Product Portfolio and Brand Extension Effects of Innovation:

A Diversification Perspective on Innovation’s Ability to Achieve New Value

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Dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Business Administration in the Graduate School of Duke University

2010
ABSTRACT

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Abstract

Organizational researchers have long considered innovation a critical activity. While insightful regarding the nature of the innovation process and the rewards and risk associated with innovation, prior work has neglected the perspective that innovations function within a firm’s wider product portfolio. This perspective enables assessment of when innovations truly generate new value for firms and the mechanisms through which it does so. I propose a general theory for how innovation creates new value for a firm and apply this theory to understanding how new value from innovation is reflected in the changes it manifests in the diversity of a firm’s product portfolio.

This dissertation addresses these issues by examining how innovations drive two types of changes in the firm’s portfolio – product portfolio and within-brand portfolio diversification - and how those changes influence the new value firms will capture. The empirical analysis of this framework seems to indicate that both innovations in general and brand extensions achieve value through individual mechanisms (e.g., demand) and portfolio mechanisms (e.g., leverage and cannibalization).

The importance of this topic lies in both theory and practice. Theoretically, this work sheds light on the degree to which innovation value is a function of the value accrued to the innovation itself and its interdependency with the firm’s overall product and brand portfolios. Practically, understanding how the new value from innovation incorporates the effect of the innovation on the firm’s portfolio enables firms to grasp how decisions they make regarding innovation influences their expected success.
Dedication

This dissertation is dedicated to my husband, Ben, and my daughter, Sloane, without whose unconditional love, support and endless smiles and laughter it would not have been possible and to my family and friends, especially my mother, Helen, who would never let me give up on my goals no matter how hard the road seemed.
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1. Introduction

Research in marketing has long considered innovation a critical activity for the firm. While this work has provided tremendous insight into the nature of the innovation process and the rewards and risk associated with innovation, this work has neglected the perspective that innovations function within a firm’s wider product portfolio. This broader perspective is important as it enables us to determine when innovations are truly generating value for firms and the mechanisms through which they do so. In this dissertation, I propose a general theory of how innovation creates new value for a firm – i.e., value that more than simply maintains a firm’s existing position – and apply this theory to understanding how new value from innovation is reflected in the changes it manifests in the diversity of a firm’s product portfolio.

Innovation can be considered the “generation, acceptance and implementation of new ideas, processes, products or services” (Thompson 1965, p. 36) or, alternatively, “an idea, practice or material artifact perceived as new by the relevant unit of adoption” (Zaltman, Duncan and Holbek 1973, p. 2). The key notion of innovation is that it consists of something new, which is then perceived as valuable to adopters. Newness and value imply that innovative introductions must bring “novel and significant consumer benefits to the market” (Sorescu and Spanjol 2008, p. 115). In the context of this paper, we define innovation, consistent with the conventional marketing definition of innovation, as “new product-related breakthroughs” (Han, Kim and Srivastava 1998, p. 32). Thus, innovation represents product introductions that are more likely, but not always, to
generate economic rents (Sorescu and Spanjol 2008) which represent the generation of incremental cash flows for the firm.

As such, innovation has been generally perceived as the way for firms to obtain organic growth and create value for the firm. In fact, Drucker (1973) discusses innovation and marketing as two crucial factors to long-term corporate health. However, innovation is not without risk. New-product failure rates are high (ranging from 33% to over 60%) (Boulding, Morgan and Staelin 1997; Sivadas and Dwyer 2000). Cooper (2005) cites the high costs and risks involved with new products as primary reasons for the decline of both new-to-the-world (-44%) and new-to-the-company (-30%) innovations between 1990 and 2004. The goal of innovation presumably is to capture value above and beyond the risks associated with the innovation. Hence, the key problem the manager must solve is how to create innovations and still acknowledge this risk-reward tradeoff.

Most of the marketing literature examines how product markets respond to innovation (see Hauser, Tellis and Griffin 2006 for a review). We know that a variety of factors influence the adoption and diffusion of innovation in the marketplace including the characteristics of the innovations themselves and the consumers in a market (e.g., Rogers 1995; Gatignon and Robertson 1985, 1991) as well as the aggregate characteristics of the diffusion process (e.g., Bass 1969; see Mahajan, Muller and Bass 1990 for a recent review). We know that the competitive market environment is shaped by innovation in a variety of ways including the influence of entry strategies (VanderWerf and Mahon 1997), ability to appropriate rents from innovation (e.g., Levin et al. 1987), and
competitor response to innovation (Purohit 1994; Bowman and Gatignon 1996). We also know that firms gain experience in managing products and innovation and that this experience can assist the firm in introducing more effective innovations more efficiently in the marketplace (e.g., Henard and Szymanski 2001). Overall, this literature has provided insight into how firms develop innovation capabilities in order to introduce products that create value for consumers that can also be protected from competitors (i.e., the firm, rather than competitors, can appropriate the generated value).

From a financial markets perspective, we know that financial markets react to the introduction of innovations (e.g., Sorescu et al. 2003; Sorescu and Spanjol 2008; Pauwels et al. 2004, Srinivasan et al. 2009). Specifically, firms can generate positive returns by preannouncing innovations (Sorescu et al. 2007) and by communicating information about each stage of the innovation process (Sood and Tellis 2009). Financial markets also tend to offer greater rewards to breakthrough innovations relative to incremental introductions (e.g., Sorescu and Spanjol 2008, Srinivasan et al 2009) and consider both the characteristics of the innovation and the firm’s capabilities when evaluating innovation potential (e.g., Sorescu et al. 2003). This research provides insight into whether or not investors find the firm’s ability to both create and appropriate the value from an innovation informative in predicting the future cash flows of the firm.

Despite these important contributions, this prior research neglects an important issue regarding innovation. This issue is that the true value of innovation is more complex than simply creating a single product that consumers value and then appropriating that value relative to competitors – instead the firm’s entire product
portfolio must also be considered. This portfolio perspective is necessary given that for an innovation to truly have an impact on the firm, the value that a firm creates and appropriates must be new, rather than replacement, value. Consider, for example, a firm which introduces an innovation that is successful but whose revenue is generated completely by cannibalizing prior products or simply replaces obsolete products. While the innovation produces positive cash flow for the firm from the individual innovation’s perspective, the revenue stream is only replacing the cash flow produced by the cannibalized or obsolete products in the firm’s portfolio. Such an innovation does not create new value for the firm. On the other hand, innovations may create positive new value by complementing (rather than cannibalizing) the existing portfolio or negative new value by not only failing, but also by casting the remaining products in the portfolio in a negative light.

Thus, we define new value as the net improvement (reduction) in the future cash flows of the firm beyond the firm’s current cash flow estimates. This definition thus incorporates the firm’s ability to create and to appropriate incremental value from innovation and will be discussed in further depth from both a conceptual and measurement perspective in Chapter 2. The insight derived from developing and examining a portfolio theory of innovation’s ability to create new value is that this value is a function how an innovation modifies the cash flows of the firm’s portfolio. This modification itself is a function of both the nature of the individual innovation and the degree to which that innovation enables the firm’s portfolio to appreciate in value over time.
As implied above, to then assess the degree to which firms capture new value from innovation, one must go beyond the innovation’s direct effect on cash flows and consider the interaction of the individual innovation with the firm’s overall product portfolio. Examining this broader perspective is important for several reasons. First, research has suggested that ignoring the interdependencies associated with the firm’s portfolio of products may result in inaccurate estimates of a given product effect’s on the level of risk and return in a firm’s expected future cash flows (e.g., Devinney, Stewart and Shocker 1985). Second, ignoring the portfolio effects involved with innovation neglects to account for potential cannibalization of a firm’s products, which, at its extreme, can lead to an innovation only replacing current revenues rather than creating new, incremental revenues or value for the firm. Finally, firms can leverage their existing innovation portfolio to enhance the returns and/or lower the risk of any new innovation (Cooper 2005; Devinney, Stewart and Shocker 1985) as well as a platform for entering new categories or markets in the future.

Thus, independent of the individual product’s characteristics, any understanding of whether or not an innovation creates new value (e.g., new incremental cash flows) for the firm should incorporate how a given introduction changes the nature of a firm’s portfolio. For example, research suggests that firms must strike a balance between exploiting its current knowledge base and exploring new opportunities (Atuahene-Gima 2005; Bordley 2003; March 1991). This would indicate that changes in the firm’s ability to capture new value in the future would also incorporate the degree to which the innovation adjusts the diversity of a given portfolio. Using prior research on corporate,
financial, and product portfolio diversification, we examine the degree to which diversification changes drive these changes in expected new value.

Finally, approaching the creation of new value of innovation via the product portfolio enables us to assess how innovation’s ability to create value for the firm is, in and of itself, a function of a multitude of factors including firm knowledge or experience, consumer adoption and competitor protection. Prior research has generally focused on one or two properties of innovation when assessing its outcomes. We know from theories about the effect of innovation on product markets that there are many types of information available about innovation (e.g., Henard and Szymanski 2001, Montoya-Weiss and Calantone 1994, Srinivasan et al. 2009, Chaney et al. 1991, Sorescu et al. 2003, VanderWerf and Mahon 1997, Kleinschmidt and Cooper 1991). For example, in their meta-analysis, Henard and Szymanski (2001) find that a firm’s experience in product categories or markets is a critical factor in explaining innovation success. However, many studies evaluating the rewards to individual innovations fail to consider these types of information simultaneously. Conceptually, these different pieces of information can offer insight regarding the potential risks and rewards associated with the future cash flows related to a specific innovation. Furthermore, statistically, if these elements are correlated, then neglecting to incorporate them leads to biased estimates due to omitted variables.

This dissertation addresses these portfolio issues by examining how innovation introductions drive two types of changes – product portfolio diversification and within-brand portfolio diversification - in the firm’s product portfolio and how those changes
influence the expected new value firms will capture. Product portfolio diversification refers to the extent to which a firm markets goods in multiple product categories. In other words, how are the products that a firm sells distributed across a series of product categories? Within-brand portfolio diversification refers to the same concept but is limited within the scope of a specific brand. In both cases, diversification is defined as the distribution of products across a series of markets or categories in which the firm participates and thus is an index-based concept. Consequently, any change in the distribution of products across these markets at the product portfolio or within-brand level results in a change in the diversification level of the firm.\(^1\)

In addition, we examine the degree to which these outcomes are contingent upon the characteristics of the innovation itself. In the case of the product portfolio, we examine the influence of characteristics such as competitor protection and consumer adoption uncertainty. Regarding within-brand portfolios, we examine moderators such as the fit between the parent brand and extension and the risk of parent brand dilution from the extension. In doing so, we examine how new value from innovation changes as a function of both an innovative introduction and that introduction’s effect on the broader portfolio of the firm (see Figure 1). Thus, we address the inherent

\(^1\) While we will address the measurement of diversification in Chapters 2 and 4, it is relevant to note here that our conceptual view of diversification results in an index-based measure that captures the breadth of the firm’s product lines or brands. This index-based measure will capture two types of diversification that result in the re-distribution of products in the firm-wide product portfolio or within-brand portfolios. First, firms can increase diversification by “balancing” their existing product markets (e.g., moving from a 80/20 percent distribution to a 60/40 percent distribution across two categories) or, second, by introducing products in a new market (e.g., moving from a 100 percent distribution all in one category to a 80/20 distribution across two categories).
interdependencies in managing innovations while still capturing the influence of individual innovation characteristics.

In this essay, we first examine the effects of innovation on the diversification of a firm’s product portfolio and the new value associated with these changes. This research is founded in the product portfolio management and strategic corporate diversification literature which generally show that, by expanding their product portfolio into categories or industries related to, but not necessarily overlapping with, core areas of expertise, firms improve the probability with which they will not be left behind by shifts in markets and/or technology (Christensen and Bower 1996; Zook and Allen 2003). Regarding this topic, we seek to answer the following questions: (1) to what degree does intra-industry product diversification enable the firm to capture new value from innovation and (2) to what degree is this diversification benefit contingent upon the nature of the innovation driving the changes in portfolio diversification?

![Figure 1: Innovation – New Value Framework](image)
In examining these questions, we find that new value from innovation increases as the diversification of the portfolio increases, but predominantly for firms who are relatively undiversified. In addition, the increase in diversification must be of a certain magnitude to have measurable impact. For firms undertaking such diversification changes, the benefits to increasing diversification diminish up to a certain point before increasing again. Furthermore, firms with recent successful performance or entering more competitive markets benefit more from diversification than firms with recent failure or those entering less competitive markets. Finally, greater uncertainty regarding the diffusion of the innovation itself reduces the benefits to using the innovation to increase portfolio diversification.

Second, we examine the diversification of the firm’s portfolio for a given brand and how it changes as a function of an innovative brand extension. The question of consumer evaluations of brand extensions has been of great interest in prior research in marketing; however, few researchers have tackled the new value aspect of these extensions, particularly within the context of the financial markets (see Lane and Jacobson 1995 for an exception). Given brands are accepted to be of the great value to firms and that firms frequently use brands as a platform for growth (Keller and Lehmann 2006; Volckner and Sattler 2006), the amount of new value from innovative extensions within a given brand family should offer important information about the wisdom of pursuing a brand extension. Here, we examine the following questions: (1) under what conditions do changes in within-brand portfolio diversity result in new
value and (2) to what degree do contingencies in these outcomes reflect the traditional mechanisms through which consumers evaluate brand extensions?

To examine these questions, we will analyze not only the direct effect of changes in the diversification of a given brand on new value due to innovative introductions, but also how those changes are moderated by the relationship between the brand extension and the brand itself. Specifically, we examine how the “fit” of the extension with the brand, the type of extension (line or category extension), the brand’s power, and the potential of the extension to dilute the brand affect the degree to which brand diversification is rewarded.

By examining both the product portfolio and the within-brand portfolio, we are able to examine the effect of changes in each on an innovation’s ability to generate new value. The importance of this topic lies in both theory and practice. First, theoretically, this work sheds light on the degree to which the new value firms acquire from innovation is a function of both the value accrued to the innovation itself and its interdependency with the firm’s overall product and brand portfolios. While work by Sorescu et al. (2003) has implied that that a firm’s scope of knowledge is relevant for capturing value from an innovation, such research has ignored the idea that the introduction of an innovation fundamentally changes the structure of a firm’s portfolio. By examining how the innovation changes the diversity of a portfolio, we can account for the fact that the new value generated by an innovation includes its ability to enable new value creation for the entire portfolio. In addition, an understanding of the different moderating effects on the returns to innovation may explain the high variability in the
returns to innovation (O’Brien 2003, Cho and Pucik 2002, Pauwels et al. 2004, Kelm et al. 1995, Sood and Tellis 2009) and also some of the conflicting results from the product portfolio diversification literature. Furthermore, it offers one of the only tests of new value outcomes to expanding or contracting the focus of a within-brand portfolio. Practically, understanding how the new value from innovation incorporates the effect of the innovation on the firm’s portfolio enables firms to grasp how decisions they make regarding innovation pipelines and in managing their overall portfolio influences their expected success. Such information is useful to firms in making not only product planning decisions (e.g., when and what types of products to introduce), but also in making strategic decisions (e.g., to diversify or refocus).

In summary, understanding the relationship between an innovation and the portfolio in which it resides is critical to developing our understanding of the benefits and risk of innovation. However, this topic has received little consideration in the past. To address this topic, the rest of the dissertation is organized as follows. Chapter 2 discusses the concept and measurement of new value. Chapter 3 provides the theoretical foundation for our hypotheses regarding innovation introductions, portfolio effects and new value of the firm. Chapter 4 details our data sample, analysis methodology and a proposed survey. Chapter 5 discusses the results of our analysis. Chapter 6 provides a general discussion of the results and offers theoretical and practical conclusions from this research.
2. New Value – A Conceptual and Measurement Perspective of Innovation Outcomes

As discussed in the introduction, this dissertation is fundamentally concerned with connecting innovation to the firm’s ability to grow by creating and appropriating value in the future. Thus, in line with Drucker (1973) and Day (2007), innovation is not just about maintaining value, but also about achieving growth as well. As mentioned previously, we term the value acquired by creating and appropriating incremental value (positive or negative) as new value. In general, creating and appropriating any value from innovation is an important concept to marketers because it represents the firm’s ability both to invent new ways of doing things (Porter 1980; Schumpeter 1934) and to protect and leverage the cash flow outcomes from these innovations (Jacobides et al. 2006; Teece 1986). As noted by Mizik and Jacobson (2003, p. 64), “Value creation influences the potential magnitude of the advantage; value appropriation influences the amount of the advantage the firm is able to capture and the length of time the advantage persists. Because firm value depends on both the magnitude and the persistence of advantage, both processes influence financial performance.”

2.1 A Conceptual Perspective on New Value

New value can be considered even more critical, conceptually, as it represents the firm’s ability to improve, not just potentially replicate, its current cash flows over the long-term. This is consistent with Drucker (1973) and Schumpeter’s (1942) assessment that innovation is a critical component of a firm’s survival.
To demonstrate how innovation may create new value, consider new value from an innovation as being represented by the following formula:

\[
(1) \quad NV = f(\Delta D, \Delta P, \Delta C, L, X)
\]

where NV = new value, \(\Delta D\) = change in demand, \(\Delta P\) = change in price, \(\Delta C\) = change in cost, \(L\) = leverage and \(X\) = cannibalization.

Equation (1) is helpful for two reasons. First, using this equation, we can assess the distinct mechanisms underlying the generation of new value from innovation. Thus, as a way of framing the logic, this formula is an effective device for structuring the discussion of the effects of innovation and diversification on the ability of firms to create new value. This is necessary given that innovation and diversification are very complex phenomena which exhibit a variety of both positive and negative outcomes. Furthermore, these positive and negative outcomes are frequently contingent upon firm and product-specific characteristics as will be shown in our discussion of moderators of diversification’s influence on new value through innovation. Consequently, an organizing framework is useful to distinguish between what mechanisms may be moving at any point in time.

I need to be clear that this dissertation does not propose to measure demand, price, cost, leverage and cannibalization and analyze their independent effects on new value. Indeed, many of these mechanisms are effectively interdependent, a fact that will become evident as we discuss the influence of innovation and diversification on new value in Chapter 3. Instead, this dissertation examines the firm, product and portfolio-
based factors whose influence on new value is manifested through such mechanisms. To the extent that we have factors that influence overlapping mechanisms, we may be able to assess the story underlying the relationship between the mechanisms noted in Equation (1) and new value. However, such findings are not the focus on this dissertation.

Second, as further discussed in Section 2.2, this equation is useful in understanding why innovation and changes in diversification can cause a variety of new value outcomes even if many of the underlying components (e.g., firm experience, brand name, magnitude of diversification change, etc.) are the same. To clarify how this occurs, we must first define the relationship between the drivers shown in Equation (1) and new value.

Recall from the previous section that new value is defined as the incremental value acquired by the firm from the introduction of an innovation. The first term, change in demand (ΔD), represents the innovation’s ability to obtain demand that is above and beyond what the firm currently receives. Note that the use of the word “obtain” implies both that the demand change has been created (either by entering a new market in which no competition exists or entering a market and obtaining customers to the detriment of competitors) and acquired by the firm. Similarly, the profit obtained from this new demand is a function of the second term of the equation – the change in the price (ΔP), which represents the firm’s ability to charge a higher price (value appropriation) due to the incremental new value the innovation provides to consumers (value creation). To the degree that a firm can leverage economies of scale or scope to
reduce its cost structure, represented by change of cost ($\Delta C$), it can also increase the level of appropriated value for each unit of demand. Generally, the first three variables in the formula ($\Delta D, \Delta P, \Delta C$) represents the effect of the individual innovation on the incremental cash flows to the firm and thus operates as a measure of the portion of the new value *attributable to the innovation itself*.

The last two variables in the formula ($L, X$) represents what Jacobides et al. (2006) term “asset appreciation.” By appreciation, we mean that an innovation’s influence on the portfolio may enhance the firm’s future prospects by providing the firm the option to explore new opportunities in the future. This appreciation may come through the development of new capabilities and resources, or, more directly related to the introduction of innovations, how the product both leverages and cannibalizes the firm’s current product portfolio. Another perspective would be to consider this portion of new value that is directly related to positive and negative portfolio externalities resulting from the introduction of an innovation.

While this perspective would suggest that, for parsimony, we reduce the two terms to one variable representing externalities (i.e., appreciation), the following argument highlights the value of keeping the two terms separate. From a conceptual point-of-view, the concepts of leverage and cannibalization do not necessarily represent opposite ends of a continuum where a firm can only achieve high leverage if cannibalization is low. In fact, one can consider each of these terms as representing two continua which may be wholly independent of the other.
Consider the introduction of an innovation that may completely cannibalize a firm’s current product line, but also provide a new and better platform for growth into new categories in the future. This may occur, for example, when a firm extends an existing brand into a new category where another brand, also owned by the firm, already exists. If the new brand entrant provides a stronger set of associations which can translate into more distant categories and thus generate higher future revenues than the incumbent brand, the firm may indeed achieve high leverage in spite of high cannibalization. Beyond the existence of such non-compensatory outcomes, considering the two concepts as independent variables enables a clearer discussion of the mechanisms underlying each variable and their relative contribution to achieving new value through innovation. We now discuss each variable in turn.

Leveraging (L) the product portfolio means not only that a firm uses the knowledge obtained through management of its prior introductions to introduce a better product, but also that as a firm’s product portfolio changes it may become a better (or worse) platform for gaining access to new markets, creating new barriers to entry, and otherwise changing the business profile. In addition, similar to an investor managing a portfolio, we can consider a firm as leveraging a portfolio when they manage the overall risk of the portfolio by balancing the interdependencies between products. In this way, a firm attempts to ensure that the portfolio is still able to contribute value to the firm even when certain products or services may be dealing with difficult market conditions.

