affects performance (Narver and Slater 1990) but might lead a firm to adopt competitors' ideas rather than to innovate (Lukas and Ferrell 2000); (3) competitive intensity, which stimulates innovativeness but reduces performance (Szymanski, Kroff, and Troy 2007); and (4) environmental uncertainty, which forces firms to innovate but negatively affects performance (DeSarbo et al. 2005). The following omitted variables could lead to a positive bias: (1) interfunctional coordination, which creates an environment conducive to innovativeness while enhancing performance (Han, Kim, and Srivastava 1998), and (2) learning orientation, which increases firm innovativeness and leads to superior performance (Baker and Sinkula 1999). We provide the correlation matrix of omitted variables, innovativeness, market position, financial position, and firm value in Table 7.

As Table 7 shows, the correlation between innovativeness and market position is .14 ($p < .05$). The partial correlation between these two variables, after controlling for the variance shared with the omitted variables, is .12, which is not statistically different from .14 ($p > .05$). Similarly, the correlation between innovativeness and financial position is .14 ($p < .05$), and the partial correlation is .15, which is not statistically different from .14. Finally, the correlation between innovativeness and firm value is .16 ($p < .05$); the partial correlation (.12) is not statistically different ($p > .05$). Then, we used the correlation matrix in Table 7 as input to regress the omitted variables on our three performance outcomes. None of the individual regression coefficients was significant. Furthermore, the market position ($F_{6, 152} = 1.25$, $p > .05$, $R^2 = .05$), financial position ($F_{5, 134} = .63$, $p > .05$, $R^2 = .02$), and firm value models ($F_{4, 72} = .63$, $p > .05$, $R^2 = .02$) were not significant. Thus, we conclude that omitted variables have negligible effects on our results.

Discussion

Theoretical Implications

Our study provides critical insights into the complex network of relationships involving firm innovativeness, market

TABLE 5
Results of Robustness Analysis

	Initial Model	
	Path Coefficient	t-Value
Innovativeness–market position	.08	6.00**
Market position–financial position	.16	11.82**
Financial position–firm value	.29	22.58**
Innovativeness–financial position	.11	7.93**
Innovativeness–firm value	.09	7.26**
Control Variables		
Advertising intensity–market position	.05	3.99**
Product diversification–market position	.08	5.78**
Firm age–market position	.11	8.36**
Intangible factors–market position	.10	7.65**
Competitive intensity–market position	.04	2.96**
Advertising intensity–financial position	.04	3.19**
Product diversification–financial position	–.03	–1.86*
Firm age–financial position	–.03	–2.31*
Intangible factors–financial position	.09	6.60**
Competitive intensity–financial position	–.05	–3.50**
Advertising intensity–firm value	.06	5.00**
χ^2 (d.f.)	51.86** (5)	
RMSEA	.04	
NFI	.98	
CFI	.98	
AGFI	.98	
RMSR	.01	

*$p < .05$.
**$p < .01$.
Notes: Error variances for each construct indicator were fixed at zero, and we used the harmonic mean (n = 5441) for estimation purposes (Viswesvaran and Ones 1995).

position, financial position, and firm value. Analyzing data obtained from 159 independent samples reported in 153 studies (N = 36,816 firms), we demonstrate that innovativeness leads to firm value through three different paths after controlling for the effects of several critical factors. In addition to the traditional innovativeness → market position → financial position → firm value path emphasized in the chain-of-effects model (Rust et al. 2004), we find that innovativeness directly influences financial position, which in turn increases firm value. Most important, we find support for a direct link between innovativeness and firm value that goes beyond its indirect effects through market and financial positions. The path analysis reveals that the total effect of innovativeness on firm value is .15, but only 24% of this total effect is captured by market and financial positions (i.e., .03). Thus, short-term, backward-looking performance metrics seem to only partially influence investors' evaluation of innovativeness; investors value innovativeness largely because of its unique potential to ensure future cash flows.

Notably, we report evidence of a possible cause-effect relationship between innovativeness and performance, in that we replicate our findings when we consider only studies in which the causal variable of interest (i.e., innovativeness) temporarily precedes the affected variable in time (i.e., performance). Importantly, our study also investigates the extent to which reverse causality affects our results. The possibility of an alternative causal path from prior performance to innovativeness is worthy of consideration because the incumbent's curse predicts that successful firms become less innovative due to inertia, which results from superior performance (see Chandy and Tellis 2000). We find that