Cannibalization (X), on the other hand, concerns how a firm’s innovative introduction takes profits away from its current product line whether or not the
products are in the same category. Cannibalization can occur directly if a product is a direct substitute for existing products. Such cannibalization may be purposeful on the part of the firm (e.g., Chandy and Tellis 1998), but prior work indicates that firms have considerable difficulty in managing, and thus are unlikely to manage, their portfolios in such a forward-looking manner (Cooper 2005; Chandy and Tellis 1998). Cannibalization can also occur indirectly if an innovation’s failure or negative reception has a negative reciprocal impact on other products within a given brand portfolio or overall corporate portfolio.

In summary, we have discussed how the determination of the new value created from an innovation must incorporate not only the value generated by the innovation itself, but also the value created or destroyed due to the innovation’s interaction with other products in the firm’s portfolio. In the next section, we examine the possible outcomes from the introduction of innovative products and demonstrate how Equation (1) can distinguish between innovations that generate negative, null or positive effects on value as well provide a mechanism for understanding how equivalent changes in diversification may result in different new value outcomes.

2.2 New Value Outcomes from Innovation

2.2.1 New Value Generated Via Innovation

A unique contribution of using the framework in Equation (1) to evaluate innovation is that we can see that an innovation in and of itself may have a null, positive or negative effect on new value creation. We’ll examine these possibilities using examples from one of the world’s most innovative companies – Procter and Gamble.
Consider the introduction of Pringles Prints, a version of the popular potato chip that possessed information, such as trivia questions, printed directly on the chips. In this case, if we solely considered the direct impact of the innovation on the firm’s new value, we might believe its impact to be positive. In the case of this product, incremental new value may have been driven by an increase in demand albeit likely at a similar price and cost point as current Pringles products. However, this innovation appears to have cannibalized an equivalent amount of sales from its current Pringles product line, rather than drawing in new customers from other potato chip brands. Thus, the positive increase in demand is negated by the revenue cannibalization and thus the net new value created could be zero. Thus this product is a neutral innovation which has no net effect on new value. This situation is demonstrated in Figure 2 as the firm who continues along the same trajectory of cash flows from the past. Note that, from the firm’s perspective, introducing neutral innovations is rational and, in all likelihood, constitutes most innovative activity. This rationality stems from the fact that firms must engage in this
behavior to replace older products with newer ones in order to “keep up” with competitors or changing customer needs and to avoid losing its current level of cash flows. In fact, some research has shown that such innovations are critical to the firm’s survival (e.g., Banbury and Mitchell 1995). Consequently, while it can maintain value, simply innovating does not necessarily create new value for firms.

Based on the above discussion, we can conclude that innovations can generate null value for a firm. However, innovation can also enhance value. Consider the introduction of Febreze Odor Eliminating Candles, which possessed the same odor-fighting power of Febreze spray but in candle form. This product likely experienced incremental demand at a potentially higher price point. In addition, the product likely cannibalized a relatively small degree of sales from the firm’s current Febreze product line since candles and sprays are distinctly different products with different usage situations even though both offer the same benefit (odor elimination). In this case, the firm, when it launches an innovation is anticipating that its cash flows will move off their current trajectory and shift upwards. Diversifying Febreze in this way offers P&G the potential to launch Febreze into other categories or to further expand into candles, other air fresheners or other household goods categories. This synergistic effect results in potential asset (product portfolio) appreciation and increases the positive shift on the firm’s cash flow trajectory (positive innovation). This pursuit of positive innovation is also rational for firms as it generates net benefits for the firm, its customers and its shareholders.
While innovations may generate positive new value, consider, on the other hand, that innovations may also destroy value by generating negative new value. Consider an innovation that may fail dramatically, the Bounce Dryer Bar. This product is intended to be installed in a household dryer and act as a stationary fabric softener for 2-4 months. This product may generate incremental demand at a higher price (and cost) point through attracting both current Bounce customers as well as customers of Snuggle or other softeners. Similar to the neutral innovation, however, a large portion of the revenue generated likely will be obtained from its current customer base. However, the potential cannibalization goes beyond revenue replacement. Consider, for example, that the product requires a fair amount of learning on the part of the customer and may possess high variance in performance outcomes. Should the product fail or create enough negative word-of-mouth by customers, it may not only generate less revenue for the product itself, it may also create a negative perception of Bounce in general. If so, current customers may migrate to competitors, rendering the net effect of the innovation negative. This thus creates substantial negative value and shifts the firm’s trajectory downwards (negative innovation).

Introducing innovations with negative new value makes little sense from the rational profit-maximizing firm’s perspective. However, consider that individual managers may exhibit the biases of overconfidence, managerial conceit (March and Shapira 1987), and escalation of commitment (Staw 1981) that distort or cause managers to inadvertently miss important market information that would provide a clearer understanding of the true nature of the new value of the innovation. In addition, agency
conflicts may exist in the firm where managers are rewarded for undertaking behavior that may not necessarily benefit the firm (Simester and Zhang forthcoming). Such behavior may include introducing a new product or for selling units of a product, even if that demand does not outweigh costs or may harm the long-term value of the firm (Simester and Zhang forthcoming). For example, firms could introduce lower margin products that cannibalize higher margin products and thus generate negative net value for the firm. Managers within the firm, then, can still be rational in their decision-making with the presence of such biases, oversights or incentive structures and consequently negative innovations can occur.

In summary, given the presence of these different types of innovations, we can see that, when assessing whether or not an innovation results in new value for the firm, we must consider both the individual characteristics and the influence of the innovation on the portfolio. In other words, what profit does the innovation create and how does that innovation influence the ability of the firm’s asset base (e.g., the product portfolio) to appreciate over time. Hence, as noted in the introduction, any account of how innovation influences the new value achieved by the firm that ignores these interdependencies between the individual innovation and the wider product portfolio is likely to be incomplete at best (or biased at worst).

2.2.2 New Value Generated Via Diversification

In addition to providing a context for determining if an innovation generates null, positive or negative value, our formula in Equation (1) helps us understand how various diversification scenarios can generate differential new value despite equivalence
in the revenues of the firm’s current portfolio, the quality of the innovation, the
innovation’s potential market size and the magnitude of the diversification change. We
will further consider how diversification generates new value in more depth in Chapter
3. However, it is worthwhile here to understand the usefulness of our new value
formulation in assessing the various outcomes from diversification through innovation
despite common starting points.

To see how, we consider four scenarios for a hypothetical firm (see Figure 3)
where the introduced innovation equivalently adjusts the diversification of the firm’s
portfolio. First consider Scenarios 1 and 2 where we have the presence of positive
innovations. Both innovations are expected to be equally successful from a revenue
perspective ($\Delta D, \Delta P$ are the same). Both introductions are made into new markets and
thus also increase the diversification of the firm to the same degree. However, the
innovation introduced in the related category (Scenario 2) is expected to cannibalize
(X) existing sales. While this cannibalization appears to be offset by the firm’s ability to
increase the value of the portfolio (L) and the revenues may create higher margins for
the firm due to cost ($\Delta C$) reductions from economies of scope, the total amount of new
value generated by an innovation is greater with the distant introduction.

However, greater value from distant innovations may not always be the case.
Consider Scenarios 1 and 3. Both innovations are introduced in equally distant
categories thus suggesting, on average, that the costs ($\Delta C$) associated with either
product should be the same and that neither product should directly cannibalize (X) the
current product portfolio. However, one is expected to be successful while the other is
not. While these revenues ($\Delta D, \Delta P$) could be a function of a variety of firm and/or product-specific characteristics, such as parent brand strength, competitive protection, consumer adoption uncertainty, and parent brand–extension fit, this success will influence how much the firm-wide portfolio has to gain in the future ($L$) and thus the total new value created by the innovation. In addition, in Scenario 3, the failure of the innovation may indirectly cannibalize ($X$) future sales of the current product portfolio and thus creates the potential for the innovation to create negative value (e.g., become a negative rather than positive innovation).

**Figure 3: Possible Innovation and Portfolio Expected Value Scenarios**

Finally, consider Scenario 4. In this case, as long as the firm is active in more than one category, the introduction of an innovation in either category will change the
diversification of the firm’s portfolio as noted in Chapter 1. However, notice that while the innovation is expected to be as successful as in Scenarios 1 and 2 (ΔD, ΔP are the same) and assumed to have a similar cost structure as Scenario 2 (ΔC is the same), its revenue is completely driven by cannibalizing (X) other products in the portfolio and also does not improve the firm’s ability to leverage (L) the portfolio in the future. This scenario demonstrates the existence of a null innovation, albeit one that changes the diversification of the firm’s portfolio.

In summary, given that equivalent changes in diversification can cause highly differential new value outcomes, we can see that, when assessing the new value outcomes associated with innovation-driven diversification, we must consider more than simply the main effects of diversification. In other words, while prior research has generally stated that it is better for a firm to be diversified, one must also consider both how the firm diversifies (more or less related) and the firm and product-specific characteristics of the innovations that drive the diversification.

2.3 A Measurement Perspective on New Value

Based on the preceding discussion, the concept of new value makes theoretical sense, particularly in our research context. However, the measurement of new value is inherently difficult. While, theoretically, we could directly measure new value using data from individual firms, gathering such data is problematic from two perspectives. First, one cannot know the true value achieved by a firm from an innovation until many years after the launch of the innovation, if ever in fine-grained detail. Even after such data has been gathered by collecting cash flow information about the firm, it is difficult
to assess the causal relationships between the innovation introduction and new value creation. Assuming that firms do maintain specific cash flow information regarding an innovation and its product portfolio over time, it is difficult to determine the exact length of the cash flow timeframe required to assess the influence of a given innovation on the firm. In fact, these timeframes may vary by firm and by innovation. Furthermore, these cash flows are likely to be influenced by a variety of factors over time including competitor actions, macroeconomic conditions, and other product portfolio changes, a circumstance which makes it difficult to ascertain how much the changes in cash flows (new value) are due to the influence of an individual innovation.

Second, cash flows from a given innovation are likely only maintained at the product level. Inherently then, firms are only capturing the portion of new value attributable to the innovation itself. Recall that this value is represented in Eq. (1) by \((\Delta D, \Delta P, \Delta C)\). Consequently, actual firm-level cash flow data only records potentially the replacement value of innovation and not the new value it generates (destroys).

Thus, it is more appropriate to assess the firm’s beliefs or expectations regarding future cash flows at the time of an innovation’s introduction in order to incorporate the leveraging and cannibalization effects of innovation. However, we often have little or no access to the firm’s beliefs about an innovation’s success at the time of introduction. While, under the assumption of a rational, profit-maximizing firm, one must assume that the firm would not introduce an innovation if it did not believe that it had a positive effect, we still possess no concrete information on its ability to create new value.
Theoretically, we could ask managers within the firm for such information. However, doing so would require having advance knowledge of when a firm plans to introduce a given product in order to ask multiple personnel within the firm regarding their assessments of the new value an innovation will create. It is necessary to do so in order to triangulate responses to determine validity and consistency and to avoid the cognitive biases associated with retrospective opinions (e.g., Golden 1992). It is highly unlikely that researchers would be able to obtain such information regarding product introduction timing for a wide cross-section of firms and, similar to the collection of cash flows, collecting such survey-based measures would take a great deal of time and collection effort.

Given these inherent difficulties with obtaining measures of new value from internal firm resources, we must look outside of the firm for a more unbiased assessment of new value that is also capable of drawing a causal link between innovation and the incremental value it provides to the firm. Hence, we turn to the financial markets for a measure of new value.

Generally speaking, research on financial markets has concluded that the stock market is an efficient mechanism by which information about a firm is incorporated into its stock price (Fama 1998). Consequently, stock market measures have been an oft-used indicator of the firm’s future potential based upon the currently available information about the firm. In particular, abnormal stock returns, a measure driven by underlying changes in a firm’s stock price, have been a critical dependent measure in event studies researching the causal link between a given firm action and its incremental impact on
future cash flows. Fundamentally, abnormal stock returns represent the level of returns that cannot be predicted using both data on historical stock movements and current market factors. Thus, it measures the degree to which the circumstances of the firm are, for example, different today than from yesterday. More specifically, abnormal stock returns measure the unexpected or unanticipated increase or decrease in the expected future cash flows of the firm (measured via stock price) that occur due to the presence of some action by the firm.

Conceptually, then, by using abnormal stock returns, we obtain an understanding of how the new information conveyed by an innovation increases or decreases the expected future cash flows (expected new value) of the firm. In addition, we also gain some knowledge of what information investors may have already accounted for in developing their expectations for future cash flows. For example, given we know that positive firm earnings, and thus stock prices, tend to persist (Hayn 1995), investors may assume that successful firms will continue activity similar to what they’ve done in the past. In this way, positive persistence (or path dependency) may reduce the information content of any new actions and thus temper any changes in abnormal stock returns. Consequently, by using abnormal stock returns, we can assess the degree to which our event of interest – innovation – influences changes in future cash flows of the firm in a way that was unexpected or unaccounted for by the financial market.

In the context of this dissertation, abnormal stock returns are particularly relevant and useful measures of expected new value. This utility extends beyond the fact that they represent a valid proxy for new value. First, this measure overcomes the
difficulties with using other firm-based measures, such as actual cash flow and managerial perceptions or forecasts of cash flows. Not only are abnormal stock returns readily available using public data, but they also represent a relatively unbiased forward-looking measure that can be captured at the time of a given event and examined retrospectively. The relative lack of bias is driven by the fact that the expectations of new value should be consistent across the firm and the stock market perspectives. Thus, causality can be accessed directly and relatively efficiently using an external measure such as stock returns.

This issue of bias, often driven by information asymmetry, deserves more discussion. Specifically, bias can be induced either by the firm or by the financial market. Consider the matrix shown in Figure 4. On the diagonal reaching from the upper left corner down to the lower right corner, the firm and the market’s expectations are aligned. The cells on the off-diagonal represent the case where the firm is hiding negative information from the market¹ (bottom left) and where the market is misinformed regarding the firm’s actual projected cash flows (top right). Either case will be resolved naturally as the market gains further information about the firm which will

¹ Note that the “hidden firm information” and “misinformed market” bias both adopt the perspective of the market not possessing the necessary information to make an informed decision. In the “hidden firm information” case, for example, the firm is purposefully not releasing certain information or adjusting it in a way that would be perceived positively by the market (an example may be earnings management). However, these biases may also be attributable to the lack of information on the side of the firm. For example, firms may have a limited view of potential competition or an overly optimistic view of the market potential that would cause them to move forward with the innovation under the belief that it would perform well (e.g., Simester and Zhang forthcoming). Given that research typically assumes that firms possess private information unknown to the market, we take the perspective that the resolution of the off-diagonals occurs when the market gains additional information over time.
be incorporated eventually into the stock price. Consequently, assuming markets are fairly efficient (Fama 1998) and thus informed about the firm and the relevant consumer markets, it is unlikely that information asymmetry poses a severe issue in biasing abnormal stock returns. Thus this measure is a reasonable, immediate proxy for new value. Furthermore, any biases that occur are likely to be errors of magnitude rather than direction. So, for example, the market may over or underestimate the new value of a firm’s innovation, but the direction of the reaction will remain consistent with the firm’s assessment. While the measure is fallible (recall that it is about expectations not true cash flows), this aligned directionality in estimated future cash flows makes it possible for us to assess the increases or losses in value associated with any innovation event in a relatively unbiased manner.

Second, under the assumption of market efficiency, the financial market also acts as a clearinghouse of information that considers the firm’s actions in relation to past and current information about the firm, its competitors and the market in which it operates. In this way, market reactions are not only representative of the new value created (or destroyed) by a given action but also an evaluation of the perceived intelligence of managerial actions and decision-making. Accordingly, research in the finance, accounting, strategy and marketing literatures has suggested that firms can use stock market reactions to specific events as a form of feedback as input into deciding what course of action to take in the future (e.g., Markovitch, Steckel, and Yeung 2005; Mizik and Jacobson 2007; Bitner and Dolan 1996).
Third, assuming not only that the financial markets are efficient, but also that investors are rational and that the stock market and the firm have equivalent information, one could argue that abnormal returns could represent managerial projections of incremental future cash flows from a given action – information often unobservable to third-parties or even the firm itself. To the extent that the net investor reaction to a given marketing action is negative or differs from the firm’s own estimates, the stock market reaction can alert firms to the need to disclose information to better align market expectations with their own (e.g., Bergman and Roychowdhury 2008; Cooper et al. 1968). In the existence of such information asymmetries, the other options available to the firm are to (i) take the action encouraged by the market or (ii) wait for the market to update their beliefs based on the outcomes the firm achieves or as additional information disseminates into the market over time. Regardless of how firms choose to address any information asymmetries, financial market reactions can help pinpoint where the information issue resides. However, we expect, as discussed previously, any biases due to information asymmetries to be primarily errors of magnitude rather than direction.

\[2\] As acknowledged previously, this circumstance may often occur due to the firm’s possession of private information that the financial market does not possess.
Finally, investors are an important constituency with whom firms must actively manage their relationship. Investor perceptions of how firms are behaving strategically can drive legal action (through shareholder class action lawsuits) and influence how and when firms can further access the equity markets for additional capital. Thus, it is in the interest of the firm to have investors believe it is operating in the long-term value-maximizing interest of both shareholders and the firm. Consequently, it is useful for firms to understand investor perceptions of their actions, through abnormal returns, in order to manage the relationship with shareholders more effectively.

Overall, while the measurement of new value is inherently difficult, the financial market offers an environment for assessing beliefs regarding the new value that any innovation will create via the mechanisms in Equation (1). In addition to overcoming the problems associated with gathering information about new value from the firm, operationalizing new value through abnormal stock returns offers important insight to managers as they work to manage the transparency of private information and to maintain positive relationships with shareholders.

2.4 Summary

In this section, we have discussed the concept and measurement of new value generated by innovation. We demonstrated that new value is a function of modifying the future cash flows of the firm which are a combination of portfolio modifications and individual innovation characteristics. Specifically, innovations generate new value on their own through increased demand, increased prices, and reduced costs. However, innovations can also generate new value by providing a stronger platform for future
introductions and avoiding directly or indirectly cannibalizing profits from other products within the firm’s current portfolio. Such effects are also reflected in how innovations modify the diversity of a given portfolio.

Thus, neglecting any one factor offers an incomplete understanding of how innovation influences the future success of the firm. This logic suggests that accurately determining whether or not an innovation generates new value necessitates a consideration of all of these factors. As shown through our examples in Section 2.2, innovations can generate null, positive and negative new value for the firm even if the value attributable to the individual innovation itself (ΔD, ΔP, ΔC)) is positive. As noted in the diversification examples in Figure 3, the influence of the innovation on the degree of leverage and cannibalization plays a significant role in determining the new value an innovation generates.

Despite the conceptual appeal of our comprehensive model of new value from innovation, we also argued that measuring new value is inherently difficult. Practically, a measure of new value must be a measure of the beliefs of the outcomes from innovation. This is due to the inefficiency associated with gathering innovation-specific information and the lack of internal firm data on how an innovation influences the specific cash flows of the firm’s wider portfolio. While theoretically available from the firm, measuring beliefs of new value using the financial markets offers a more efficient methodology for collecting data that is also aligned with firm-based beliefs. For firms, such a measure also offers insight into understanding perceptions of the soundness of
innovation strategy, identifying asymmetries that need to be resolved and managing relationships with shareholders.

In the next section, we move to a theoretical discussion of how product and brand portfolio effects influence the firm’s ability to achieve new value by diversifying through innovation.
3. Diversifying through Innovation: Exploring the Benefits and Risks Expanding a Firm’s Product or Brand Portfolio

3.1 Product Portfolio Diversification

Examining the relationship among innovation, the product portfolio and firm performance necessitates the combination of two separate literatures – product portfolio management and corporate diversification. While both have been of long interest in the innovation and strategy traditions, the two literatures contribute distinctly different perspectives regarding the firm’s strategic approach. Product portfolio management tends to hold the perspective of a firm’s internal management of its product pipeline while corporate diversification has tended to take an external view of a firm’s strategy (e.g., diversification) at a given point in time. From a firm perspective, both are relevant to our discussion of how innovation is rewarded in that the firm must plan its product introductions in a way that best enables it to create new value. As noted in the introduction, that plan must take into account not only how the innovation itself will perform but how it influences the ability of the firm to invest in asset appreciation through its portfolio, which becomes more or less diverse as a function of the introduction. We briefly review both literatures before developing our main effect and moderating hypotheses regarding the influence of changes in product portfolio diversification on the creation of new value.

3.1.1 Product Portfolio Management

First, as noted above, product portfolio management has long been of interest in the innovation literature. However, while researchers have tackled the issue through
both analytical and empirical means, prior work has tended to focus on prescriptions and techniques for helping firms determine what types of innovation to pursue (see Kavadias and Chao 2007 for a review) rather than examining the influence of any given portfolio on the firm’s ability to generate new value (see Hauser, Tellis and Griffin 2006). For example, work by Cooper et al. (1997, 1998, 1999) suggests that firms should create a process that is both a focused strategy yet subject to repeated review in order to create a portfolio that is balanced in terms of incremental (short-term) and more radical (long-term) projects (see also Wind and Mahajan 1988; Tushman and O’Reilly 1996). Such recommendations are supported by Chao and Kavadias (2008) who use simulations to demonstrate that incremental and radical innovations vary in their average risk and average performance after launch.

In an exception to this focus on prescriptive techniques, Bordley (2003) examines how firms can actually optimize (i.e., maximize profits) the breadth and depth of a firm’s product portfolio by managing the quality and cost of their product entries. Sun et al. (2004) examine what types of product strategies (e.g. line extensions, product licensing, etc.) firms should pursue to profit-maximize under various market conditions (e.g., high and low network effects). Likewise, Blau et al. (2004) demonstrate how method for allowing a firm to optimize its product portfolio sequence by managing projected NPV in the pharmaceutical industry. While such research is focused on generating profits, it neglects consideration of the nature of the interdependencies of the products that may already exist on the market, not just within the product pipeline. Generally, the purpose of such research has been to determine what the optimal product
pipeline structure is for firms given that not all products make it to the commercialization stage nor are all introduced products successful (e.g., Ding and Eliashberg 2002). Thus, in this research stream, the firm is evaluating the optimal choices it should make with regards to its product portfolio to maximize its own privately projected performance and resource allocation over the long-term (see Ali et al. 1993). In other words, the firm possesses a series of products on which it will use portfolio management techniques to determine the relative resource allocation to and sequencing of product introductions.