TABLE 6
Moderators of the Effects of Innovativeness on Firm Performance

	Overall Performance Estimates	Market Position Estimates	Financial Position Estimates	Firm Value Estimates
Constant	–.03 (.10)*	–.23 (.21)	–.38 (.12)**	.36 (.08)**
Firm value versus market position (H_1)	.10 (.03)**	—	—	—
Financial position versus market position (H_1)	–.01 (.03)	—	—	—
Large (vs. small) firms ($H_{2a,b,c}$)	.09 (.04)*	.13 (.07)*	.09 (.04)*	–.21 (.08)**
Advertising intensity ($H_{3a,b,c}$)	.24 (.07)**	.27 (.12)*	.04 (.02)*	.36 (.10)**
High-tech (vs. low-tech) firms ($H_{4a,b,c}$)	.11 (.05)**	.19 (.08)*	.16 (.06)*	–.33 (.09)**
Western versus non-Western countries ($H_{5a,b}$)	.14 (.05)**	.25 (.10)**	.07 (.06)	—
Innovativeness outputs (vs. inputs) ($H_{6a,b,c}$)	.13 (.04)*	.14 (.07)**	.22 (.06)**	–.13 (.05)*
Innovativeness culture (vs. outputs) ($H_{7a,b,c}$)	.14 (.06)*	.14 (.10)	.16 (.08)*	.12 (.05)*
Radical (vs. incremental) innovations ($H_{8a,b,c}$)	.18 (.06)**	.24 (.12)*	.14 (.06)*	.22 (.07)**
Objective (vs. subjective) innovativeness measures	–.04 (.05)	–.02 (.09)	–.11 (.06)	–.08 (.08)
Objective (vs. subjective) performance measures	.04 (.08)	–.03 (.12)	.10 (.07)	—
Manufacturing (vs. service) industry	–.02 (.07)	–.17 (.10)	.08 (.07)	–.08 (.06)
Marketing (vs. management) outlet	–.06 (.04)	–.10 (.08)	.04 (.05)	–.15 (.08)
Marketing (vs. international business) outlet	–.02 (.05)	–.04 (.09)	.02 (.06)	–.05 (.09)
Year of publication	.03 (.04)	–.01 (.03)	.02 (.04)	.03 (.08)
Number of effects	376	159	140	77
Number of studies	153	86	77	36
Wald χ^2 (d.f.)	63.85 (15)***	36.84 (13)***	39.10 (13)***	45.71 (11)***

*$p < .05$.
**$p < .01$.
Notes: Standard errors are reported in parenthesis.

TABLE 7
Correlations Among Omitted Variables, Innovativeness, and Performance

	1	2	3	4	5	6	7	8	9
1. Customer orientation	1.00								
2. Competitor orientation	.46	1.00							
3. Interfunctional coordination	.54	.53	1.00						
4. Learning orientation	.51	.45	.52	1.00					
5. Environmental uncertainty	.21	.21	.32	.10	1.00				
6. Competitive intensity	.28	.32	.18	–.03	.23	1.00			
7. Innovativeness	.38	.35	.21	.01	.15	.01	1.00		
8. Market position	.08	.09	.15	.08	.04	–.02	.14	1.00	
9. Financial position	.11	.04	.16	.17	N.A.[a]	–.09	.14	.17	1.00
10. Firm value	.02	.16	N.A.[a]	N.A.[a]	.03	–.02	.16	.12	.31

[a]N.A. = not applicable. We do not report these correlations, because only one study in our database reports those correlations. We excluded these variables from the corresponding analyses.

prior level of performance influences subsequent innovativeness, but in a positive rather than a negative way. Thus, innovativeness works as a mechanism through which the rich get richer and not as a depressing mechanism, as the incumbent's curse would suggest.

In this study, we also investigate the contingent nature of the relationships between firm innovativeness and various performance outcomes. We demonstrate that the conflicting findings in the literature can be attributed to the diversity of research contexts and conceptualizations of firm innovativeness employed in original studies. We uncover five factors that moderate these relationships: (1) firm size, (2) advertising intensity, (3) high-tech versus low-tech industry, (4) Western vs. non-Western countries, and (5) conceptualization of innovativeness (i.e., inputs vs. outputs vs. culture, radical vs. incremental innovations). Importantly, we demonstrate that the moderating effects of these factors vary by type of performance. As such, we identify a sixth, overarching condition that helps clarify some critical debates in the innovation literature. For example, with regard to the real locus of performance advantages generated by innovativeness, our study reveals that a process view is better equipped than a product view to explain the effects of innovativeness on financial position and firm value, but both perspectives are equivalently valuable in explaining how innovativeness influences market position. In addition, we show that while larger firms appropriate greater returns in terms of market and financial positions, smaller firms are in a better position to reap the benefits of their innovative efforts in stock markets. In so doing, we also shed light on the role of firm size, a long-debated issue in the innovation literature.