However, while it is important to manage and sequence one’s product portfolio with an eye to the risks and returns associated with each given product in the pipeline, equally important is an understanding of how these introductions impact the currently available product portfolio both in the short-term (through cannibalization) and long-term (through leverage and development of a platform for growth). This dissertation does not purport to offer prescriptive techniques for maintaining an optimum product portfolio introduction sequence – our purpose to direct attention to the fact that the new value a firm achieves from an innovation is a function of both the innovation and the firm’s wider portfolio, which has certain characteristics both before and after the innovation introduction. As noted by Blau et al. (2004, p. 230), “Managing the new product pipeline is a series of tradeoffs among maximizing expected economic returns, minimizing risk, and maintaining diversity in the product mix for a given level of renewable and nonrenewable corporate resources.” In fact, Sorescu et al. (2003) find that the financial market returns to pharmaceutical innovations are highly dependent upon
several firm and innovation-specific factors including the type of innovation and the nature of the scope of the firm’s current product portfolio. Consequently, the firm must be cognizant of how the new value resulting from adjustments in this portfolio may be an important performance indicator firms may want to include in their portfolio management process.

In summary, while the innovation product portfolio management literature provides us with an understanding of how product pipelines can be managed to balance projected risk and return across the innovation development process, it does not offer us an understanding of how the launch of products in an innovation pipeline affect the current products in the firm’s portfolio post-launch. Therefore, the question remains as to how the launched portfolio of products affects performance. To investigate this question, we now move to the corporate diversification literature to explore the relationship between a firm’s current product portfolio and the creation of new value.

3.1.2 Corporate Diversification

Corporate diversification, at the industry, geographic and product levels, has been of long interest over the past 30 years in the strategy literature. Generally, researchers in this area have advocated that it is in the firm’s best interests to seek a diversified product portfolio (see Palich et al. 2000 and Ramanujam and Varadarajan 1989 for reviews; see Delios and Beamish 1999; Berger and Ofek 1995 for exceptions), while the exact nature of the relationship (e.g., linear, curvilinear, etc.) between diversification and performance remains a debated topic, particularly with regard to financial market-based measures of performance (Palich et al. 2000).
Across the various diversification bases – e.g., geographic, product – researchers have generally classified the benefits and risks associated with diversification into several categories (see Table 1 for a sample of this literature), each of which has important ramifications for understanding how changes in diversification influence new value through demand, price, cost, leverage and cannibalization. We now review these major categories of benefits and risks.

First, research has suggested that diversified firms “can employ a number of mechanisms to create and exploit market power advantages, tools that are largely unavailable to their more focused counterparts,” (Palich et al. 2000, p. 156). Market power is defined as the “ability of a market participant or group of participants (persons, firms, partnerships, or others) to influence price, quality, and the nature of the product in the marketplace” (Shepherd 1970, p.3). One such advantage is access to consumer markets. For example, diversified firms inherently possess wider coverage in the consumer market through tapping into new geographies or other markets in which they had previously not participated. The access may be facilitated by relationships between buyers (e.g., retailers) and sellers whereby the two parties engage in reciprocal and preferential agreements to buy and sell goods to one another (Grant 1998). Such preferential relationships may also enable the firm to have greater access to customers in the future through new product introductions.

An additional advantage derived from market power includes the firm’s ability to reduce competition by driving competitors from the market or deterring entry. First, diversified firms may adopt predatory pricing techniques by supplementing revenues
from other markets and then adopt higher pricing once the marketplace becomes more concentrated which offsets these initial losses (Berger and Ofek 1995; Scherer 1980; Saloner 1987). However, diversified firms do not necessarily need to enact such behaviors, but instead can deter competitor entry by signaling the ability to engage in predatory pricing (Saloner 1987).

Another outcome associated with diversification is the firm’s ability to leverage economies of scope. A firm obtains economies of scope (Panzar and Willig 1981) when it is able to reduce costs by sharing tangible (e.g., equipment, factories, sales resources) or intangible assets (e.g., distribution relationships, R&D, managerial expertise) in the production of multiple products. Fundamentally, we can separate economies of scope into two basic benefits for the diversified firm: reduced per unit cost structure and increased ability to leverage knowledge or relationships to enter new markets. The former is derived from one of two potential circumstances: (1) the firm exploits a common resource and thus the combined cost of product across the multiple products is less than each of them independently (Rumelt 1974, 1982; Teece 1980) and (2) excess resources that might otherwise be unused due to specificity or lack of efficient markets to trade such resources are used (Panzar and Willig 1981; Teece 1980; Markides 1992). This is more in line with the traditional sense of the term economies of scope, since the “firm is able to distribute the cost of an asset already capitalized by spreading its use across multiple operations” (Palich et al. 2000, p. 159), a process termed “asset amortization” by Markides and Williamson (1994). A key restriction to this form of
economies of scope is that it is not scale-free, meaning that the firm has a finite ability to
leverage these common physical resources (Levinthal and Wu forthcoming).

The latter is driven by the ability of firms to use diversification to boost their
ability to potentially bundle products or leverage positive brand reputations (Barney
1997) as well as to develop its knowledge base to provide an option to explore
opportunities in the future. The intangible relationships firms have with their
intermediate and end consumers as well as their knowledge base provide a potential
excess resource that the firm can use to obtain growth in the future. As noted in
Levinthal and Wu (forthcoming), this form of economies of scope is essentially scale-
free, although the benefits to such economies of scope may diminish over time.

Coordination costs, or the costs required to manage the various employees and
departments controlled by the firm, act to mitigate the cost savings engendered by
economies of scope. Researchers have noted that employees may be more likely to shirk
in diversified firms, leading to productivity losses (e.g., Calvo and Wellisz 1978). In
addition, diseconomies of scale may arise as a firm’s hierarchical structure expands (e.g.,
Keren and Levhari 1983) and top management becomes increasingly strained as it
attempts to coordinate businesses that are increasingly diverse (Grant, Jammine and
Thomas 1988). As firms become increasingly diversified, the multiple business begin to
lack a common logic and managers are less capable of addressing the “competitive
pressures that may simultaneously occur in any of their activities” (Lubatkin and
Chatterjee 1994, p. 117; Williams, Perez and Saunders 1988). Because of this issue, the
organizational form and evaluation approaches that best enhance profitability may in fact vary as a function of the type of diversification a firm pursues (Hitt et al. 1994).

However, diversified firms are said to benefit by having increased access to internal market efficiencies. *Internal market efficiencies* are defined as the presence of an internal (i.e., intra-firm) market that enables flexibility in capital and labor acquisition and allocation. Prior work has suggested that internal generation of capital, through cross-subsidization, is less costly and more efficient than external funding (Froot, Scharfstein and Stein 1994; Lang, Poulsen and Stulz 1995). Consequently, diversified firms, that have access to such cross-subsidization, have more flexibility in obtaining capital resources than single-business firms (Gertner, Scharfstein and Stein 1994). This flexibility is also available for other resources such as labor, which can be transferred from one division to another rather than externally-sourced and thus yields an overall benefit for diversified firms (e.g., Grant 1998; Ravenscraft and Scherer 1987; Williamson 1986). In addition, managers are better able to make optimal resource allocation decisions given that their information is typically superior to that of external markets (Shleifer and Vishny 1991; Williamson 1986) and thus are more cost-efficient in managing their capital resources for any given product as well as for the portfolio in general.

Finally, researchers have examined the relationship between risk and portfolio diversification that originated in the finance literature. *Risk*, in this case, refers the risk or uncertainty associated with the future cash flows of the firm. Two different perspectives exist on this issue. While both suggest that increased diversification can lead to less risk,
the two perspectives differ on the way in which diversification achieves that reduced risk. The first, based the traditional securities management portfolio theory, suggests that “the more related the businesses of a firm, the more their returns are expected to move in unison, and therefore the less the expected reduction in unsystematic risk”

Table 1: Review of Selected Diversification Literatures

<table>
<thead>
<tr>
<th>Concept</th>
<th>Definition</th>
<th>Affected Vars in Eq (1)</th>
<th>Representative Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Power</td>
<td>Ability of a firm to influence price, quality, and the nature of the product in the marketplace</td>
<td>Demand Price Leverage</td>
<td>Grant 1998; Scherer 1980</td>
</tr>
<tr>
<td>Economies of Scope</td>
<td>Ability to reduce costs by sharing tangible or intangible assets in the production of multiple products</td>
<td>Cost Leverage</td>
<td>Nayyar 1992; Helfat and Eisenhardt 2004</td>
</tr>
<tr>
<td>Coordinating Costs</td>
<td>Ability of the firm to manage and coordinate the departments and businesses within its purview</td>
<td>Cost Leverage</td>
<td>Williamson 1967; Prahalad and Bettis 1986</td>
</tr>
<tr>
<td>Internal market efficiencies</td>
<td>Ability of the firm to efficiently access capital from and direct capital to various businesses within its firm</td>
<td>Cost Leverage</td>
<td>Lang and Stulz 1994; Meyer, Milgrom and Roberts 1992; Gertner, Scharfstein and Stein 1994</td>
</tr>
<tr>
<td>Risk</td>
<td>Ability of the firm to reduce the risk and uncertainty associated with its overall future cash flows</td>
<td>Leverage Cannibal-ization</td>
<td>Galbraith, Samuelson, Stiles and Merrill 1986; Amit, Dodd and Weinstein 1986; Amit and Wernerfelt 1990; Chatterjee and Lubatkin 1990; Lubatkin and Chatterjee 1994</td>
</tr>
</tbody>
</table>

but not its systematic risk (Lubatkin and Chatterjee 1994, p.114; see also Amit and Livant 1998; Chang and Thomas 1989). Consequently, the more diversified a firm becomes, the more the risk of the individual businesses offset each other, thus reducing the overall risk associated with the firm’s cash flows. In this case, part of the uncertainty reduction
can be derived from the fact that the products within one business will not affect, or cannibalize, the products in another.

The second perspective, called corporate diversification theory, suggests that firms can minimize both their systematic and unsystematic risk by pursuing diversification where the businesses are interrelated and thus the cash flows are correlated with each other (Bettis and Hall 1982; Chatterjee and Lubatkin 1990; Lubatkin and Chatterjee 1994). This research suggests that while the cash flows from related businesses are influenced by the same market forces and thus move in unison more frequently, firms are able to leverage synergies via economies of scope (Maloney and McCormick 1983), the ability to enhance product uniqueness or reduce the cost of differentiation (Porter 1985), the use of common metrics and control systems (Hoskisson et al 1991), and the ability to apply a “common logic” towards managing competition across the markets (Prahalad and Bettis 1986). Such synergies are less available to firms as their underlying businesses become more unrelated and thus outweigh the benefits obtained via the lowered cash flow correlation. In either case, diversification serves to leverage the portfolio to reduce cash flow risk.

In summary, the research on corporate diversification provides insight into the benefits and risks of the diversification of the firm’s product portfolio. Despite the important contributions of this broad research line, this empirical work has only examined static levels of diversification at a given point in time (see Markides 1992; Helfat and Eisenhardt 2004 for exceptions). This static perspective neglects the idea that the firm modifies its portfolio over time. As Helfat and Eisenhardt (2004, p. 1220) state,
“In reality, managers often diversify their firms through a series of moves that occur over an extended period.” Addressing the value created by these modifications is critical for beginning to understand the dynamics involved in product portfolio management. This is particularly true given that prior research has suggested that the benefits to diversification are highly contingent upon the firm’s ability to exploit those benefits effectively (e.g., Montgomery 1992, Singh and Montgomery 1987; Nayyar 1992). This research thus suggests that the outcomes derived from changes in product portfolio diversification will be contingent upon the implementation of the diversification (e.g., characteristics of the innovation, type of diversification, etc.). In the next section, we begin to assess how innovation introductions dynamically adjust a firm’s product portfolio and the ramifications of such modifications on a firm’s ability to create new value.

### 3.1.3 The Relationship between Product Portfolio Changes from Innovation and New Value Creation

As discussed above, many benefits accrue to diversifiers such as erecting barriers to entry, achieving economies of scope, increasing the range of their customers, and reducing firm-level risk (Palich et al. 2000; Jose, Nichols and Stevens 1986). Researchers have noted that by diversifying, firms improve the probability with which they will not be left behind by shifts in markets and/or technology (Christensen and Bower 1996; Zook and Allen 2003). Consequently, increasing the diversification of one’s product portfolio within a given industry (e.g., consumer packaged goods) can serve the firm by potentially protecting against future competitive actions and reducing the unsystematic
(e.g., cash flow) risk of the firm above and beyond that investors can achieve by diversifying their financial portfolios (Amit and Wernerfelt 1990; Bettis 1983; Amihud, Dodd and Weinstein 1986). While the main effect of increasing diversification has been generally hypothesized to be positive (see Palich et al. 2000 for a review), it is useful to consider how we might arrive at such a prediction by examining how changes in diversification influence each of the components identified in Eq. (1) through the concepts identified in Table 1. Even though this main effect is not the focal point in this dissertation, examining this process in detail is particularly valuable as it facilitates the discussion of how our proposed moderators will enhance or detract from the value of increased diversification.

To begin, as shown below, recall that in this equation, the new value created by an innovation is a function of demand, price, cost, leverage and cannibalization.

\[ NV = f(\Delta D, \Delta P, \Delta C, L, X) \]

As noted in the previous section, to assess how changes in portfolio diversification incurred via innovation introduction influence new value, we rely upon the prior research in strategic management, marketing and finance to assess how diversification changes influence each of the terms in this equation.

First, consider how changes in diversification from innovation affect demand for a given product (\(\Delta D\)). As a firm increases its level of diversification through an innovation, it presumably increases its access to previously untapped demand either through new markets or acquiring demand from competitors. The increase in demand is readily apparent if a firm is entering a new market in which no competitors exist.
However, acquiring demand from competitors can be considered slightly less straightforward. First, if a firm is highly successful or possess successful brands, customers may readily switch from to other alternatives to the focal firm once it introduces an innovation in a given category. In this case, however, the product or innovation through which the firm diversifies becomes increasingly relevant as the degree to which consumers will switch will be driven, in part, by the additional value offered by the new innovation relative to other products on the market. Alternatively to this switching argument, this increased demand may occur from the reciprocal buying and selling derived from increased market power whereby the firm establishes a preferential relationship with suppliers or customers (Grant 1998). This preferential relationship can lead to increased access to a given market or customer base to the relative detriment of competitors. By virtue of having such preferential relationships, the incremental share of the diversifying firm is likely to increase. Regardless of its source, diversification increases, all else being equal, will likely improve the firm’s underlying demand ($\Delta D$ is positive) and thus increase new value.

Next, all else being equal, increases in diversification via innovation should enable the firm to charge a higher price ($\Delta P$) relative to innovation that does not increase diversification. This price is also driven by the market power argument, whereby the firm not only further differentiates itself from its own current products, but also may be able to differentiate from competitors if entering a new untapped market. In addition, diversification should also deter future competitive entry or force other competitors from the market (Caves 1981; McCutcheon 1991; Raubitschek 1987). Thus, consistent
with the economics literature (Lerner 1934), as a firm is better able to differentiate itself into a monopoly (or pseudo-monopolistic) position, it is able to charge a higher price, all else equal, and thus positively effects new value (ΔP is positive).

In terms of cost (ΔC), firms that diversify achieve costs benefits through economies of scope and lowered costs of capital to fund any given product. However, while economies of scope may reduce the per unit cost of any given product, the degree to which a firm can leverage these types of synergies is highly dependent upon the type of diversification it pursues (Lubatkin and Chatterjee 1994; Nayyar 1992). While this contingency is less of an issue with regards to access to internal capital markets, lower capital costs derived from diversification are only available when internal markets are efficiently managed (Lang, Poulsen and Stulz 1995; Froot, Scharfstein, and Stein 1994). In addition, the cost structures of innovations that increase diversification may increase dramatically as a function of increased governance and coordination costs (Jones and Hill 1988; Keren and Levhari 1983; Rawley 2010) and the long-run costs associated with hiring and training employees as the firm grows (Penrose 1959). Consequently, on average, the net effect of increased diversification seems to increase cost which negatively affects new value from a given innovation (ΔC is positive). This increase in cost will offset at least some of the price increase when determining the innovation’s contribution to new value of the firm1.

---

1 While we cannot determine the balance between price and cost increases, as we document later, one must assume that the rational profit-maximizing firm would not undertake an innovation that would possess a negative per unit contribution.
In terms of portfolio leverage (L), as a firm diversifies it can reap benefits and losses as a function of the overall portfolio. First, the firm may accrue benefits via economies of scope that increase the benefits to diversification. From a resource-based and transaction cost point of view, these economies of scope are derived from the firm’s ability “to exploit its excess firm-specific assets, such as brand names, managerial skill, consumer loyalty and technological innovativeness,” which “cannot be traded in the market because of a variety of imperfections.” (Markides 1992, p. 399). Diversification thus enables firms to exploit these assets in other categories. However, the firm’s ability to derive such benefits is highly contingent upon whether or not the diversification is related or unrelated to the firm’s current business scope (Montgomery and Wernerfelt 1988; Varadarajan 1986; Markides and Williamson 1994).

Second, as a firm diversifies, it, by nature, is moving away from its previous areas of expertise. By moving away from its core markets or capabilities, the products within the portfolio become increasingly independent and thus the firm may be capable of reducing the risk or volatility of future cash flows (e.g., Barney 1997; Berger and Ofek 1995; Grant 1998; Lang and Stulz 1994; Devinney and Stewart 1988). Again, however, this reduction in risk through decreases in product interdependencies is highly contingent upon whether or not the underlying product categories within the adjusted (i.e., post-innovation) product portfolio are related or unrelated (Devinney and Stewart 1988; Bettis and Mahajan 1985; Lubatkin and Chatterjee 1994).

However, increases in diversification are negatively influenced by the portfolio in that the firm is less capable of leveraging its experience, capabilities and market
knowledge as its moves away from its prior areas of expertise. To a certain extent, however, these negative effects may be offset by the firm’s ability to apply the new knowledge gained by entering increasingly diverse businesses to new markets. An additional negative effect stems from the firm’s ability to manage inefficiencies created when firms apply a prior “dominant logic” to a dissimilar category (Prahalad and Bettis 1986). These strategic inefficiencies can inhibit the firm’s ability “to address the competitive pressures that may simultaneously occur in any of their activities” (Lubatkin and Chatterjee 1994, p. 117). Thus, the overall net effect of increases in diversification on the new value derived from the process of leveraging the portfolio is mixed (L is unknown in value).

Finally, as a firm introduces an innovation that diversifies the firm and moves it away from its current line of business, the less cannibalization (X) exists as a major concern. This reduction in cannibalization is driven by the fact that the new innovation is, by definition, extending the firm’s presence into different categories in which the firm currently does not participate. Even if the firm is moving into a related category, the assumption is that this new product would be a complement rather than substitute for the firm’s other products. In addition, we can assume, at the overall portfolio level, that any negative repercussions for a given innovation will not enact a reciprocal negative influence further “cannibalizing” firm revenues – a frequently voiced concern in the brand management literature (see Keller 2002 for a review). This is true given firms may manage a variety of different brands and product lines of which the consumer is not fully aware. Consequently, the negative feedback from the focal innovation may not
translate to all of the other products marketed by the focal firm and thus cannibalization is less of a concern at the overall product portfolio level. This combined reduction in cannibalization potential from both sources has a positive net effect on the new value created by increases in product portfolio diversification (X is low in value).

Based on the above arguments, increases in diversification can only be predicted to produce, at best, limited positive main effects (see Table 2). Generally, as noted previously, prior research has concluded that diversification is beneficial to firms, at least up to a certain point (see Palich et al. 2000 for a review). This is consistent with the concept of a rational, profit-maximizing firm who would only undertake diversification under the conditions that it improved the firm’s bottom line (e.g., Markides 1992) Thus, consistent with prior literature and as demonstrated through our theoretical discussion of Equation (1), we propose the following main effects hypothesis:

**H1: The more an innovative introduction increases the diversification of the firm’s product portfolio, the greater the increase in new value in response to the introduction, ceteris paribus.**

Note, however, that a null net effect is also possible and is supported by Tallman and Li (1996, p. 180) who state, “It seems fair to say that the performance effects of product diversity are not clear.” Thus, consistent with some of the literature noted above, it appears that any effects changes in diversification have on new value will be contingent upon moderating effects such as the current level of diversification, the nature of the diversification, and the nature of the innovation being introduced which are explored in Section 3.3.
Table 2: Effect of Increases in Diversification on New Value Drivers in Equation (1)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Demand (ΔD)</th>
<th>Price (ΔP)</th>
<th>Cost (ΔC)</th>
<th>Leverage (L)</th>
<th>Cannibalization (X)</th>
<th>Net Effect (H1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect of (+) change in div.</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>Mixed</td>
<td>Low</td>
<td>Null to Positive</td>
</tr>
</tbody>
</table>

As noted in the introduction, innovative introductions operate not only within the firm’s overall product portfolio, but also within the portfolio of a given brand. Consequently, we now move to the branding literature to examine how the relationship between an innovative brand extension and the within-brand portfolio may function differently than the relationship between the innovation and the overall product portfolio.

### 3.2 Within-brand Portfolio Diversification

Brand leveraging, or extending a brand to multiple products, has been an oft-studied mechanism through which firms attempt to grow organically (Czellar 2003). In fact, brand extension tends to be the dominant mechanism which firms use in introducing new products, with over 80% of new product introductions being classified as extensions (Keller 2003). Prior research suggests that the popularity of brand extensions is due to the fact that they “leverage the investments a company makes in its existing brand names and hedge against the risk of new product failures,” (Batra, Lenk, and Wedel 2010, p. 335). Extending an existing brand does so by leveraging consumer awareness of the brand, perceived quality and trust in the brand, and current brand loyalty to increase demand as well as to achieve greater efficiency in marketing expenditures (Aaker 2004).
Generally, these benefits are believed to be derived from brand equity, or the added value that a brand provides to a product over its unbranded counterpart (e.g., Keller 2002). According to Srivastava et al (1998, p. 8),

Brand equity can be tapped in a variety of ways. It enables firms to charge higher prices (Farquhar 1989), attain greater market shares (Boulding, Lee, and Staelin 1994), develop more efficient communications programs because well-differentiated brands are more responsive to advertising and promotions (Keller 1993; Smith and Park 1992), command greater buyer loyalty and distribution clout in the marketplace (Kamakura and Russell 1994), deflect competitive initiatives (Srivastava and Shocker 1991), stimulate earlier trial and referrals of products (Zandan 1992), and develop and extend product lines (Keller 1993; Keller and Aaker 1992).

Leveraging brand equity may then increase future firm cash flows and potentially generate new value for the firm via the brand’s portfolio. This suggestion is consistent with work by Smith and Park (1992) which examines the influence of brand strategy (extension vs. new brand) on new product market share and finds that brand extensions acquire higher initial market share than new brands (see also Boulding, Lee, and Staelin 1994). As discussed in Aaker (2004), brand extensions can also reciprocate benefits to the within-brand portfolio by increasing brand visibility; however, brand extensions can also damage the within-brand portfolio by diluting brand associations, creating undesirable associations, damaging customer loyalty or cannibalizing the original brand. This line of reasoning would indicate that understanding the true value of a brand extension is both a function of the extension itself and the manner in which it changes the within-brand portfolio.

Despite this implication, little research has been done examining the impact of brand extensions, particularly innovations, on the firm’s ability to generate new value by
diversifying its within-brand portfolio. In fact, the tendency has been to examine how firms’ should manage their stable of brands (e.g., Aaker 2004), which has its foundations in the corporate diversification literature, or to examine the acceptance and performance effects of individual extensions (see Keller 2002 for a review). These perspectives neglect the idea that individual brands operate as individual portfolios which are then adjusted by the introduction of an extension (e.g., Delvecchio 2000). We briefly review the existing literature regarding the relationship between individual brand portfolios and extensions before developing our core hypothesis regarding the influence of changes in within-brand portfolio diversification on the creation of new value.

3.2.1 Brand Extensions and Within-brand Portfolios

As indicated above, the brand extension literature has focused on extension success drivers. Keller (2002) performed an extensive review of this literature (see also Keller and Lehmann 2006), and, thus, for the sake of focus and brevity in a very large research field, we only briefly summarize the literature regarding the performance outcomes of brand extensions that relate to the within-brand portfolio. We borrow the same performance mechanisms from the corporate diversification literature (see Table 1) and apply the brand diversification literature, as available, to these mechanisms (see Table 3). We then revisit the broader brand extension literature once we embark upon examining the extension-specific moderators that influence the new value created by changing the diversity of the within-brand portfolio.

Generally speaking, the work dealing with extensions as a function of the within-brand portfolio have typically focused on consumer perceptions and acceptance of the
focal brand extension. For example, prior research has shown that consumers are more willing to accept brand extensions from parent brands with varied category associations (Dacin and Smith 1994; Delvecchio 2000) an outcome which may be a result of the greater accessibility of brand beliefs from consumer schema regarding broad brands relative to narrow brands (Meyvis and Janiszewski 2004). This idea is consistent with the market power idea in that brands possess a certain level of market power that can translate more (or less) effectively to new markets or categories which will inherently mitigate (or amplify) the risks associated with the firm’s future cash flows. In addition to market power, if brands are able to translate more (or less) effectively into new markets, this implies that marketing costs will be lowered, advertising efficiency is enhanced and other distribution expenditures (e.g., obtaining retail space) will be lower, all of which contribute to the firm’s ability to achieve economies of scope via the brand (e.g., Aaker 2004).

Boush and Loken (1991) demonstrate that this enhanced extendibility of broad brands is particularly relevant for distant or unrelated extensions. However, Berger et al. (2007) find that this effect of product variety is contingent upon the characteristics of the portfolio. Specifically, they demonstrate that products from individual brands are viewed more positively in terms of quality and choice if the brand exhibits sufficient specialization within a given product category and the product variety within the category is compatible with this specialization (see also Delvecchio 2000). Thus, they suggest that extending breadth comes at the expense of depth, particularly when consumers are attempting to evaluate quality. In essence, although possibly contingent
upon the “distance” of the extension, this line of research suggests that as an extension diversifies a brand, it creates a stronger platform for future extensions. In summary, this ability to leverage the brand in the future is a function of both the brand’s increased market power (e.g., its accessibility to consumers via a broader presence in the market) and the reduction in the risk associated with future extensions (i.e., the probability that consumers will accept new extensions from this brand in the future).

Another relevant line of research regarding risk involves the reciprocal effects of an extension on the parent brand. While primarily focused on the individual extension, this work is informative given that any feedback effects on the parent brand are then likely to influence the entire brand portfolio. First, diversification of the brand via an extension inherently possesses a higher risk of failure (due to the firm’s relative lack of expertise in the extension category), which will then negatively impact the parent brand and thus the entire brand portfolio (Aaker 1990, 2004; Roedder John et al., 1998). In general, as a firm diversifies away from its core brand categories, the more likely consumers are to have a negative perception of the innovative brand extension and the more likely that this negative perception will spill over to the parent brand. However, this result varies depending upon how “typical” consumers believe the extension to be of the brand (e.g., Loken and Roedder John 1993). This contingent effect is consistent with a conceptual model by Keller and Sood (2001) which suggests that the negative impact of unsuccessful brand extensions are only likely to spillover when a high degree of fit exists between the parent brand and the extension.
Aside from fit considerations, as firms diversify their brand, consumers may also perceive the firm more generally to possess lower overall levels of expertise and produce lower quality products (Berger et al. 2007) which can decrease the parent brand’s perceived status (Park, Jaworski and MacInnis 1986; Kirmani et al. 1999). Consumers may also be confused by a brand’s extension into a new category (Aaker 2004) and question their loyalty to the parent brand or the core attributes of the brand. In either case, increased diversification of a given brand can dilute its overall brand equity (Braig and Tybout 2005) which reduces the ability to leverage the brand in the future.

Table 3: A Review of Selected Brand Diversification Literature

<table>
<thead>
<tr>
<th>Concept</th>
<th>Definition</th>
<th>Affected Vars in Eq (1)</th>
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<td>Demand Price Leverage</td>
<td>Meyvis and Janiszewski 2004; Berger et al. 2007</td>
</tr>
<tr>
<td>Economies of Scope</td>
<td>Ability to reduce costs by sharing tangible or intangible assets in the production of multiple products</td>
<td>Cost Leverage</td>
<td>Aaker 2004</td>
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<td>Coordination Costs</td>
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<td></td>
</tr>
<tr>
<td>Internal market efficiencies</td>
<td>Ability of the firm to efficiently access capital from and direct capital to various businesses within its firm</td>
<td>Cost Leverage</td>
<td></td>
</tr>
<tr>
<td>Risk</td>
<td>Ability of the firm to reduce the risk and uncertainty associated with its overall future cash flows</td>
<td>Leverage Cannibal -ization</td>
<td>Dacin and Smith 1994; Delvecchio 2000; Keller and Sood 2001</td>
</tr>
</tbody>
</table>

This research has provided important insights regarding how the within-brand portfolio maintains a reciprocal relationship with brand extensions by simultaneously enabling or disabling brand extendibility while also being influenced by the extension’s
success. However, in general, the brand extension research area has neglected the issue of how the introduction of an innovative brand extension interacts with the overall within-brand portfolio to influence the new value created by the extension. As noted previously, while the performance of the extension on its own is important research, ignoring the interdependencies associated with a portfolio of products may result in inaccurate estimates of a given product effect’s on the level of risk and return in a firm’s future cash flows (e.g., Devinney, Stewart and Shocker 1985). The same idea holds true for within-brand product portfolios. To the degree that the value associated with a given brand extension ignores its ability to modify the brand portfolio’s performance, our understanding of when and how firms should extend brands is, at the minimum, limited or, at worst, biased.2

Given the limited research on within-brand portfolio diversification as a mechanism for understanding new value creation from brand extensions, as noted in Table 3, to better assess how brand diversification influences the firm’s ability to achieve new value, we must combine the corporate diversification literature with the existing brand extension literature. Doing so enables us to determine the unique benefits and risks associated with diversifying a brand relative to diversifying the entire product portfolio. We now turn to combining these literatures in investigating the relationship between within-brand diversification and new value.

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2 We will address this issue again when we turn to the methodology section in Chapter 4.
3.2.2 The Relationship between Within-brand Portfolio Changes from Innovation and New Value Creation

In examining how increases in overall product diversification result in new value, we apply the arguments regarding the product portfolio diversification-performance relationship and supplement or modify them as necessary using the within-brand portfolio diversification literature (see Table 3) as well as relevant pieces of the general brand extension literature. Based on this procedure, we determine that the net effect of increases in within-brand diversification are also mixed, but decidedly more positive than product portfolio diversification, when using Eq. (1). Again, recall that Equation (1) represents the new value created by an innovative brand extension as a function of demand, price, cost, leverage and cannibalization.

\[ NV = f(\Delta D, \Delta P, \Delta C, L, X) \]

In terms of demand (\(\Delta D\)), as a firm increases its level of within-brand diversification, it presumably increases the access of the brand to previously untapped demand either through new markets or acquiring demand from competitors. This increase in demand is likely in either case given that the firm is using an existing brand name which is recognizable to and valued by the consumer (Farquhar 1989) which reduces the risk of entering the new market (e.g., Kapferer 1994). However, it should be noted that consumer acceptance of brand extensions that diversify the within-brand portfolio is highly contingent upon a variety of factors including fit between the parent brand and the extension (e.g., Aaker and Keller 1990) and the strength of the parent brand (e.g., Lane and Jacobson 1995). In general, however, diversification via a brand
extension is likely to generate more demand than using a new brand (Aaker 2004) to
diversify indicating that increased diversification through a brand extension has a
positive relationship with demand which then enhances new value (ΔD is positive).

In terms of price (ΔP), established brands in general enable the firm to charge a
higher price than non-branded or new brand products (Aaker 1991; Agarwal and Rao
1996). This price premium enhances the market power argument from product portfolio
diversification, where the firm is capable of increased differentiation and can also deter
future competitive entry (Caves 1981; McCutcheon 1991; Raubitschek 1987). This would
indicate that, as a firm increases the diversification of a given brand portfolio, the price
would be higher than if the firm had increased the diversification of its product portfolio
through a new brand or an unbranded product (Aaker 2004) This should be true
regardless of whether the within-brand diversification is pursued in related or new
categories. Thus, by diversifying the within-brand portfolio, the firm is able to charge a
higher price for an extension, all else equal, and thus positively affects new value (ΔP is
positive)

In terms of cost, the logic is decidedly more mixed than under overall product
portfolio diversification. On the one hand, increasing the diversification of a brand
lowers marketing costs and enhances advertising efficiency given that the brand name
already conveys certain attributes and benefits to the consumer (Tauber 1981; Smith and
Park 1992; Aaker 2004). These strong marketing links may enable the firm to achieve
benefits from economies of scope across the different categories (Grant and Jammien
1988), particularly if the parent brand has high brand equity. This is consistent with
prior work that notes that brands, like other intangible assets, are essentially scale-free and can be leveraged extensively (Levinthal and Wu forthcoming). On the other hand, costs may increase as the firm has to ensure that consumers perceive the diversification move to be consistent with the current brand. In addition, similar to product portfolio diversification, the cost structures of brand products that increase diversification may increase as a function of increased governance and coordination costs. Consequently, the net effect of increasing brand diversification on cost is unknown ($\Delta C$ is unknown) as is its effect on new value. Given, however, that costs will not necessarily offset increases in price, it appears that the net contribution is likely higher under within-brand diversification than overall product portfolio diversification.

With respect to leveraging ($L$) the portfolio, as a firm increases the diversity of its within-brand portfolio, it better establishes the brand as a platform for growth into new markets by enhancing the brand’s image and enabling greater brand extendibility (e.g., Park, Jaworski, and MacInnis 1986; Dacin and Smith 1994; Keller and Aaker 1992). In addition, as noted in the cost section, a firm’s experience with a given brand enhances its ability to market diversifying products effectively and efficiently. Consequently, additional experience with the brand through an extension serves to increase general awareness of the brand and thus further increases the marketing efficiencies associated with the brand. Finally, brand extensions are able to utilize the dual benefits of risk reduction as noted in the product portfolio diversification literature. Namely, by expanding a brand into new categories, the firm is reducing the risk associated with the brand’s cash flows by reducing the correlation between products within the brand’s
portfolio. In addition, because the same brand name is utilized, the firm can realize at least some of the benefits associated with related diversification. In particular, firms can leverage marketing and control (i.e., performance metrics) synergies as well as potential economies of scale related to other capital expenditures (e.g., employees, graphic design for packaging, etc.). Thus, the net effect of leverage changes due to increasing within-brand diversity is positive (L is higher), thereby enhancing new value. In addition, this positive effect is higher than what we would expect under typical product portfolio diversification.

As a firm diversifies its within-brand portfolio, it is also less likely that the newly introduced innovation will cannibalize existing products in the brand portfolio. However, the degree to which diversification reduces cannibalization (X) may be highly dependent upon the relatedness of the diversification move. As noted with product portfolio diversification, however, even if the firm is moving into a related category, the assumption is that this new product would be a complement rather than substitute for the firm’s other products in the brand portfolio. However, increasing the diversification of a brand has another potential cannibalizing effect. As a firm diversifies away from its core brand categories, the more likely consumers are to have a negative perception of the innovative brand extension and the more likely that this negative perception will spill over to the parent brand (e.g., Loken and Roedder John 1993). In addition, the consumer may perceive the firm to possess lower overall levels of expertise and produce lower quality products (Berger et al. 2007).
Finally, diversification can also decrease the parent brand’s perceived status (Park, Jaworski and MacInnis 1986; Kirmani et al. 1999) or run a higher risk of failure (due to the firm’s relative lack of expertise in the extension category), which will then negatively impact the parent brand and thus the entire brand portfolio (Aaker 1990; Roedder John et al., 1998). While these spillover effects are contingent upon the nature of the fit between the parent brand and the extension, in general, diversifying a brand increases these risks. Consequently, the cannibalization effect of increasing within-brand portfolio diversification is mixed (X is unknown) and thus has a more negative effect on new value than would be expected when diversifying the overall product portfolio.

Summing these effects results in a net positive main effect of increases in within-brand diversification (see Table 4). This logic yields a similar prediction as overall product diversification in that we hypothesize that:

**H2:** The more an innovative introduction increases the diversification of the firm’s within-brand portfolio, the greater the increase in new value in response to the introduction, ceteris paribus.

| Table 4: Effect of Increases in Diversification on New Value Drivers in Equation (1) |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|
| Variable | Demand (ΔD) | Price (ΔP) | Cost (ΔC) | Leverage (L) | Cannibalization (X) | Net Effect (H2) |
| Effect of (+) change in div. | (+) | (+) | Mixed | High | Mixed | Positive |

Despite the similarity to H1, note that the drivers of changes in new value from diversifying an within-brand portfolio differ in important ways – specifically the cost effect is mixed rather than positive, the leverage effect is high rather than mixed and the cannibalization effect is mixed rather than low – and that a null result is less likely than...
in product portfolio diversification (see Table 5). In addition, while moderating effects are also critical in assessing the effects of within-brand diversification changes, these potential moderating effects will differ from those moderators under product portfolio diversification. Such moderating effects for the within-brand portfolio can include type of brand extension, parent-extension fit, parent brand strength, and dilution risk, which are derived from the existing branding literature.

**Table 5: A Comparison of Within-Brand and Product Portfolio Diversification**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Demand (ΔD)</th>
<th>Price (ΔP)</th>
<th>Cost (ΔC)</th>
<th>Leverage (L)</th>
<th>Cannibalization (X)</th>
<th>Net Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect of (+) change in div. (WITHIN BRAND - WB)</td>
<td>(+)</td>
<td>(+)</td>
<td>Mixed</td>
<td>(+)</td>
<td>Mixed</td>
<td>Positive</td>
</tr>
<tr>
<td>Effect of (+) change in div. (PRODUCT - P)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>Mixed</td>
<td>Low</td>
<td>Null to Positive</td>
</tr>
<tr>
<td>Effect of WB diversification relative to P diversification</td>
<td>Higher</td>
<td>Higher</td>
<td>Lower</td>
<td>Higher</td>
<td>Higher</td>
<td>Higher</td>
</tr>
</tbody>
</table>

Despite the potential for these positive main effects, our discussion of how diversification influences the new value created by an innovation, whether it is a brand extension or not, highlights that the relationship between new value and an innovation may be highly contingent upon various firm and innovation-specific factors. Thus, the main effects are necessary to understand as a foundation for clarifying how moderators operate in this context but are not of great interest unto themselves. We now move to a discussion of these moderating elements by first discussing contingencies in the product portfolio diversification context before moving to the within-brand portfolio environment.
3.3. *Moderating Effects*

3.3.1 *Product Portfolio Diversification Moderators*

As noted in Section 3.1, given the lack of strong main effects for how changes in overall product portfolio diversification influence new value, we now turn our focus to the contingencies that affect how changes in diversification to influence new value. In terms of product portfolio diversification, we focus on two firm-specific characteristics (the level of diversification and prior success of the firm) and four innovation-specific characteristics (innovation relatedness, market competitiveness, adoption uncertainty and competitor protection).

Let us start by considering the overall *level of diversification*. Generally, as diversification levels increase, it is proposed that the benefits to diversification decrease on the margin. First, consider demand ($\Delta D$). Up to a certain point, diversification would presumably continue to increase access to markets; however, eventually, the firm runs out of new markets to enter where competition does not exist and thus must enter markets where other firms are currently competing. As a firm enters a market where others are currently competing, the ability of the firm to garner all of the demand in the market decreases. All else being equal, the probability of entering competitive markets increases as the firm continues to diversify. Thus, the incremental demand achieved as diversification increases should diminish over time.

Next, while the price ($\Delta P$) a firm charges for a product should continue to increase (relative to a product in a market the firm currently serves) as a function of market power, the magnitude of the price increase should decrease as the firm is forced
to enter increasingly competitive markets. Consequently, similar to the demand argument above, the incremental price increase achieved as diversification increases should also diminish over time.

Furthermore, as diversification increases, the costs ($\Delta C$) associated with managing disparate business increase (Williamson 1967; Prahalad and Bettis 1986) and the less a firm is able to leverage economies of scope to reduce costs. Even if a firm remains able to leverage economies of scope (possible if the markets or categories are still related), the costs necessary to achieve those synergies increase over time as a function of coordinating across products and product lines (Nayyar 1992; Rawley 2010). This result is due, in part, to the fact that many economies of scope, such as those achieved using physical resources, are not scale-free (Levinthal and Wu forthcoming). Consequently, as diversification increases, the costs associated with introducing any given innovation go up.

In terms of leverage (L), while increasing diversification may continue to reduce the risk of the firm, the factor-based diversification literature (Penrose 1959; Teece 1982; Wernerfelt and Montgomery 1988) argues that assets lose their competitive advantage as they are applied in increasingly distant fields and thus contribute marginally less profit to the firm (Markides 1992). In addition, as diversification increases, a firm may increasingly encounter strategic inefficiencies that prevent it from efficiently and effectively deal with competitive threats that may occur simultaneously in its various markets. These arguments would suggest that as diversification increases, the firm’s
ability to leverage the portfolio to enter new markets effectively and efficiently would reduce over time.

Finally, as diversification levels increase, it becomes increasingly likely that the firm’s offering compete with each other for the customer’s dollars even if the products are not direct or indirect substitutes for each other. This competition for a share of the customer’s budget decreases the cannibalization (X) benefits of diversification as diversification increases.

Combining these effects, if we assume the firm is profit-maximizing, a firm should stop at its optimal diversification point where the marginal benefits no longer offset the marginal costs (Montgomery and Wernerfelt 1988). While some research has indicated that firms may extend beyond this optimal level of diversification and thus create negative value (e.g., Jensen 1986), other research has demonstrated that such firms typically “refocus” in order to return to the optimal diversification levels (e.g., Markides 1992). Thus, we suggest that the benefits to increases in diversification levels will vary based upon the firm’s current level of diversification, initially being strongly positive and then lessening as the overall level of diversification reaches its maximum.

Consequently, we propose the following hypothesis:\(^3\):

H3a: The new value benefits from increases in product portfolio diversification due to an innovation introduction will diminish as the overall level of product portfolio diversification reaches its maximum, ceteris paribus.

\(^3\) For clarification purposes, please note that all product portfolio moderators are labeled as H3 and are differentiated by the letters a-h.
This hypothesis is consistent with our position that increases in diversification will, in themselves, possess a positive relationship with new value. However, if firms extend beyond optimal diversification levels, we may actually find that increases in diversification lead to negative new value as diversification reaches its maximum. Such a result would be consistent with finding a null result in H1.