Our meta-analysis also confirms that radical innovations consistently generate more positive performance outcomes than incremental innovations. Given the considerable debate on this issue (e.g., Sorescu and Spanjol 2008; Szymanski, Kroff, and Troy 2007), we conducted additional analyses to investigate whether radical innovations have even stronger effects on market position, financial position, and firm value for firms with high advertising intensity. Advertising should help consumers and investors realize the benefits of radical innovations while reducing the associated risks. Accordingly, in Equations 2–4, we added the interaction between radical versus incremental innovation and high versus low advertising intensity. We found a positive interaction effect between radical versus incremental innovations and advertising intensity on market position and firm value ($\beta = 6.4$, $p < .01$; $\delta = 1.78$, $p < .01$, respectively) but no significant interaction effect on financial position. Similarly, we tested for the interaction effects between radical versus incremental innovation and high-tech versus low-tech industries. Because radical innovations are relatively rare in low-tech industries (Szymanski, Kroff, and Troy 2007), we expect that they would have an even greater impact on performance in low-tech industries because consumers and investors are not used to seeing them in these industries.[4] The interaction effects were not significant, suggesting that radical innovations have positive performance implications, regardless of the level of technology of the industry.

To further enhance understanding of the combinations of conditions that affect the innovativeness–performance relationship, we also focused on the patterns of the contexts under which innovativeness has the most negative effects on performance outcomes. A content analysis of this subset of studies indicated that the following combinations of conditions limit the effectiveness of innovativeness on performance outcomes: (1) small firms and low advertising expenditures for market position; (2) innovativeness inputs, high-tech industries, and Western countries for financial position; and (3) large firms and high-tech industries for firm value. The results of this qualitative investigation illustrate that there is no single study characteristic and/or factor responsible for the negative results and that each performance outcome is determined by a combination of different conditions.

Finally, this study reveals that investors are more concerned with innovativeness inputs and culture, which enable a firm to constantly introduce new products over time, than with a firm's innovation action at one specific point in time (i.e., outputs). In contrast, outputs have stronger effects on market and financial positions. Because market and financial positions are less influenced by inputs than outputs, market and financial positions only partially capture the value that innovativeness inputs generate for investors. This contributes to the explanation of why there

[4]We thank an anonymous reviewer for suggesting these two interaction effects.

is a direct link between innovativeness and firm value that goes beyond its effects through market position and financial position. In addition, our meta-analysis suggests that investors view firms with an innovative culture as capable of creating superior competencies, which the firm alone can exploit (McGrath et al. 1996). Thus, we conclude that innovativeness directly changes investors' perceptions of firm value, beyond the temporary performance gains of new product introductions, by reassuring investors that innovative firms are able to maintain stable cash flows over time.

Managerial Implications

This study provides four relevant implications for managers. First, managers should be cognizant of the total impact of innovativeness on firm value rather than focusing on its impact on sales, profits, or stock returns. Importantly, we find that the direct impact of innovativeness on firm value is stronger than its impact through market and financial positions. The literature indicates that managers might be reluctant to invest in innovativeness because they fear that they may no longer be affiliated with the company when their investments finally turn into products that are introduced in the marketplace. Excessive managerial focus on short-term performance has been frequently cited as the main cause of firms' poor innovativeness (Rajagopalan 1997). Our study suggests that this fear is somewhat groundless: Stock markets are capable of recognizing innovative efforts and reward them even before the commercialization stage of new products. To the extent that managers' salaries largely depend on stock performance, investing in innovativeness inputs and culture appears to be a viable strategy for managers to increase their own wealth. Furthermore, marketing executives can use the findings of this meta-analysis to stress the multifaceted role of innovativeness to justify to board members and chief executive officers that innovativeness pays off in both the short and long run. Our study shows that even though developing and maintaining high levels of innovativeness in a firm might appear to be a costly activity, it does generate revenues beyond the costs involved in its implementation. Therefore, using the evidence presented in our study, managers can argue that innovativeness not only enables a firm to increase its revenues and market share but also leads to the development of internal capabilities that help firms reduce the costs of operations (Geroski, Machin, and Van Reenen 1993; McGrath et al. 1996).

Second, we reveal that the firms that extract the highest gains from innovativeness in the stock market are not necessarily the same firms that benefit the most in terms of market or financial position. As such, the findings based on moderator analyses provide useful managerial insights pertaining to *which* firms gain the most from innovativeness and *what* type of innovativeness enable firms to do so. Our research shows that managers of small firms competing in low-tech industries with small advertising budgets have a natural disadvantage in leveraging innovativeness to improve their market and financial positions. These managers can partially make up for their firms' disadvantage in the marketplace by introducing radically new products, especially in Western countries. Another way to overcome this shortcoming is to take advantage of investors highly valuing the innovativeness of these firms. Our research indicates that managers of innovative, small firms in low-tech industries can still receive investor support despite poor revenues and profits in the marketplace. We suggest that these managers may choose to raise the capital necessary to support their innovative efforts through initial public offerings and overcome their disadvantage in the marketplace. Conversely, our study indicates that managers of large firms in high-tech industries have a natural disadvantage in leveraging innovativeness to directly increase their firm value in the stock market. These managers have two options to overcome this challenge. They may design communication campaigns for the investor community to emphasize the aspects of innovativeness that investors particularly value: inputs and culture, rather than specific product introductions. Alternatively, they can work through the chain-of-effects path and draw attention to how well their innovative efforts pay off in terms of market and financial position.