Now, consider the prior success of the firm. In thinking through the moderating effect of a firm’s prior success, recall that new value is represented by the expectations regarding how the innovation will modify the future performance of the firm. Consequently, to the degree that a firm is expected to engage in certain behavior as a function of its prior performance levels, innovations will have more or less impact on the expectations for new value. To see how, consider the relationship between success, innovation and new value from the perspective of two different firms who introduce innovations of equivalent high quality that adjust the diversity of their product portfolios in the same way. Firm A has a history of successful performance while Firm B has performed poorly in recent fiscal periods. While Firm A may indeed be able to garner more revenues from the innovation by virtue of the capabilities that have made it successful in the past, continued success for Firm A changes very little for the firm. The firm will not necessarily improve its access to capital, quality employees or expectations for growth. The firm’s stock of these “resources” was already established once the firm became successful. In addition, the firm gains marginally less benefit from diversification’s ability to reduce the risk of its future cash flows given the tendency for positive earnings persistence. On the other hand, as successful firms continue to
diversify, the firm is demonstrating its ability to continue to grow which may defy the traditional belief that successful firms have a tendency to become complacent and inert (Lant and Montgomery 1987; Greve 1998).

For Firm B, the poor performer, the introduction of an innovation changes the future trajectory for this firm. Not only does the innovation drive incremental revenue into the firm (which in itself works to offset prior negative performance), but the success of this innovation also gives Firm B access to new resources such as new capital or equity, higher quality employees and a shift in its growth expectations. Furthermore, by diversifying its portfolio, Firm B receives the benefits of offsetting risks from cash flows in poorly performing sectors of the firm and strengthens its platform for future product introductions. However, to a certain extent, the market may anticipate that unsuccessful firms may attempt to move away from what has held them back in the past. Thus, while the poorly performing firm (Firm B) receives a greater positive leverage benefit (L) from the increase in diversification from innovation than the successful firm (Firm A) in terms of changing its capabilities, the successful firm also receives a leverage benefit by positioning the firm for continued success in the future.

However, we cannot just consider the firm’s perspective, as our measure of new value is based on abnormal stock returns. Work in the accounting and finance literature has suggested that information about intangibles becomes increasingly important as earnings become negative (Daniel and Titman 2006). The logic is that investors can typically rely on earnings persistence with positive earnings; however, this is not true with negative earnings (Hayn 1995). If it were, then the firms would eventually go
bankrupt and disappear. Consequently, investors utilize other non-accounting information, such as innovation behavior, to determine the future cash flows of the firm.

This logic suggests that changes to the product portfolio via innovation will be more strongly related to abnormal stock returns in firms that have lower prior performance. This work does not suggest that the returns and new value creation from increased diversification will not exist for successful firms, only that the stock market may consider it to be less necessary or informative for gauging the future cash flows of successful firms (e.g., Sorenson 2000). Consequently, in effect, this logic suggests that the stock market, at some level, expects that successful firms (like Firm A) should be able successfully diversify into new markets or categories which will enable their positive earnings to persist even in the event of stagnating current market demand.

Thus, continuing to produce high quality innovations in new markets does little to change the market’s expectation that the firm will continue to succeed. The same is not true for the poorly performing firm (Firm B), who must find another way to change its product portfolio to reverse its prior failures. The introduction of a high quality innovation has the potential to change a poorly performing firm’s trajectory by providing it with a platform for growth in the future. This statement is consistent with our discussion of the firm in that, holding the quality of an innovation equal, both the firm and the stock market expect diversification through innovation to have a greater new or unexpected impact on the firm’s future value as the firm’s prior performance decreases.
Based on these competing ideas, we suggest the following competing hypotheses:

**H3b:** The lower the prior firm performance, the greater the new value benefits of increased diversification, ceteris paribus.

**H3c:** The higher the prior firm performance, the greater the new value benefits of increased diversification, ceteris paribus.

The first of our innovation-specific moderators is the experience of the firm. Generally, we think of experience as representing a firm’s given stock or depth of knowledge (Dierickx and Cool 1989). Experience information about the innovating firm can include a variety of factors such as launch experience, marketing capabilities and industry experience. As it relates to diversification, experience relates primarily to the firm’s knowledge of a given product category or market through the relatedness of the diversification. It is presumed that as a firm pursues more related diversification (i.e., that which relates to or overlaps with its current business markets), the resources underlying the business in terms of production, marketing and research technologies are more similar (Rumelt 1974). Thus, a common knowledge base can be used across all of the various markets or categories.

In part, accounting for this factor is necessary given that firms can increase diversification in one of two ways: (1) increasing the balance of products across its current categories – for example, changing its portfolio distribution from 1 innovation in

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4 Relatedness is a firm-focused variable that represents the degree to which the firm has experience it can use in creating and launching the innovation. Note that this is distinctly different than the customer-focused idea of relatedness whereby the customer determines whether or not products are related by existing as either complements or substitutes. In this case, customer perceptions of relatedness are not required in order for the firm to be able to introduce an innovation in which it possesses relevant or related knowledge.
the first category and 2 in a second to 2 innovations in both categories – and (2) entering into a new category – for example, creating a radical innovation when previously the firm only had incremental innovations. Our concept of relatedness as a moderator to diversification accommodates Sorescu et al.’s (2003) view that a firm’s ability to leverage any innovation is a function of both the breadth (i.e., diversification) and depth (i.e., relatedness) of experience.  

While we have noted previously that the benefits to diversification decrease as absolute level of diversification increases, this may be particularly true for firms that move into areas of business that are unrelated to the firm’s core expertise (Markides 1992). In their meta-analysis of the corporate diversification literature, Palich et al. (2000) find that firms that diversify into related areas performing better than those who are undiversified or diversify into unrelated areas. This finding is consistent with research on mergers and acquisitions (Montgomery and Singh 1984; Singh and Montgomery 1987). Specifically, unrelated diversifiers experience higher risk levels than

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5 Sorescu et al. (2003) propose product scope as a combined measure of both this type of breadth and depth. Inherently, their formulation of their measure is this interaction of diversification and relatedness as they multiply entropy (a measure of diversification) by the number of products within a portfolio (depth of experience). To foreshadow, we go one step further in our analysis by considering three possible alternative measures of relatedness: (1) a binary measure of whether or not the innovation is within a restricted set of related categories or markets, (2) a percentage-based measure of the firm’s prior experience in a given product category or market and (3) category-specific knowledge (i.e., a firm with 5 products in a category in which 75% of its products are introduced) which is distinctly different from Sorescu et al.’s (2003) general depth of knowledge (i.e., a firm with 100 products has more experience than one with 5).

6 It is important to note that Palich et al.’s (2000) conceptualization of diversification assumes that level and type of diversification are not distinct, which the authors acknowledge. Thus, their conclusion that related diversification outperforms unrelated diversification is equivalent to moderate diversification outperforming high diversification. Our analysis and theorizing distinguishes between the two concepts (level and type of diversification) and thus, at a secondary level, contributes to an understanding of the value generated by different types and levels of diversification.
related diversifiers and target firms in related mergers experience greater abnormal returns than targets in unrelated mergers. However, Chatterjee and Wernerfelt (1991) find that whether related or unrelated diversification experiences better performance depends on the resource profile of the firm.

From an innovation perspective, we see the argument for the pursuit of related or unrelated diversification as two-sided. First, consider demand ($\Delta D$) and cost ($\Delta C$). On the one hand, firms could gain more future benefit from innovation that is “related” to its portfolio. When this is the case, the firm can leverage demand and supply interdependencies as well as distribution synergies (Devinney and Stewart 1988) thus resulting in higher demand and lower cost structures. This is consistent with work by Markides and Williamson (1994) which shows that the ability to exploit such interdependencies increases the value of related diversification beyond the value associated with simply being in similar industries. However, recent work by Rawley (2010) suggests that the economies of scale achieved by pursuing related diversification are offset by the need to coordinate across the firm to realize such synergies and to manage organizational rigidity (see also Nayyar 1992; Goold and Campbell 1998; Jones and Hill 1988). Consequently, the cost benefits of related diversification may not exist and may in fact be more negative as the degree of relatedness increases between categories. In addition, while the firm may benefit from being able to bundle related products, the possibility also exists that the two related products may be perceived an indirect substitutes, thus increasing the cannibalization ($X$) effect of increased diversification.
Furthermore, Lubatkin and Chatterjee (1994) find that constrained diversification (typically referred to as related diversification) enables firms to achieve both lower systematic and unsystematic risk than highly or unrelated diversification, contrary to standard portfolio theory. This results in positive leverage effects (L) when managing cash flow risk in the future for the portfolio. One the other hand, firms may benefit more when they pursue innovation that is “unrelated” to its portfolio (Devinney and Stewart 1988). This is the case because firms can leverage the uncorrelated performance of difference products (e.g., the demand and supply for the products are independent of each other) to reduce the firm’s financial risk (a component of leverage in our equation).

This is closer to the traditional financial concept of portfolio diversification where the firm stocks held in a portfolio are generally unrelated to each other and thus diversify away all non-market risk. This viewpoint is supported by Michel and Shaked (1984), who find that firms pursuing unrelated diversification achieve higher returns than those pursuing related diversification. Devinney (1992) also finds some empirical evidence that ties product relatedness (operationalized as updates to the existing product line) to increases in financial risk.

Generally, the logic above suggests competing arguments for how relatedness will enhance (or detract from) the benefits to diversification. Consequently, we propose the following competing hypotheses:

H3d: The lower the relatedness of a diversification move, the greater the new value benefits of increased diversification, ceteris paribus.

H3e: The higher the relatedness of a diversification move, the greater the new value benefits of increased diversification, ceteris paribus.
Next, we consider two market-based, innovation-specific variables – market competitiveness and consumer adoption uncertainty. Market competitiveness represents the aggregate competition that exists within a given market or category in which the firm enters. Generally, as the competitiveness of the market increases, the lower the level of demand ($\Delta D$) for the firm should obtain, all else being equal. Thus, the smaller the possible level of cash flows that the firm could achieve due to diversification. We suggest that this is true despite the fact that more competitive markets also tend to represent larger markets which should represent greater potential demand for the firm as a function of market size (Melitz and Ottaviano 2008) and possible increased customer heterogeneity. Thus as a market becomes more competitive, the net demand increase for entering in a larger market will be smaller than what the firm might expect if it entered a less competitive market.

In addition, with an increase in competition comes a commensurate decrease ($\Delta P$) in price (Melitz and Ottaviano 2008). Recall that part of diversification’s ability to achieve higher prices ($\Delta P$) is due to driving competitors from the marketplace. As markets become more competitive, fewer competitors may be less likely to leave, thus mitigating the market power benefit of diversification.

The net reduction in demand combined with a decrease in price, which results in a lower per unit contribution, suggests that the benefits to diversification will decrease as the market competitiveness increases. Consequently, we propose the following hypothesis:
H3f: The greater the market competitiveness, the lower the new value benefits of increased diversification, ceteris paribus.

Consumer adoption uncertainty can be considered the ambiguity associated with whether or not consumers will purchase and use an innovation. As innovations become more discontinuous, customers must accept more new ideas and/or learn new behaviors when using the product creating uncertainty regarding whether or not the consumer will benefit from adopting the innovation (Rogers 1995; Calantone, Chan and Cui 2006; Danneels and Kleinschmidt 2001; Dewar and Dutton 1986; Hoeffler 2003; Castaño et al. 2008). This consumer learning requirement creates greater risk to consumers in making the adoption decision and thus slows adoption (Rogers 1995; Gatignon and Robertson 1985), which subsequently creates greater uncertainty regarding the degree to which consumers will actual purchase the innovation. This deceleration in consumer adoption also serves to open the door for competitors to produce an alternative entry. The combination of these effects reduces the increase in demand ($\Delta D$) expected due to diversification.

In addition, deceleration in adoption increases the risk of innovation for the firm and decreases the net present value of the cash flows associated with an innovation by increasing the expected variability in future cash flows. This reduces the leverage ($L$) benefit, in the form of reducing uncertainty of cash flows, which might be expected from innovation due to an increase in diversification. Consequently, we propose the following hypothesis:

H3g: The greater the consumer adoption uncertainty of an innovation, the lower the new value benefits of increased diversification, ceteris paribus.
Finally, competitor reactions to innovation reflect the ability of competitors to introduce products that imitate and offer a substitute for the entrant firm’s innovation. If competitors can easily and quickly imitate the firm’s innovation, the firm will not be able to appropriate all of the profits it might expect from the innovation (Barney 1991). Instead, competitors will enjoy these rents as well. Consequently, the degree of competitor protection is a focal driver of the degree of demand (ΔD) the firm can expect to obtain as a function of its diversification through innovation. As more competitors are able to enter the market with equivalent products, holding the market size equal, the less demand a given firm can acquire. Thus, if a firm is protected from competition, this protection enhances the demand increase provided by increased diversification.

In addition, should the firm hold a monopoly (or pseudo-monopolistic) position within the market, the price (ΔP) it can charge for a given product is higher, all else being equal. Consequently, if a firm is protected from competition, the per-unit contribution of each unit sold is higher than if the innovation is able to be copied or co-opted by competitors.

Competitor protection can be invoked by legal protections (e.g. patents), relational protections (e.g., exclusive distribution relationships) and/or intangible product characteristics that make it difficult to replicate (e.g., causal ambiguity). Regardless of its form, the absence of such protections means the future profits accruing to any innovation are likely to be smaller and/or possess greater risk. This is consistent with work by Henard and Szymanski (2001) which demonstrates a negative relationship...
between likelihood of competitor response and new product success. Based on this prior research, we suggest the following hypothesis:

H3h: The greater the degree of competitor protection for an innovation, the greater the new value benefits of increased diversification, ceteris paribus.

As discussed above, the new value associated with changes in product portfolio diversification is likely to be highly contingent upon both firm and product-specific factors that differentially affect the mechanisms in Equation (1) which drive the new value outcomes from diversification through innovation. Table 6 outlines the effects, as discussed in the preceding 11 pages, while Figure 5 shows a modified version of Figure 1 accounting for the process by which diversification influences new value. For simplicity’s sake, we have focused only on the portion of Figure 1 attributable to changes in the firm’s product portfolio. However, the same process holds true for the within-brand portfolio, albeit with different moderators. Thus, we now move to a

Table 6: Summary of Moderator Arguments for Product Portfolio Diversification

<table>
<thead>
<tr>
<th>Moderator</th>
<th>Demand (ΔD)</th>
<th>Price (ΔP)</th>
<th>Cost (ΔC)</th>
<th>Leverage (L)</th>
<th>Cannibalization (X)</th>
<th>Net Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of diversification</td>
<td>+ (diminish.)</td>
<td>+ (diminish.)</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+ (diminish)</td>
</tr>
<tr>
<td>Prior success</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>?</td>
<td>N/A</td>
<td>?</td>
</tr>
<tr>
<td>Relatedness</td>
<td>+</td>
<td>N/A</td>
<td>?</td>
<td>?</td>
<td>+</td>
<td>?</td>
</tr>
<tr>
<td>Market competitiveness</td>
<td>?</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>Consumer adoption uncertainty</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>Competitor protection</td>
<td>+</td>
<td>+</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>+</td>
</tr>
</tbody>
</table>
discussion of the potential moderators of the brand diversification and new value relationship utilizing the vast literature on brand extensions.

![Figure 5: Extended Product Portfolio Diversification Framework](image)

### 3.3.2 Within-brand Portfolio Diversification Moderators

As noted in Section 3.2, brand diversification is suggested to have a positive relationship with new value. However, many of the effects of diversification on the components underlying new value were noted to be contingent upon extension- and brand-specific factors. We now turn our focus to these contingencies that affect how changes in diversification to influence new value. In terms of within-brand portfolio diversification, we focus on two brand-specific characteristics (level of within-brand diversification and parent brand strength), two extension-specific characteristics (parent brand-extension fit and extension type) and one blended characteristic (parent brand dilution risk).
First, we examine the contingencies that result as a function of level of within-brand diversification. Work by Farquhar and Herr (1992; see also Farquhar et al. 1992) has shown that if a brand is strongly associated with a given category, consumers have difficulty accepting extensions into other categories. Such research would suggest that increases in the diversification of a given brand’s product portfolio due to an extension launch will not necessarily lead to the aforementioned benefits at low levels of diversifications. Consequently, diversification through an extension may only be able to achieve the demand, cost and leverage benefits proposed in Section 3.2 once a certain level of brand diversification has been reached. For example, if consumers are less willing to accept a given brand extension, this indicates that the demand increase (ΔD) for the firm is less than would be generally expected when the firm diversifies. In addition, firms may have to expend more advertising resources to overcome this resistance which may offset the cost-reducing (ΔC) economies of scale achieved through utilizing common distribution channels, sales people, and other commercial factors. Finally, diversifying a brand only establishes a platform for growth to the degree that it enables consumer acceptance of brand extensions in the future. Given that this acceptance is generally low at low levels of diversification, we can infer that the leverage benefits (L) for a firm are less at low levels of diversification than at other points in the diversification distribution.

As a brand’s category associations become more diverse, the ability of the firm to go after more distant extensions increases (Keller and Aaker 1992). As brand diversification becomes increasingly broad, consumers are more willing to accept
additional diversification moves (Boush and Loken 1991) potentially because the brand beliefs are increasingly holistic and non-category specific (Meyvis and Janiszewski 2004). Thus, at moderate levels of diversification, the firm is able to benefit from increased demand, advertising and other cost efficiencies, and reduced cash flow risk while also providing a platform for successful future extensions as described in Section 3.2.

Like product diversification, however, diversification beyond this point does not necessarily benefit the firm. By continuing to diversify the brand past a certain point leads to the reduction, and even destruction, of some of the benefits to increasing diversification. From a demand perspective (ΔD), as a firm diversifies a given brand, the likelihood exists that the brand associations will become increasingly diffuse. The presence of diffuse, unfocused brand beliefs reduces the brand’s equity (Braig and Tybout 2005) which makes any given extension less attractive relative to other competing products. In fact, as shown by Berger et al. (2007), unfocused variety may actually reduce perceptions of expertise which can then reduce quality perceptions and choice. These altered perceptions reduce demand in addition to the increased competition a firm is likely to encounter as it further diversifies a brand due to the presence of a finite marketplace which diminishes the firm’s ability to enter new markets with an existing brand. From a leverage standpoint (L), reduced brand equity also provides a less attractive platform for future growth, given that leveraging the brand more in the future will not necessarily help the firm. This circumstance reduces the leverage benefits from diversification.
This brand equity issue is also relevant from the cannibalization (X) point of view in that this reduced brand equity may spillover to other products within the brand’s portfolio and reduce future sales from those products. Consequently, even though products are not technically competing, an extension that “overly” diversifies a brand can, in theory, cannibalize sales from other non-competing products. This increased likelihood of cannibalization exists in addition to the fact that as the within-brand product portfolio grows, the more the products will compete for the budget of the consumer, further increasing cannibalization possibilities.

Finally, from a cost perspective (ΔC), the economies of scope for physical resources diminish over time due to scale constraints (e.g., Levinthal and Wu forthcoming), similar to product portfolio diversification. In addition, the advertising efficiencies specific to within-brand diversification begin to decline due to the need to actively manage the connections across a wide variety of categories.

Consequently, the benefits of increasing brand diversification are reduced as within-brand diversification levels extend beyond some optimal point. Given the contingencies associated with the acceptance and reciprocal effects of brand extensions, however, it is not necessary that new value is negative beyond this optimal point. In fact, the introduction of an extension may still create positive new value for the firm; however, it is likely that that new value benefits are less than at the optimal within-brand diversification point. Thus, we suggest that within-brand portfolio diversification interacts with diversification changes whereby:
H4a: The new value benefits from increases in within-brand portfolio diversification due to an innovation introduction will be highest at moderate levels of within-brand diversification, ceteris paribus.  

Brand extension research has also shown that the strength of the parent brand is an important predictor of the value of a brand extension. Lane and Jacobson (2005) find that the financial market’s positive reaction to brand extensions is moderated by the attitude towards and familiarity with the parent brand. The work would suggest that the stronger the positive attitude towards the parent brand, which is reasonably proxied by strength, the more value a brand extension creates. This value can be derived from demand, leverage, price and cost benefits.

Prior research has shown that strong brands can extend more easily into distant categories (e.g., Rangaswamy et al. 1993) in part because they are more credible and thus consumers are more willing to trust the decision to extend the brand into a new category (Keller and Aaker 1992). These results would indicate that the stronger the parent brand, the greater the demand (ΔD) from an extension and the greater the ability to leverage (L) the brand in the future which enhances the benefits from diversification.

In addition, research has typically shown that stronger parent brands can also charge higher prices (ΔP) than brands that are relatively less strong (e.g., Simon 1979, Agrawal 1996; Park and Srinivasan 1994). However, it should be noted that it is possible that brands with a strong reputation may maintain a relatively lower or “value” price than other weaker brands. In fact, work by Ailawadi et al. (2003) demonstrated that

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7 For clarification purposes, please note that all within-brand portfolio moderators are labeled as H4 and are differentiated by the letters a-e.
price itself is not necessarily an indication of high brand equity and that, instead, one must consider the revenue generated by a brand (demand x price). On average, however, stronger brands typically communicate greater value which traditionally translates to higher prices.

Other work has shown that perceptions of fit may vary as a function of consumer characteristics. For example, Broniarczyk and Alba (1994) find that “novice” consumers, who do not possess a large knowledge base on the parent brand, rely on more attitudinal and awareness measures to gauge perceptions of fit as opposed to “expert” consumers who evaluate fit on the basis of brand-specific associations. Consequently, the brand associations are sufficiently broad to enable more distant extensions. This broad concept may enable a firm to leverage advertising economies of scope more efficiently without having to clarify the connection between the parent brand and the extension category, thus reducing the cost (ΔC) associated with any given brand extension. Added together, these effects result in the following hypothesis

**H4b: The greater the strength of the parent brand, the greater the new value benefits of increased diversification, ceteris paribus.**

We now consider the extension-specific characteristics and their influence on the relationship between within-brand diversification and new value. First, we examine parent brand – extension fit. The success of brand extensions has been shown to be a function primarily of the consumers’ perceptions of fit between the extension and the parent brand (Aaker and Keller 1990; Klink and Smith 2001). Fit between the extension and the parent brand can be derived from most any brand association. This is true to the
extent that fit is about the brand extension “making sense” to the consumer. However, three key mechanisms for assessing fit have been attribute consistency (or product feature similarity), brand image or concept consistency (Batra et al. 1993; Park et al. 1991) and ability consistency (Keller and Aaker 1990).

Brand extensions can be successful if it possesses any or all sources of fit. For example, Park et al. (1991) demonstrate that Rolex could more easily extend from watches into clocks, bracelets and rings than Timex, while Timex could more easily extend into stopwatches, calculators and batteries than Rolex. In the case of Rolex, the high-end brand image consistency overcame the lack of product attribute consistency. Alternatively, function-oriented Timex benefited from both product feature or attribute and image consistency in its favored extension categories. In another study, Broniarcyzk and Alba (1994) show that Fruit Loops and Cheerios had different brand extendibility based on predominant brand associations. For example, the association of Fruit Loops with “sweet” and “kids” translated well into lollipops and popsicles but not other categories more closely related to cereal (e.g., hot cereal, waffles). Cheerios primary brand association, “healthy grain”, however, was only relevant in categories closely related to cereal. Thus, Cheerios’ ability to extend into more distant categories was more limited than Fruit Loops. Image or attribute consistency, however, can extend beyond the category-specific associations of the original brand product. For example, Bridges et al. (2000) suggest that fit can be enhanced if the categories in which the brand participates are coherent. For example, Fisher-Price participates in a wide variety of categories (e.g., bath care, toys) all of which are commonly viewed as “products for
children” (Keller 2002). Finally, in terms of ability consistency, consumers may evaluate how the company’s skill set transfers to making the extension product. For example, would Crest’s manufacturing facilities or knowledge residing in its employees from participating in the toothpaste category assist the firm in entering the mouthwash category? The greater the fit between the firm’s current core competency and the competencies required for the extension, the more the perceived quality of the parent brand will transfer over to the extension (Aaker and Keller 1990).

Regardless of the form of fit, if consumers perceive fit to be lower, the lower the demand ($\Delta D$) from any given brand extension, particularly those that are different from the firm’s prior markets or categories. Thus, as a brand diversifies, decreased perceptions of fit will decrease the demand benefits of diversification.

Furthermore, the firm must expend more effort (and advertising dollars) to ensure consumers have a positive perception of fit between the parent brand and the extension if it believes consumer may have difficulty making the connection between the two. This need reduces the advertising cost benefits ($\Delta C$) associated with diversifying a brand through an extension.

Either way, the benefits to diversification through a brand extension decrease as the perception of brand fit decreases. Consequently, we propose the following hypothesis:

$$H4c: \text{The greater the perceived fit between the parent brand and the extension, the greater the new value benefits of increased diversification, ceteris paribus.}$$
Based on the importance of fit, many firms have focused primarily on line (i.e., within the same category), rather than category (i.e., entering a new market), extensions (Farquhar 1989; Keller 1998; Ogiba 1988). Much like product portfolios, firms can increase within-brand diversification by pursuing either line or category extensions. In the case of line extensions, firms can increase diversification by equalizing the distribution of the brand across a given set of categories. Category extensions increase diversification via entry into a new category, much like the traditional notion of corporate or product diversification.

In terms of their effects on new value, line extensions are proposed to benefit the firm by enabling the targeting of more homogeneous customer segments, which results in an increase in short-term sales ($\Delta D$) from consumers who needs are now met through the line extension. In addition, line extensions may increase demand by satisfying variety-seeking customers who might have otherwise chosen a product from the line of an alternative brand. The increase in products available aligns with the market power argument that the firm can force other competitors from the market and reap even further demand benefits which offset the cannibalization that occurs within the category by virtue of the extension competing as a substitute with current products in the brand line (Quelch and Kenny 1994).

To the extent that the market power outcomes force competitors from the category, the firm may be able to charge a higher average price ($\Delta P$) for the extension. However, given that product lines often contain products at various price levels, it
cannot be stated for certain that the price a firm could charge for an extension would be higher or lower than if the product was a category extension.

By targeting homogeneous segments within the same category, line extensions also enable firms to achieve both economies of scale in product and economies of scope in marketing and distribution costs. This occurs given that the messaging of advertising need not change nor do the channels of distribution as the extension essentially represents the same product currently available, just in a slightly modified form. Consequently, line extensions enhance the cost benefits (ΔC) of diversification.

However, line extensions can stimulate lower brand loyalty by increasing the variety-seeking behaviors of customers, opening the door for competitor entries in the future, putting a strain on relationships with trade partners, and eventually increasing the costs associated with managing multiple products, promotion schedules and manufacturing processes for multiple products within the same line (Quelch and Kenny 1994; see also Bayus and Putsis 1999). These effects result in lower leverage (L) for the brand portfolio in the future. In addition, in most cases, overall category demand is finite and thus the demand-side benefits to line extensions decrease on the margin as the market becomes saturated, indicating that the firm’s ability to leverage the brand may be compromised in the future. However, line extensions have been shown to have a potential positive reciprocal effect on the parent brand (Carter 2007; Balachandar and Ghose 2003. These factors should increase the positive leverage benefits of increasing brand diversification.
While concern does exist regarding the potential for line extensions to cannibalize (X) existing parent brand products, thus creating the possibility for a negative (or at least neutral) effect on overall revenues and profits. However, this is only problematic to the degree that the extension is a substitute for the existing products in the brand portfolio or if it shares shelf space with other existing products causing product facings to be lost if a new product is introduced. If we consider that line extensions may not produce cannibalization (e.g., Coke vs. Diet Coke), then the net effect of a line extension should be to positively enhance the new value associated with within-brand diversification.

Category extensions, on the other hand, are more risky in that it may be more difficult for consumers to perceive the fit between the extension and the parent brand, particularly if the parent brand is strongly associated with the attributes of the original product category (Rangaswamy et al. 1993; Farquhar and Herr 1992). Consequently, firms must spend more money and time ensuring that consumers are able to connect the new extension with the parent brand. This increased difficulty for both the consumer and the firm results in a reduction of the demand (ΔD) and cost (ΔC) benefits associated with within-brand diversification.

However, extending a brand to a new category successfully can broaden the product categories associated with the brand and thus the firm to pursue further category extensions in the future (Dacin and Smith 1994; Keller and Aaker 1992; Boush and Loken 1991). In fact, Batra et al. (2010) find that brands that maintain abstract or general associations are “atypical” or not specifically tied to one product category.
Furthermore, category extensions may enable the firm to reduce the risk associated with the brand’s cash flows. These effects enhance the leverage (L) benefits associated with diversification.

Finally, category extensions cannibalize (X) the current brand product line to a much lower degree, if at all, relative to line extensions. This result occurs given that the within-brand products exist in different categories and thus are not clear substitutes.

In sum, the case is less clear-cut in terms of the net effect of category extensions on new value. However, it seems apparent that category extensions will enhance the new value benefits to a lower degree than line extensions. Consequently, we suggest the following hypothesis:

**H4d: Line extensions will achieve greater new value benefits from increased diversification than category extensions, ceteris paribus.**

Finally, a primary concern in the branding literature has been the negative reciprocal impact, or *brand dilution risk*, of an extension on the parent brand. Brand dilution risk can be conceptualized in three different ways. First, risks exist in terms of cannibalization (X). The greater the degree to which an extension acts as a substitute for a firm’s existing products, the more it negatively impacts the future sales of those products. While research has shown that extensions may incremental increase revenues above and beyond this cannibalization risk (e.g., Reddy, Holak and Bhat 1994), the logic remains that the greater the risk of cannibalization, the lower the positive new value impact of any diversification via an extension.
Second, all firms possess product adoption uncertainty or probability risk regarding when and if consumers will adopt a given innovation. From the market’s perspective, the greater the perceived uncertainty of the innovation’s diffusion into the marketplace, the greater the potential for product failure. This potential for brand extension failure may be indicative of the firm’s inability to successful leverage (L) the parent brand in the future. Consequently, the more adoption uncertainty that exists, the more negatively the market should react to any given extension, thus reducing demand for the product (ΔD).

Finally, while most research has shown that negative experiences with a brand extension do not necessarily influence consumer perceptions of the parent brand (e.g., Keller and Aaker 1992; Romeo 1991; and Roedder John et al. 1998), Keller and Sood (2003) demonstrate negative consumer experiences with an extension are more likely to have negative feedback effects when the extension is introduced in categories similar to that of the parent brand or represents an incongruity with the brand. As the potential for negative consumer experience risk increases, the risk also increases for the negative feedback to, in effect, cannibalize (X) existing products in the within-brand portfolio. Consequently, perceptions of the future cash flows from the overall brand portfolio will be more negative than when this risk is lower.

Overall, across types of brand dilution risk, as the risk increases, the lower the benefits to adjusting a brand product portfolio through an extension. Consequently, we suggest that:
H4e: The greater the brand dilution risk, the lower the new value benefits of increased diversification, ceteris paribus.

As discussed above, the new value associated with changes in within-brand portfolio diversification can be highly contingent upon both firm and product-specific factors that differentially affect the mechanisms in Equation (1) which drive the new value outcomes from diversification through innovation. Table 7 outlines this various effects, as discussed in the preceding pages, while Figure 6 shows a modified version of Figure 1 accounting for the process by which diversification influences new value. For simplicity’s sake, we have focused only on the portion of Figure 1 attributable to changes in the firm’s within-brand portfolio.

**Table 7: Summary of Moderator Arguments for Within-Brand Portfolio Diversification**

<table>
<thead>
<tr>
<th>Moderator</th>
<th>Demand (ΔD)</th>
<th>Price (ΔP)</th>
<th>Cost (ΔC)</th>
<th>Leverage (L)</th>
<th>Cannibalization (X)</th>
<th>Net Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of diversification</td>
<td>Inverse-U</td>
<td>N/A</td>
<td>U-shaped</td>
<td>Inverse-U</td>
<td>+ (diminish.)</td>
<td>Inverse-U</td>
</tr>
<tr>
<td>Parent brand strength</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>N/A</td>
<td>+</td>
</tr>
<tr>
<td>Parent brand – extension fit</td>
<td>+</td>
<td>N/A</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>+</td>
</tr>
<tr>
<td>Line extension</td>
<td>+</td>
<td>?</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Parent brand dilution risk</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>
In summary, this section has demonstrated that both product portfolio and within-brand portfolio diversification should have at least moderately positive effects on the creation of new value from innovation. However, these effects are contingent upon multiple firm- and product-specific factors, which influence the success of the innovation itself as well as the portfolio. We now move to a discussion of our data sample, analysis methodology and a proposed survey for studying the relationships in Figures 5 and 6.
4. Methodology

4.1 Data Sample

We will test our predictions using information from several existing secondary sources from 2006-2008. The sources include: (i) Datamonitor’s Product Launch Analytics, which contains all product introductions to retail stores around the world and expert coding of products as innovations or noninnovations; (ii) COMPUSTAT firm data for observable firm financial data and characteristics; and (iii) CRSP data on firm returns. A consumer survey was also conducted, as described in Section 4.4.2.2, to gather data regarding brand extension perceptions as well as alternative measures of several product portfolio variables.

The analysis for both diversification elements will be conducted using information regarding innovation introductions for public firms from 2006-2008 in Product Launch Analytics. Product Launch Analytics tracks all product introductions worldwide and records them (see Sorescu and Spanjol 2008 for an overview of the benefits of this dataset). Product Launch Analytics collects extensive data about the new product, its features, and the firm introducing it. We limit our analysis to 2006-2008 as ProductLaunch Analytics did not issue daily introduction reports until 2006, prohibiting an event study analysis of individual product introductions. To determine whether or not the innovation represents a brand extension, we examined whether or not the firm had introduced any product (non-innovation or innovation) with the same brand name (e.g., Colgate, Tide, Sprite, etc.) prior to the innovation’s launch over various timeframes covered by the entire Product Launch database (e.g., 5 years).
Product Launch Analytics also systematically codes all introductions according to whether the product fits into a number of innovation categories: packaging innovation, merchandising innovation, formulation innovation, positioning innovation, market innovation, and technological innovation. In this dissertation, a product is defined as innovation if it is categorized into one of the six categories noted above by Product Launch coders. Products can be classified into multiple categories. The 188 innovations used are coded as being innovative on at least one dimension (e.g., formulation, merchandising, new market, packaging benefit, positioning, or technology). Earlier work has indicated that financial markets believe that products coded as innovations in this database have greater implications for future cash flows than products not coded as innovations (Sorescu and Spanjol 2008). This is consistent with prior research advocating the importance of innovation relative to more incremental product/service introductions even though innovations are suggested to constitute from 2 to 14 percent of firm’s product introductions (Booz-Allen & Hamilton 1982; Kim and Mauborgne 1999; Day 2007). Our sample is similarly structured with only 3.1 percent of the total product introductions for the firms in our analysis being classified as innovations. Given the evident rarity of these innovation events, we consider it more likely that the stock market will consider these introductions as highly relevant, new information that has an identifiable stock market response.

Given the need to ensure statistical stability of our results and to enhance clarity in parameter estimate interpretation, we will separate the samples from this database for the product portfolio and within-brand analyses. For the product portfolio
diversification hypotheses, the initial analysis sample includes all 188 innovations from 2006-2008. The initial within-brand portfolio diversification analysis sample includes 167 innovative brand extensions (a subset of the larger sample) across the same time period.¹

From the perspective of sampling procedure, comparing the sample of innovations from between the product portfolio and within-brand diversification analyses, we find that 92% of all product innovations in the final sample from 2006-2008 are brand extensions. This is consistent with prior work which has indicated that approximately 81% of all new product introductions, both innovative and not innovative, are brand extensions during the 1990s (Keller 1998). Other work (Ogiba 1988) has shown this number to be as high as 95%. Consequently, we are not concerned that splitting our sample to examine the diversification issues separately creates a sampling problem with respect to the effects of innovation.²

4.2 General Analysis Methodology

The decision to split the sample in this way requires a conceptual discussion of the regression analyses that will be conducted for each sample. First, recall our measure of new value (NVᵢ) as described in Chapter 2. As noted in this chapter, we measure new value as the abnormal stock returns associated with the innovation event. We noted, however, that while such a measure is a valid proxy for new value, it is also a fallible measure. The limits to our measure stem from the fact that abnormal stock returns are

¹ The final samples are reduced from this initial size due to data availability, removal of confounding events and respondent error in the customer survey.
² However, given that innovations are of greater risk to firms than more incremental projects (e.g., Sorescu and Spanjol 2008), it is possible as suggested in the introduction that firms are utilizing brand extensions more frequently with innovations in order to offset the increase in risk due to the nature of the innovation.
about expectations or beliefs of value and are not the “true” new value (TNV) generated by the innovation (and the product portfolio). Consequently, as shown in the formula below, our calculation has some degree of measurement error, represented by $e_i$.

$$\text{(2) } NV_i = TNV_i + e_i$$

To explain some of these sources of measurement error, we introduce controls ($c$) into our models to account for variations associated with macroeconomic effects, firm size, etc., as shown in Equation (3) below.

$$\text{(3) } NV_i = TNV_i + c + e_i$$

Next, consider our overarching framework as shown in Figure 1. As noted in that figure, new value (TNV) created via diversification through innovation is generated through both product portfolio and within-brand diversification. This would suggest that total new value is a summation of the new value generated through product portfolio diversification ($NV_{pi}$) and the new value generated through within-brand diversification ($NV_{bi}$) as shown in the following equations:

$$\text{(4) } TNV_i = NV_{pi} + NV_{bi} + c + e_i$$

$$\text{(5) } NV_{pi} = \bar{h} + f(h) + \bar{w} + e_{pi}$$

$$\text{(6) } NV_{bi} = \bar{w} + g(w) + e_{bi}$$

$$\text{(7) } E(NV_{pi}) = \bar{h}$$

$$\text{(8) } E(NV_{bi}) = \bar{w}$$

where $c$ represents an array of control variables, $h$ represents the array of variables noted in Section 3.1 and 3.3.1, $\bar{h}$ represents the expected average effect of an innovation (i.e., the intercept), $\bar{w}$ equals the expected average effect of innovative brand extensions,
and \( w \) represents the array of variables noted in Section 3.2 and 3.3.2. Specifically, the variables included in \( h \) are change in product portfolio diversification, absolute level of product portfolio diversification, prior success, relatedness of the innovation, market competitiveness, consumer adoption uncertainty and competitor protection. The variables included in \( w \) include change in within-brand diversification, absolute level of within-brand diversification, perceived fit, parent brand strength, type of extension and dilution risk. It is important to note that \( \bar{w} \) is meant only as a control effect in Equation (5) and is represented by the intercept in the estimation of Equation (6). By excluding such control variables, however, the factors in Equations (5) and (6) do not overlap.

Note that, as described in Chapter 2, our dependent variable for new value is represented by abnormal stock returns, which itself cannot be directly decomposed into the abnormal returns attributable to product portfolio and within-brand diversification. This problem is augmented by the fact that the vast majority of the observations are potentially changing both the product and the within-brand portfolios as noted above. If this is true, by substituting Equations (5) and (6) into Equation (3), we derive the following formula:

\[
NV_i = \bar{h} + f(h) + \bar{w} + g(w) + e_{pi} + c + e_i
\]

By rearranging the terms as shown in Equation (9), we see that the \( e_i \) in Equation (3) actually consists of three types of error as shown in Equation (10) below:

\[
NV_i = \bar{h} + \bar{w} + f(h) + g(w) + c + e_{pi} + e_{bi} + e_i
\]

\[
e_i = e_{pi} + e_{bi} + e_{mi}
\]
Where the error terms are the error associated with the unaccounted for new value variance associated with product portfolio variables (\(e_{pi}\)), within-brand portfolio variables (\(e_{bi}\)) and other idiosyncratic measurement effects (\(e_{mi}\)), respectively.

Assuming homoskedasticity in this error structure and independence between \(f(h)\) and \(g(w)\), we can perform a procedure to attempt to separate out the effects while maintaining statistical reliability in our analyses. First, given that if a firm changes its within-brand diversification, it is also changing its product portfolio diversification, we can consider within-brand diversification as a subset of product portfolio diversification. An example can demonstrate this effect. Consider a firm that introduces an innovative extension for its only brand, \(Brand \ X\), into a new category. Previously, the brand (and the firm) had only existed in one category with 9 products. Thus, the firm had 100% of its products (both at the portfolio and brand level) in one category. By introducing the innovation into a new category with the existing brand name, the firm now has a product and brand portfolio with 90% of products in one category and 10% in another. However, if the firm introduces an innovation using a new brand, \(Brand \ Y\), it is adjusting its overall product portfolio to the 90%/10% distribution.

Consequently, if we include the dummy for brand extensions in Equation (3) rather than all of the variables noted in Equation (4), we can control for the average effect of brand extensions (\(\bar{w}\)) on new value in analyzing the effects of the product portfolio variables in Equation (2). This control allows us to account for brand extension

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3 Recall that our measure of new value is inherently a measure of the expectation or the belief of new value creation. Thus, while a reasonable proxy as described in Chapter 2, it is still a fallible measure that may possess some error.
effects and assess, albeit with some error \((e_{pi})\), the new value associated with changes in the product portfolio. We thus examine the following regression:

\[
NV_i = \bar{h} + \bar{w} + f(h) + c + V_w.
\]

(12)

Where all remaining components are represented by \(V_w\), which equals the following:

\[
V_w = g(w) + e_{pi} + e_{bi} + e_{ii}
\]

(13)

Under the assumption of homoskedasticity and normality of errors, then \(V_w\) should have an expected value of 0 and should not be correlated with \(NV_{pi}\).\(^4\)

Given these assumptions, we can take our parameter estimates and calculate expected new value from product portfolio changes \((\bar{NV}_{pi})\) using the following equation:

\[
\bar{NV}_{pi} = \hat{\alpha} + \sum_k \hat{\beta}_k h_k
\]

(14)

where \(\hat{\alpha}\) equals the estimated value of \(\bar{h}\) and \(h\) equals the variables contained in \(f(h)\) in Equation (5). We can then subtract out this predicted new value as shown in the equation below\(^5\):

\[
NV_i - \bar{NV}_{pi} = NV_{bi} + c + e_i
\]

(15)

By rearranging this formula as shown in Equation (15), we can then use this remaining new value as proxy for the new value attributable to within-brand portfolio changes \((NV_{bi})\). Again, assuming homoskedastic and normal errors, then any error then

\(^4\) This is consistent with our suggestion that \(E(g(w),f(h)) = 0\). In addition, while it is possible that \(e_{bi}\) is correlated with our dummy variable for brand extensions, recall that we are not interested in this parameter estimate when estimating the value associated with diversifying the product portfolio and are instead concerned with controlling for this effect.

\(^5\) Note that the average effect of a brand extension \((\bar{w})\) and any other control variables are excluded in the calculation of the estimated new value from the product portfolio. Consequently, it remains in the new value to be estimated by the brand, consistent with the formula in Equation (4).
remaining in $e_t$ should be uncorrelated with the independent variables with a mean of zero.\(^6\)

\begin{equation}
NV_{bi} = NV_{i} - \overline{NV}_{pi} + c + e_i
\end{equation}

Using this conceptual framework, we now move to a discussion of the event study methodology basis for our dependent variable as well as a description of our independent measures for both portfolio analyses.

**4.3 Event Study Methodology**

Event study methodologies have been employed in a wide variety of settings within the marketing discipline. Studies have examined the impact of corporate name changes (Horsky and Swyngedouw 1987), joint ventures (Johnson and Houston 2000), celebrity endorsements (Agrawal and Kamakura 1995) and new product announcements (Sorescu et al. 2007; Chaney, Devinney and Winer 1991). The benefit of this methodology is that it enables a joint test of both our hypotheses regarding the perceived influence of innovation characteristics on the future cash flows of the firm and the efficiency with which the market processes information (Fama et al. 1969). Under the assumption that markets are efficient, the effect of the introduction of an innovation should be reflected immediately in the firm’s stock price (Fama 1991).