Third, another notable finding is related to the positive effects of prior firm value on subsequent innovativeness levels. Research has indicated that 51% of firms reduce their innovation budgets as a result of past increases in stock returns (Chakravarty and Grewal 2011). Managers adopt such myopic behavior in an effort to avoid unexpected earning shortfalls in the immediate future. However, our meta-analysis indicates that firm value positively influences firm innovativeness, which in turn increases firm value. This suggests that because innovativeness works as a mechanism through which the rich get richer, managers should refrain from engaging in myopic behaviors and focus on the long-term implications of their budgetary decisions.

Fourth, this meta-analysis provides implications for managers involved in introducing new products across countries. In our study, firms operating in Western countries report a stronger relationship between innovativeness and market position than firms in non-Western countries. Managers operating in non-Western countries should recognize that consumers in these contexts are more reluctant to buy novel products because consumers do not want to appear different from others because they are more collectivist, value change less than consumers in Western countries, and are more long-term oriented. In efforts to address these issues, managers should take additional care to develop launch campaigns specifically addressed to reduce the sense of independence, uniqueness, and change often associated with innovations.

Limitations and Directions for Further Research

Despite its contributions, this study has several limitations that should be borne in mind when interpreting the findings. First, any meta-analysis is constrained by the nature and scope of the original studies on which it is based (Hunter and Schmidt 1990). For example, meta-analysts are limited in their ability to code studies because of the often-limited description of research settings in original articles. Thus, our study was limited to examining the effects of variables that were available in existing studies. Another important

concern is that the relationships reported in the original studies may be positively biased because of oversampling of successful firms; firms that fail to be innovative have likely exited the market and are not captured by the studies in our sample. Finally, we used only studies whose results could be converted to correlation coefficients, which limited our sample size.

The ultimate goal of a good meta-analysis is to provide guidance to scholars about how to design the next study to optimize knowledge development (Farley, Lehmann, and Mann 1998). On the basis of the findings and limitations of our meta-analysis, we identify several directions for further research in the innovation field. First, the marketing literature has recently explored risk and stock volatility as a measure of investor response. Sorescu and Spanjol (2008) show that radical innovations increase not only firm value but also firm risk, which could jeopardize the welfare of other stakeholders and consumers. Due to data limitations, we could not examine the risk implications of firm innovativeness. More research seems to be warranted to develop a comprehensive model of the impact of innovativeness on firm risk. Specifically, future studies should focus on the role of systematic and idiosyncratic risk in the chain-of-effects model that links innovativeness to firm value. In addition, further research should analyze the effects of different conceptualizations of innovativeness on systematic and idiosyncratic firm risk.

Second, much of the research that investigates the impact of innovativeness on firm value has been conducted in Western countries. However, we have limited knowledge about the effects of firm innovativeness on performance in different national and cultural contexts. Research indicates that a firm's ability to successfully commercialize a new product depends not only on its own capabilities but also on a wide range of factors in its broader national context (Spencer 2003). Thus, further research should provide a better understanding of the role of national context in the firm innovativeness–performance relationship with a special focus on how innovativeness creates firm value in developing economies.

A third critical issue that has attracted limited attention in the marketing literature involves the differences between investor and consumer responses to marketing actions (Hanssens, Rust, and Srivastava 2009; Srinivasan and Hanssens 2009). Specifically, consumers and investors rely on different signals and adopt different time orientations when evaluating a firm's marketing actions (Mizik and Jacobson 2003; Pauwels et al. 2004). The possibility that these two groups reward marketing actions, such as innovativeness, in different ways represents a serious challenge for managers and researchers because there may be a trade-off between the objective of maximizing performance from a consumer perspective and the objective of maximizing firm value from investors' perspective (Martin 2010). Therefore, further research that focuses on how these differences affect consumers' and investors' evaluations of firm innovativeness deserves special attention.

Finally, the innovation literature would benefit from taking a broader, multilevel perspective in understanding the effects of innovativeness on firm performance by focusing on broader outcomes than those simply associated with economic valuation (by shareholders, managers, or customers), such as sustainability or general social welfare. Moreover, while the current focus in the innovation literature is on the external consequences of innovativeness, it is important to note that innovativeness may affect several internal organizational factors, which in turn may influence market position, financial position, and firm value. Further research should investigate the mediating role of the internal factors—such as formalization, centralization, cross-functional integration, pride among employees, organizational commitment, and identification—in the relationships involving firm innovativeness and market position, financial position, and firm value.

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