\(^6\) While somewhat unorthodox, this type of methodology is not without precedent as described in the event study methodology below. While typically applied to stock response variables (expected stock returns, abnormal returns, etc.), as long as the assumptions of error homoskedasticity, error normality and independence of variables hold, essentially this method enables us to continue to explain the variance in $NV_i$, the level at which our dependent variable is measured, without giving up reliability in our parameter estimation or subjecting ourselves to omitted variable bias due to the need to reduce the variables considered to maintain statistical reliability.
As discussed in Chapter 2, our dependent variable is the new value created by the introduction of an innovation. For both theoretical and methodological reasons, we proposed abnormal stock returns as an appropriate measure of this concept. The use of this measure is also consistent with the standard event methodology used in the prior literature.

From a conceptual point-of-view, event study methodologies are designed to extract the information value of a given event for the future cash flows of the firm that is unanticipated or unexpected. Consequently, to the degree that a firm’s behavior is expected or anticipated with certainty, event studies should not yield nor predict any abnormal returns. However, with less than perfect anticipation (i.e., in the presence of uncertainty), “the announcement effect equals the valuation effect times one minus the probability that the event would occur (Thompson 1995, p. 967). In fact, according to Thompson (1995, p. 968):

To say that a decision made within a corporation is not perfectly anticipated requires that something about the decision be uncertain in the eyes of investors. There are two possibilities. The first is that investors do not understand the objective function of the decision-maker. But, if the market learns something about the decision-making process, this presumably affects market perceptions of the probabilities of future decisions made within the firm. The second possibility is that investors do not know as much about the exogenous environment surrounding the corporate decision as the corporate decision-maker. In this case the market learns something about private information simultaneously with the decision. In both situations, the implications of theory must be couched in terms of everything that the market learns from a corporate event.

As a concrete example, imagine at the point the investor first becomes aware of an innovation through pre-announcement or other research that the market is only 20%
certain that a firm will introduce the new innovation in a given category. Consequently, at that point in time, the maximum value assigned to the innovation will be 0.2 times the expected future cash flows associated with the product prior to any announcement or event regarding the product. As uncertainty becomes resolved over time, the remaining 0.8 or (1-0.2) percent of the expected future cash flows is incorporated into the firm’s stock price at a later point in time. With respect to a specific announcement, if none of the remaining 0.8 uncertainty is resolved prior to the event itself, all of the cash flows associated with this uncertainty would not be incorporated until the event occurs.

In the case of the launch of innovative new products, it is unlikely that the innovation launch is either fully anticipated or unanticipated. Investors, and analysts in particular, may have detailed, but limited, knowledge regarding the firm’s activities. They may know, for example, that a firm is spending a certain amount of money on R&D or is strategically planning to enter a given market. They may know from analyst conferences or quarterly reports that the firm may have a particular strength in a given capability or within a given consumer or geographic market. However, it is unlikely that management would communicate all private information ahead of a product launch, particularly if it wanted to protect any possible competitive advantage going into the launch. Consequently, investors may not be aware of specific product launch plans beyond what the firm has pre-announced.

Even if investors may be aware that the firm is planning a new product introduction, they may be unsure of the specific date of introduction. This uncertainty tempers expectations not only the true impact of the innovation both in terms of its own
sales as its impact on the other products in the portfolio, but also obscures the strategic direction of the firm for the future (i.e., are they going to diversify first, introduce a line extension first, etc.). Furthermore, up until the actual launch, the product itself is merely “vaporware” meaning that the firm may never have any intention of selling the product or that the product may not even exist.

Once the product has been released, these types of uncertainty are resolved and thus the information may be finally incorporated into the stock price. As Sood and Tellis (2009, p.444) note, this resolution can be positive or negative, but should be significant nonetheless:

Announcements about commercialization events may lead to negative returns because launched products fall below expectations, costs of promotion and launch seem high, or the competitive advantages from launch seem fleeting (Crawford 1977, Berenson and Mohr-Jackson 1994). On the other hand, announcements of commercialization events may lead to positive returns because they signal the competitiveness of the firm, the successful completion of innovation project, and the expansion of the product portfolio (Sharma and Lacey 2004, Chen et al. 2005, Akigbe 2002, Zantout and Changanti 1996, Chaney et al. 1991, Tellis and Johnson 2007, Hendricks and Singhal 1996, Urban and Hauser 1980, Chan et al. 1992, Sankaranarayanan 2007, Keller and Lehmann 2006).

One important caution is that, at the time of launch, investors cannot assess the true success of a given innovation. Consequently, stock price responses to innovative launches are, in themselves, predictions or expectations of the future success not only of the product itself but in how it positions the firm to be successful in the future.

Our particular source of information, Product Launch Analytics, is but one source of information that could be used in gathering information about a firm’s products. As noted in other sources (e.g., Thompson 1995, Sood and Tellis 2009), the
Wall Street Journal has been the typical source of information in event studies. However, as these sources note, this publication, as is true of any single source, are fallible to the degree that they exercise discretion over what they report or deem as important news. Other event studies have suggesting utilizing multiple sources (e.g., Sood and Tellis 2009) to overcome the issues associated with any single source. The unique benefit of the Product Launch Analytics database is that it is comprehensive and covers all product launches, both domestic and international, by firms in the consumer packaged goods market. Datamonitor uses a variety of sources – visits to retail locations, trade shows, other news outlets, etc. – to identify accurate information for these products.7

In terms of actual calculation of our measure of new value, following standard event study methodology, we calculate returns to innovation using both the market and Carhart (1997) extension of the Fama-French model. In both cases, returns are measured as the cumulative abnormal returns over the event window \((t_1, t_2)\) using the following equation:

\[
(17) \quad \text{CAR}_{t(t_1,t_2)} = \sum_{t=t_1}^{t_2} \text{AR}_{it}
\]

where \(\text{AR}_{it}\) equals abnormal daily returns. \(\text{AR}_{it}\) is calculated as the difference between the actual daily returns \(r_{it}\) and predicted daily returns \(\hat{r}_{it}\), where predicted daily

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7 As may be expected given that trade shows were mentioned as an information source for Datamonitor, Product Launch Analytics also contains some test market or pre-announcement data (with updates included to announce the actual product launch). To the degree possible, our data was culled to focus specifically on actual product launches. Using IRI New Product Pacesetters Data during 2006 which contains a subset of all product introductions during that year, we were able to verify that the Product Launch Analytics date for the eight products contained in both datasets falls within the 4-week introduction window in the IRI data. From the market’s perspective, this launch resolves the uncertainty regarding the availability of the innovation and its ability to, in reality, impact the cash flows of the firm and also any uncertainty regarding the nature (e.g., characteristics) of and quality of the innovation.
returns are estimated using either the market or Carhart (1997) extension of the Fama-French model as described below.

Theoretically, beyond exploring the drivers of these returns, we could also assess the significance of these returns by calculating the cumulative average abnormal return \((CAAR_{t1,t2})\) across the sample firms between \(t1\) and \(t2\) using the following equation:

\[
CAAR_{t1,t2} = \frac{\sum_{i}^{N} CAR_{i(t1,t2)} / N}{N}
\]

We would then assess the significance of these abnormal returns by dividing the CAAR by the variance of the abnormal returns in the estimation period (e.g., Lane and Jacobson 1995). Typically, to allow for differential information dissemination, one would examine various windows of time as far out as (-10 days, +10 days) around the event date and would utilize the most significant window across both methods (Geyskens, Gielens, and Dekimpe 2002). However, recall, given our theoretical development, the market might not respond positively to the introduction of a given innovation. In fact, the market could exhibit a positive, neutral or negative reaction to the introduction consistent with the innovation’s impact on the future cash flows of the firm. Under such circumstances, traditional tests of event window significance might produce a null result at all event windows.\(^8\)

Consequently, we begin with an established benchmark of +/- 5 days and then examine how the effects vary based upon different time windows. A graphical examination (see Figure 7) of the average event day abnormal returns for this window

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\(^8\) It is also worth noting at this point that clustering can be a concern with event studies (Binder 1998) and can prevent clear interpretation of event study results; in our case, the average intra-event window is 154 days for firms that have multiple observations in our analysis. Consequently, we feel relatively confident that event clustering is not present in our sample and thus will not bias our results.
indicates that indeed the five-day window appears to have contain information content on each day for firms whose CAR are negative or positive, a nuance which is missed when considering the overall average abnormal returns on each event day (see Figure 7).

![Figure 7: Event-Day Abnormal Returns](image)

In the case of the market model, returns are calculated by collecting daily data on the stock market returns of each firm for both the 100-day and 240-day period ending ten days before the event day. We then estimate the following equation:

\[
(19) \quad r_{it} = \alpha_i + \beta_i r_{mt} + \epsilon_{it}
\]

where \( r_{mt} \) equals the equal-weighted daily return on the market index and \( \alpha_i \) and \( \beta_i \) reflect firm-specific parameters. We then use the estimated parameters \( \hat{\alpha}_i \) and \( \hat{\beta}_i \) to predict the daily returns for each firm for each event day using the following formula:

\[
(20) \quad \hat{r}_{it} = \hat{\alpha}_i + \hat{\beta}_i r_{mt}
\]

where \( \hat{r}_{it} \) is the predicted daily return for the firm on the event day.
Using the Fama-French model with Carhart’s (1997) momentum factor, we extend the market model to include three additional factors to explain excess returns:

\[(r_{it} - r_f) = \alpha_i + \beta_ir_{mt} + s_iSMB_t + h_iHML_t + u_iUMD_t + \epsilon_{it}\]

where \(r_{mt}\) equals the value-weighted market return, \(r_f\) is the risk-free rate, \(SMB_t\) is the return differential between portfolios of small and large market capitalization stocks, \(HML_t\) equals the differential between portfolios of high- (value) and low- (growth) book-to-market ratio stocks, and \(UMD_t\) equals the differential between portfolios of high- and low-prior-return stocks. Once we estimate this regression, we then use the estimated parameters \((\hat{\alpha}_i, \hat{\beta}_i, \hat{s}_i, \hat{h}_i, \text{ and } \hat{u}_i)\) to predict the daily returns for the firm on each event day \((\hat{r}_{it})\). These predicted returns are then used in Equation (22) to calculate the abnormal returns for each event day for each event in our sample.

\[AR_{it} = r_{it} - \hat{r}_{it}\]

As a corroborating outcome to CAR, we also measured the change in firm-level annual cash flows following the introduction of the firm. These cash flows will serve to verify that the stock market is indeed forward-looking in its response and efficiently incorporating innovation launch information into future firm cash flows.

### 4.4 Independent Variables

As referenced in Chapter 1, our conceptual view of diversification is that diversification is defined as the distribution of products across a series of markets in which the firm participates and thus is an index-based concept. This index-based measure captures the breadth of the firm’s product lines or brands through two methods of re-distributing products in the firm-wide product portfolio or within-brand portfolios.
As noted in Chapter 1, firms can increase diversification by “balancing” their existing product markets or, second, by introducing products in a new market.

We measure this distribution of innovation using entropy, a commonly used measure of diversification. Entropy is calculated as:

\[
\text{E}_i = \sum_{j=1}^{N} p_j \log \left( \frac{1}{p_j} \right)
\]

where \( p_j \) equals \( P_j / P \), the fraction of the firm’s innovations in the \( j \)th innovation category relative to its overall innovation portfolio; \( P_j \) equals the number of innovations in a given category at time \( t \) and \( P \) represents the total number of innovations in the firm’s portfolio at time \( t \). The entropy measure is widely used in the corporate diversification literature and has been shown to be superior to and distinct from other categorical measures of diversification or continuous measures such as product counts (Hoskisson et al. 1993).

![Figure 8: Entropy Across Levels of Percent of New Products](image)

Furthermore, entropy can be considered as superior to another continuous measure, percent of new products introduced. This is because entropy incorporates the
number of categories in which a firm participates whereas percentage of new products is simply a variation of the product count measure, albeit one that makes high and low total product count firms comparable. As shown in Figure 8, entropy varies across the number of categories in which the firm participates even when the number of total products in the portfolio and the percentage of new products remain constant. As shown in Figure 9, while the shape of the entropy function remains similar, the value of entropy varies across the both the number of categories and the number of total products in the portfolio even when the number of new products remains the same.

Figure 9: Entropy Across Total Product Portfolio Size

However, to accurately assess the market reaction to the innovation’s influence on the diversification of the portfolio, we must assess the change in diversification from t-1 to t as indicated by the following formula:

\[ \Delta E_t = E_t - E_{t-1} \]

where t equals the date at which the innovation is introduced and t-1 equals the day before the innovation is introduced.
The results from these entropy calculations are then used to calculate a firm’s *level of diversification*. We use the continuous version of level of diversification with its higher level terms (e.g., quadratic terms) and a categorical measure of level of diversification as a robustness check to assess the moderating relationship proposed in H3a and H4a. For the categorical measure, moderate diversifiers of each type are considered as those +/- .5 standard deviation of the mean diversification level of the sample. Low (high) diversifiers will be categorized as firms below (above) 1 standard deviation of the mean of the sample.

### 4.4.1 Product Portfolio-Specific Measures

*Prior success* of the firm is measured through investor metrics. Specifically, success is measured as the level of stock returns achieved by the firm in the fiscal year immediately preceding the introduction of the innovation. We use this measure as it is scaled for the market value size of the firm and accounts for the fact that success in the stock market is determined the degree to which firms can exceed expectations. Using the fiscal year removes the issue of seasonality, which can be a concern particularly with consumer packaged goods. As a robustness check, we also examine abnormal stock returns for the firm relative to the overall market (e.g., controlling for the Fama-French and Carhart factors).

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9 In terms of accounting metrics, success could be measured as the level of operating income in the fiscal year immediately preceding the introduction of the innovation. To control for size differences, we could use the log of this variable in our analysis; however, this measure may be a better proxy for size (as larger firms would tend to have larger operating incomes even after logging the value). Consequently, we will use it as a control in our analysis.
Diversification relatedness (firm experience) can refer to two alternative scenarios. The first considers relatedness as specific firm experience, whereby the new innovation leverages the firm’s current knowledge base in the category in which the innovation was introduced. In continuous terms, this measure is calculated as the percentage of the firm’s entire product portfolio that is within the innovation’s category (e.g., personal care) over the past 5 years. In binary terms, this is simply a 0/1 measure in which 1 means the firm has introduced a product in this category in the past 5 years.

In both cases, we examine the robustness of using this measure compared to creating a more product scope-based experience measure whereby the percentage (or binary code) of products within the category is multiplied by the number of products the firm has introduced in the relevant category. This check is necessary to account for the fact that firm’s with experience with 5 products in a category may have less depth of experience than a firm with experience with 10 products in a category even if both have, in our measure, 75% of their experience in this category. We also examine the robustness of this measure to alternative timeframes (e.g., 10 years).

Market competitiveness is measured as the number of SKUs introduced in the given category (or smaller submarket) within the past 5 years with robustness checks at the 1, 3 and 10 year level. We use the number of SKUs as a proxy given the unavailability of data regarding the number of firms actively participating in the category or submarket or the level of revenues attributable to the given category (or submarket) at a suitable time measurement (e.g., annual data).
Consumer adoption uncertainty as a three-level factor (low, moderate, high) based on the product’s relative advantage, compatibility and complexity which can be inferred from the data available in product descriptions. Based on these three elements, we characterize each of the seven innovation codes into consumer learning (low, moderate, high) categories using the following logic:

- **Innovation – Merchandising:** Merchandising innovations are foster a greater connection between the consumer and the product through modifying the product on a temporary basis (e.g., Sausages Limited Edition Guinness World Record Snacks, Budweiser Limited Edition Holiday Bottles). Thus, these innovations offer moderate relative advantage through a stronger short-term connection with the product, high compatibility with current usage, and low complexity. This moderate relative advantage only requires consumer learning about the nature of the product change and thus possess low adoption uncertainty.

- **Innovation – Packaging benefit:** Packaging innovations alter the packaging of a given product to facilitate usage of the product by the consumer (e.g., Coca-Cola resealable glass bottles). Therefore they offer a moderate relative advantage through increased convenience and are of moderate compatibility and complexity given the consumer must learn how to use the new package. Thus, these innovations possess moderate adoption uncertainty.

- **Innovation – Formulation:** Formulation innovations are changes to the fundamental ingredient combination of a given product (e.g., Del Monte
Enriched Fruit Cocktails). These changes are transparent to the consumer and should not affect consumer interaction with the product. Thus, these innovations involve low complexity. However, the change is intended to provide at least moderate relative advantage. In addition, the new ingredient combination may not fit with the consumer’s current usage patterns, thus creating low-to-moderate compatibility. Thus, these innovations possess moderate adoption uncertainty.

- **Innovation – Positioning:** Positioning innovations are non-product-based changes that involve adjusting the target market for the product (positioning innovation – user related) or changing perceptions of how or when the product is used (positioning innovation – usage). Neither option makes the product more or less difficult to use (low complexity) but both involve either consumer learning regarding the fit of the product with one’s current lifestyle or learning to use the product in a new way (e.g., Gatorade’s G2 Sports Drink). Both indicate low compatibility with current product usage. The innovation offers high relative advantage to new users and moderate relative advantage to old consumers. These innovations thus possess moderate adoption uncertainty.

- **Innovation – Technology:** New technology innovations involve the implementation of a new technology to a product (e.g., Oral-B Triumph Power Toothbrush with SmartGuide). Thus, the product should offer high relative advantage but also possesses low compatibility and high complexity. Consequently, these innovations possess high adoption uncertainty.
• **Innovation – New market:** New market innovations are products which are introduced to a market which has theoretically never seen or used them before (e.g., Pur Flavor Options Water Filtration System Faucet Mount). These innovations offer high relative advantage to this new market. However, these products also possess low compatibility with the products consumers currently use and thus require significant consumer learning about how the product fits into their lifestyle. However, these innovations are not product-based and thus are likely to be low in complexity. Overall, however, these products possess high adoption uncertainty.

An alternative measurement protocol would break the above innovations into only two categories (low, high) by which an innovation is either considered a low adoption uncertainty (merchandising, packaging, formulation) or a high adoption uncertainty (positioning, technology or new market). Finally, we asked consumers to rate the innovativeness of a given innovative brand extension and the likelihood with which they would adopt a given innovation and use those measures as robustness checks for our coded measure.

*Degree of competitor protection* is operationalized as a legal protection from competitor actions. We use this measure as it acts as the strongest barrier against replication of an innovation and thus appropriation of the rents from the innovation. Legal protection is measured as a three-level (low, medium, or high) indicator of whether or not an innovation is protected by a granted patent, pending patent or no patent. Given the inherent difficulty in matching innovations to specific patents through
by examining patent and product descriptions and that patents can also apply to non-innovative introductions (e.g., line extensions of patented products), we coded an innovation as being patented (pending patent) if the description in Product Launch Analytics referenced the presence of a granted (pending) patent for the given product.

As a robustness check, we compared legal protection to protection via casual ambiguity where *causal ambiguity* is measured as a three-level (low, medium, and high) categorical variable representing the level of protection from competitor learning based on innovation coding by Product Launch Analytics and the ability of competitor’s to reverse engineer or copy the product. We coded the level of protection as *low* when the product innovation appears to be easy for competitors to reengineer or to copy. In terms of our innovation codes, low protection from competitor learning would apply to merchandising and packaging, which are product-based innovations. *Medium* protection applies to innovations that are moderately difficult to reengineer or copy. This applies to higher-level product innovations such as formulation and technology innovation, which are still product-based and thus able to be effectively copied but are more difficult in that they involve competitors combining multiple components or implementing a new technology to produce a similar product. *High* protection applies to market-based innovations that are highly difficult for competitors to copy from the perspective that they are intangible and tend to reflect the combination of complex characteristics and unique firm-specific knowledge. Such protection accrues to positioning and new market innovations as they both require unique knowledge of consumers and how to effectively reach new users. If a given innovation is coded as having more than one innovation
characteristic, we measure protection commensurate with the innovation code reflecting the highest level of protection from competitor learning.\textsuperscript{10}

A summary of our measures is presented in Table 8. Control variables (not described in the table) will include year dummies to control for macroeconomic effects, firm size, prior innovation behavior, preannouncements and a control variable for brand extensions as described in the prior section.

4.4.2 Within-Brand Portfolio-Specific Measures

4.4.2.1 Secondary Data Measures

\textit{Line extension} is measured as a binary (0/1) variable which equals 1 if the extension is a line extension and 0 if a category extension. Following prior literature, an extension is considered a line extension if the firm has previously introduced a product under the parent brand in the innovation’s category. Otherwise, the extension is a category extension. To accommodate any nonlinearities that may exist as the level of experience in a given category increases, we also measure extension type as a continuous experience variable as the number of launches (both innovations and non-innovations) in the innovative extension’s product category during the 5 years preceding the extension launch. We also measure the robustness of our results to altering both the time lag and incorporating the number of SKUs rather than just the number of launches. Here, if a firm has zero launches prior to the extension, we can still

\textsuperscript{10} While our theoretical discussion also discussed relational protection, we do not possess data regarding distribution relationships. Consequently, we are unable to examine the extent to which relational protection may exist.
Table 8: List of Innovation Product Portfolio Framework Measures

<table>
<thead>
<tr>
<th>Construct</th>
<th>Operationalization</th>
<th>Measure</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Value</td>
<td>Abnormal Stock</td>
<td>$\text{CAR}<em>{t(t1,t2)} = \sum</em>{t=t1}^{t2} \text{AR}_{it}$</td>
<td>CRSP</td>
</tr>
<tr>
<td></td>
<td>Returns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Future Cash Flows</td>
<td>Short-Term Future</td>
<td>New operating income for the year following innovation introduction</td>
<td>Compu-stat</td>
</tr>
<tr>
<td></td>
<td>Cash Flows</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Portfolio</td>
<td>Product Portfolio</td>
<td>$E_i = \sum_{j=1}^{N} p_j \ln \left(\frac{1}{p_j}\right)$</td>
<td>Product Launch</td>
</tr>
<tr>
<td>Diversification</td>
<td>Entropy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Portfolio</td>
<td>Product Portfolio</td>
<td>3-level categorical (low = less than -.5 sd from mean, moderate = within +.5/- .5 sd of mean, high = over +.5 sd from mean)</td>
<td>Product Launch</td>
</tr>
<tr>
<td>Level of Diversification</td>
<td>Entropy</td>
<td>Continuous operationalization with a quadratic term to allow for nonlinear effects</td>
<td></td>
</tr>
<tr>
<td>Prior Success of Firm</td>
<td>Prior Fiscal Year</td>
<td>Stock returns over the prior fiscal year</td>
<td>Compu-stat</td>
</tr>
<tr>
<td>Firm Experience</td>
<td>Stock Returns</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prior Fiscal Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Abnormal Stock</td>
<td>Abnormal stock returns (compared to market factors) over prior fiscal year</td>
<td>Compu-stat, CRSP, Ken French’s Data Library</td>
</tr>
<tr>
<td></td>
<td>Returns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm Experience</td>
<td>Relatedness</td>
<td>Percentage of the firm’s entire product portfolio that is within the innovation’s category</td>
<td>Product Launch</td>
</tr>
<tr>
<td>(continuous)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relatedness</td>
<td>Binary (0/1) – Has the firm introduced a product in this category before? (1=Yes, 0=No)</td>
<td>Product Launch</td>
</tr>
<tr>
<td>(binary)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relatedness</td>
<td>Percentage or binary measure multiplied by the number of products the firm has introduced in the innovation’s category</td>
<td>Product Launch</td>
</tr>
<tr>
<td>(scope)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Competitiveness</td>
<td>Number of</td>
<td>Number of skus introduced by all firms in the category in the past 3 years</td>
<td>Product Launch</td>
</tr>
<tr>
<td></td>
<td>introductions in a</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>given category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer Adoption</td>
<td>Innovativeness of</td>
<td>3 level categorical (low, moderate, high)</td>
<td>Product Launch</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>New Product</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Likelihood of adoption</td>
<td>Survey</td>
</tr>
<tr>
<td>Competitor Protection</td>
<td>Legal</td>
<td>Binary (0/1) – Is the product protected by an existing or pending patent? (1=Yes, 0=No)</td>
<td>Product Launch</td>
</tr>
<tr>
<td></td>
<td>Causal</td>
<td>3 level categorical (low, medium, high)</td>
<td>Product Launch</td>
</tr>
</tbody>
</table>
determine that it was a category extension but we can allow for variation in the line extension behavior from one prior launch to the maximum of the sample.

Our secondary data-based measures of dilution risk is comprised of product adoption uncertainty and negative consumer experience risk. Product adoption uncertainty is measured by coding the innovative extensions into a nominal categorical variable (low, moderate and high risk) based upon the characteristics of the innovative nature of the extension as described in the product portfolio measurement section. We measure negative consumer experience risk as a binary (0/1) variable which equals 1 when the extension is introduced in the same broad category (e.g., personal care) as the parent brand. We do not measure cannibalization risk as it is difficult to determine, based on secondary data, the degree to which an innovation is considered to be a substitute for another existing product beyond measuring whether or not the innovative extension is a line or category extension, a measure already included in our analysis as a separate construct.

4.4.2.2 Survey Methodology and Measures

As consumers are the ultimate determinant of the success of a given brand extension and that their propensity to purchase an extension has been shown to be determined by the elements of brand strength, perceived fit, and projected product experience it is critical to assess their views on the products used in our sample. Consequently, we utilized a consumer panel representative of the general population available via a third-party survey provider to answer various questions regarding the 165 brand extensions in the analysis.
To gain enough responses for our analyses to be statistically reliable and yet maintain a survey of manageable length, we asked questions regarding a random sample of 6 of the 165 brand extensions and their respective brands to each respondent (see Appendix A for an exemplar set of questions for one brand and brand extension). We then gathered 20 data points for each innovative extension resulting in a total of 3300 responses gathered from 550 participants.\textsuperscript{11}

*Parent brand strength* was measured as the respondents’ perceptions of the overall quality of the parent brand on a scale of 1-7 (Aaker and Keller 1990).

*Perceived fit* is represented by two different dimensions: attribute and image. *Attribute fit* is calculated by combining the complement and substitute dimensions of fit as described in Aaker and Keller (1990). Respondents were asked to choose the degree to which they perceived the extension as a product that they would be likely to purchase with other parent brand products in the innovation category (complement) or as a product which they would purchase over other parent brand products in the innovation category (substitute). *Image fit* was assessed by asking respondents to assess on a scale of (-3) to (+3) the extent to which they perceive global similarity between the parent brand and the extension product (Volckner and Sattler 2006).\textsuperscript{12}

*Brand dilution risk* is represented by three separate components – *cannibalization risk, product adoption uncertainty* and *negative consumer experience risk*. Cannibalization

\textsuperscript{11} As noted previously, we end up losing part of the sample due to respondent error (e.g., where consumers do not demonstrate the appropriate level of response to include their survey as valid).

\textsuperscript{12} While we also asked respondents about the degree to which the associations they have of the parent brand are similar to the associations they have of the extension, survey respondents did not have consistent usable responses. Consequently, we removed this question from the analysis.
risk was measured using respondent’s perceptions of the degree to which the extension is substitute for the parent brand product(s) as detailed above. *Product adoption uncertainty* was measured using the respondents’ intent to purchase the extension on a scale of 1 to 7. Since we are already measuring fit in the model, *negative consumer experience risk* was measured as the degree to which incongruities may occur between the extension category and the parent-brand quality. Keller and Aaker (1990) show that as the perceived difficulty of producing an extension decreases, the greater the incongruity between extension category and the need for a high quality brand, even if the appropriate level of fit exists between the extension and the parent brand. As noted by Keller (2003, p. 166), “If the product is seen as comparatively easy-to-make, such that brand differences are hard to come by, then a high quality brand may be seen as incongruous or, alternatively, consumers may feel that the brand extension will attempt to command an unreasonable price premium and be too expensive.” Following Aaker and Keller (1990), we measure this as the perceived difficulty in making the extension on a scale of (-3) to (+3). The authors justify the use of this measure by stating that, “when consumers perceive the extended product class to the ‘trivial’ or very easy to make,…the consumer may view the combination of a quality brand and a trivial product class as inconsistent or even exploitative…” (p. 30). This inconsistency or exploitative nature increases the potential with which the consumers would incur a negative product experience with the brand extension.

In our analysis, we will control for *parent-brand* and *extension experience*, given that these innovative extensions have already been introduced. To do so, we measured
<table>
<thead>
<tr>
<th>Construct</th>
<th>Operationalization</th>
<th>Measure</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Value</td>
<td>Abnormal Stock Returns</td>
<td>( CAR_{it(t+1,t+2)} = \sum_{t=t+1}^{t+2} AR_{it} )</td>
<td>CRSP</td>
</tr>
<tr>
<td>Within-Brand Diversification</td>
<td>Within-Brand Portfolio Entropy</td>
<td>( E_i = \sum_{j=1}^{N} p_j \ln \left( \frac{1}{p_j} \right) )</td>
<td>Product Launch</td>
</tr>
<tr>
<td>Within-Brand Level of Diversification</td>
<td>Within-Brand Portfolio Entropy</td>
<td>3-level categorical variable (low = less than -0.5 sd from the mean, moderate = within +0.5/-0.5 sd from the mean, high = over +0.5 sd from the mean)</td>
<td>Product Launch</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continuous operationalization with a quadratic term to allow for nonlinear effects</td>
<td></td>
</tr>
<tr>
<td>Future Cash Flows</td>
<td>Short-Term Future Cash Flows</td>
<td>Log operating income for the year following innovation introduction</td>
<td>Compustat</td>
</tr>
<tr>
<td>Parent-Extension Fit</td>
<td>Parent-Extension Attribute Fit</td>
<td>• Degree extension is a brand substitute or complement</td>
<td>Survey</td>
</tr>
<tr>
<td></td>
<td>Parent-Extension Image Fit</td>
<td>• Degree of global similarity between parent brand and extension</td>
<td>Survey</td>
</tr>
<tr>
<td>Type of Extension</td>
<td>0/1 Binary (0=line extension, 1=category extension)</td>
<td></td>
<td>Product Launch</td>
</tr>
<tr>
<td>Parent-Brand Strength</td>
<td>Parent Brand Quality</td>
<td>Degree to which current brand is viewed as a high quality brand</td>
<td>Survey</td>
</tr>
<tr>
<td>Dilution Risk</td>
<td>Cannibalization Risk</td>
<td>Degree to which extension is viewed as a substitute</td>
<td>Survey</td>
</tr>
<tr>
<td></td>
<td>Product Adoption Uncertainty</td>
<td>Intent to purchase the extension</td>
<td>Survey</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Categorical (low, medium, high)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Negative Consumer Experience Risk</td>
<td>Perceived difficulty of producing the extension</td>
<td>Survey</td>
</tr>
<tr>
<td></td>
<td>Extension Strength</td>
<td>Number of introductions in same subcategory</td>
<td>Product Launch</td>
</tr>
<tr>
<td></td>
<td>Quality of the Extension</td>
<td>Perceived quality of the introduced product</td>
<td>Survey</td>
</tr>
<tr>
<td>Innovation Value</td>
<td>Innovativeness of the Extension</td>
<td>Perceived innovativeness of the introduced product</td>
<td>Survey</td>
</tr>
</tbody>
</table>
how frequently respondents use and purchase the parent brand and the extension
products as well as the degree to which they were satisfied with their prior experience
with the brand and products. We also measured consumer perceptions of extension
strength, measured as the overall quality of the extension (Aaker and Keller 1990) and
the innovativeness of a given product. A summary of our measures is presented in Table
9.
5. Analysis Results

5.1 Product Portfolio Analysis

5.1.1 Descriptives and Correlations

Descriptives for the firms in our analysis are listed in Table 10. As shown in this table, the firms in our sample, while all public entities, exhibit a wide range of characteristics in terms of market value and profits. Consequently, our analysis controls for this variation through firm size as measured by the logged operating income in the prior fiscal year. In addition, to account for the fact that the market may have different underlying expectations for a given firm, we explore the possibility of a random effects specification whereby the intercept is allowed to randomly vary by firm\(^1\). Descriptives for the product portfolio analysis are shown in Table 11 and correlations are shown in Table 12. We have chosen an event window of \([-5, +5]\) that is consistent with prior research (e.g., Sood and Tellis 2009) and with the graphical representation of the information content in stock prices as shown in Figure 7. However, we examine the robustness of our results to this choice. The sample size is lower (170) than initially stated (188) due to data availability and to ensure enough space between innovative introductions by the same firm or any preannouncements of the innovation. This “space” is necessary to ensure that the CAR for each event are not confounded by information from other events.

\(^1\) Given that approximately 50% of our sample only possesses one observation in the analysis, a random effects specification is estimable but results in fixing the error variance to zero.
<table>
<thead>
<tr>
<th>Name</th>
<th>Avg. Prior Stock Return</th>
<th>Avg. Prior Operating Income ($K)</th>
<th># of Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>3M</td>
<td>-0.04</td>
<td>6,287</td>
<td>3</td>
</tr>
<tr>
<td>Alcoa</td>
<td>-0.08</td>
<td>3,396</td>
<td>1</td>
</tr>
<tr>
<td>Altria</td>
<td>0.19</td>
<td>16,809</td>
<td>3</td>
</tr>
<tr>
<td>Anheuser-Busch</td>
<td>-0.04</td>
<td>3,707</td>
<td>10</td>
</tr>
<tr>
<td>Bayer</td>
<td>0.31</td>
<td>7,665</td>
<td>1</td>
</tr>
<tr>
<td>Bob Evans</td>
<td>0.22</td>
<td>173</td>
<td>1</td>
</tr>
<tr>
<td>Bristol-Myers Squibb</td>
<td>0.10</td>
<td>3,483</td>
<td>1</td>
</tr>
<tr>
<td>Cadbury Schweppes</td>
<td>0.11</td>
<td>2,493</td>
<td>3</td>
</tr>
<tr>
<td>Campbell Soup</td>
<td>0.05</td>
<td>1,502</td>
<td>2</td>
</tr>
<tr>
<td>Chatter</td>
<td>0.49</td>
<td>130</td>
<td>1</td>
</tr>
<tr>
<td>Church &amp; Dwight</td>
<td>0.30</td>
<td>316</td>
<td>1</td>
</tr>
<tr>
<td>Clorox</td>
<td>0.07</td>
<td>954</td>
<td>1</td>
</tr>
<tr>
<td>Coca-Cola</td>
<td>0.11</td>
<td>7,586</td>
<td>7</td>
</tr>
<tr>
<td>ConAgra</td>
<td>-0.11</td>
<td>1,317</td>
<td>1</td>
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<td>Dean Foods</td>
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<td>854</td>
<td>2</td>
</tr>
<tr>
<td>Del Monte Foods</td>
<td>-0.08</td>
<td>435</td>
<td>5</td>
</tr>
<tr>
<td>Diageo</td>
<td>0.02</td>
<td>4,051</td>
<td>3</td>
</tr>
<tr>
<td>Energizer Holdings, Inc.</td>
<td>0.34</td>
<td>599</td>
<td>2</td>
</tr>
<tr>
<td>Fuji</td>
<td>-0.15</td>
<td>4,341</td>
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<tr>
<td>General Mills</td>
<td>0.00</td>
<td>2,740</td>
<td>1</td>
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<tr>
<td>GlaxoSmithKline</td>
<td>0.01</td>
<td>15,047</td>
<td>2</td>
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<tr>
<td>H.J. Heinz</td>
<td>0.21</td>
<td>84</td>
<td>5</td>
</tr>
<tr>
<td>Hasbro</td>
<td>0.20</td>
<td>523</td>
<td>1</td>
</tr>
<tr>
<td>Hershey</td>
<td>-0.10</td>
<td>1,186</td>
<td>2</td>
</tr>
<tr>
<td>Hormel Foods</td>
<td>-0.02</td>
<td>593</td>
<td>1</td>
</tr>
<tr>
<td>J.M. Smucker</td>
<td>0.11</td>
<td>342</td>
<td>2</td>
</tr>
<tr>
<td>Jarden Home Brands</td>
<td>0.21</td>
<td>419</td>
<td>1</td>
</tr>
<tr>
<td>Johnson &amp; Johnson</td>
<td>-0.02</td>
<td>16,157</td>
<td>0</td>
</tr>
<tr>
<td>Kellog</td>
<td>-0.03</td>
<td>2,246</td>
<td>6</td>
</tr>
<tr>
<td>Kimberly-Clark</td>
<td>-0.16</td>
<td>3,411</td>
<td>2</td>
</tr>
<tr>
<td>Altria Group</td>
<td>-0.11</td>
<td>5,853</td>
<td>6</td>
</tr>
<tr>
<td>Kroger Corp.</td>
<td>0.07</td>
<td>3,300</td>
<td>1</td>
</tr>
<tr>
<td>Lifeway Foods</td>
<td>0.26</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Novartis Pharmaceuticals Corp.</td>
<td>0.08</td>
<td>10,464</td>
<td>1</td>
</tr>
<tr>
<td>PepsiCo</td>
<td>0.06</td>
<td>7,951</td>
<td>10</td>
</tr>
<tr>
<td>Perrigo Co.</td>
<td>-0.04</td>
<td>102</td>
<td>1</td>
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<tr>
<td>Pfizer Inc.</td>
<td>-0.18</td>
<td>20,312</td>
<td>3</td>
</tr>
<tr>
<td>Physicians Formula Cosmetics, Inc.</td>
<td>-0.35</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>Pilgrims Pride Corp.</td>
<td>0.34</td>
<td>391</td>
<td>1</td>
</tr>
<tr>
<td>Playtex Products</td>
<td>0.05</td>
<td>125</td>
<td>1</td>
</tr>
<tr>
<td>Procter &amp; Gamble</td>
<td>0.09</td>
<td>16,402</td>
<td>15</td>
</tr>
<tr>
<td>Revlon</td>
<td>-0.20</td>
<td>80</td>
<td>4</td>
</tr>
<tr>
<td>Reynolds American</td>
<td>0.08</td>
<td>2,407</td>
<td>3</td>
</tr>
<tr>
<td>Sara Lee</td>
<td>-0.08</td>
<td>1,453</td>
<td>3</td>
</tr>
<tr>
<td>Target Corp.</td>
<td>-0.15</td>
<td>6,931</td>
<td>2</td>
</tr>
<tr>
<td>Estee Lauder</td>
<td>0.01</td>
<td>935</td>
<td>7</td>
</tr>
<tr>
<td>The Scotts Company LLC</td>
<td>-0.24</td>
<td>380</td>
<td>1</td>
</tr>
<tr>
<td>Unilever</td>
<td>0.16</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Walgreens Co.</td>
<td>0.06</td>
<td>3,254</td>
<td>1</td>
</tr>
<tr>
<td>Whole Foods Market</td>
<td>-0.12</td>
<td>492</td>
<td>1</td>
</tr>
<tr>
<td>Wm. Wrigley Jr. Co.</td>
<td>0.02</td>
<td>1,093</td>
<td>2</td>
</tr>
<tr>
<td>Wyeth</td>
<td>0.08</td>
<td>6,173</td>
<td>1</td>
</tr>
<tr>
<td>Elizabeth Arden, Inc.</td>
<td>0.02</td>
<td>98</td>
<td>3</td>
</tr>
<tr>
<td>Bare Escentuals</td>
<td>-0.20</td>
<td>165</td>
<td>2</td>
</tr>
<tr>
<td>Wal-Mart Stores Inc.</td>
<td>-0.07</td>
<td>22,106</td>
<td>2</td>
</tr>
</tbody>
</table>
5.1.2 Regression Analysis

We begin our discussion with a brief review of the main effects of our variables of interest. As shown in Table 13, the only main effects that are at least marginally significant predictors of the cumulative abnormal return (CAR) during the innovation launch window are competitor protection and the dummy variable for brand extension. In the case of changes in product portfolio diversification, we see that as firms increase their diversification level, the expected new value does not change. While this contradicts H1, we noted that it was possible for the main effect of changes in diversification to be null given the competing positive and negative effects.

This result is thus consistent with work by Tallman and Li (1996). This indicates that, all else being equal, using an innovation to increase the diversification of the product portfolio will not necessarily result in an increase in the expected new value a firm will generate in the future. While not directly predicted, as competitor protection increases (i.e., innovations are patented or otherwise protected), the new value from an innovation actually decreases. This result does not conceptually agree with the arguments we presented regarding the benefits of competitor protection in Ch. 3 and may indicate that investments in patents are not viewed as useful or necessary in the consumer packaged goods industry given the relatively high substitutability of
products. Consequently, the market may perceive the effort placed on obtaining a patent as a waste of resources on the part of the firm.\(^2\)

It is interesting to note that the intercept for innovation is not significant. This indicates that financial markets may perceive innovation, in itself, to be necessary but not sufficient for new value creation. Thus, the fact that a firm is innovating is not

Table 11: Descriptives

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR</td>
<td>180</td>
<td>-.2805</td>
<td>.2259</td>
<td>-.0074</td>
<td>.0591</td>
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<tr>
<td>Diversif. Change</td>
<td>180</td>
<td>-.07</td>
<td>.69</td>
<td>.0297</td>
<td>.1196</td>
</tr>
<tr>
<td>Level of Diversif.</td>
<td>180</td>
<td>.00</td>
<td>1.37</td>
<td>.4217</td>
<td>.4135</td>
</tr>
<tr>
<td>Level of Diversif. Squared</td>
<td>180</td>
<td>.00</td>
<td>1.39</td>
<td>.3478</td>
<td>.4690</td>
</tr>
<tr>
<td>Prior Success</td>
<td>178</td>
<td>-.73</td>
<td>1.70</td>
<td>.0373</td>
<td>.2194</td>
</tr>
<tr>
<td>Div. Relatedness</td>
<td>178</td>
<td>.00</td>
<td>1.00</td>
<td>.6911</td>
<td>.3275</td>
</tr>
<tr>
<td>Market Competitiveness</td>
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<td>.40</td>
<td>8.37</td>
<td>4.68</td>
<td>2.94</td>
</tr>
<tr>
<td>Cons. Adoption Uncert.</td>
<td>180</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>.3322</td>
</tr>
<tr>
<td>Competitor Protection</td>
<td>180</td>
<td>0</td>
<td>2</td>
<td>.1</td>
<td>.3793</td>
</tr>
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<td>Prior Operating Income (Size)</td>
<td>173</td>
<td>1</td>
<td>10</td>
<td>7.6512</td>
<td>1.8332</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>170</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^2\) As with the intercept for the regression analysis, it is highly possible that this result is specific to the consumer packaged goods industry and could be different within other industries where patent protection affords monopoly or pseudo-monopoly profits (e.g., pharmaceuticals).
Table 12: Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>CAR</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Correlation</strong></td>
<td>1</td>
<td>-.063</td>
<td>-.031</td>
<td>-.001</td>
<td>.083</td>
<td>.009</td>
<td>0.028</td>
<td>0.212</td>
<td>0.039</td>
</tr>
<tr>
<td><strong>Sig. (2-tailed)</strong></td>
<td></td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>180</td>
<td>180</td>
<td>180</td>
<td>180</td>
<td>180</td>
<td>180</td>
<td>180</td>
<td>180</td>
<td>180</td>
</tr>
<tr>
<td><strong>Diversif. Change</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td><strong>Correlation</strong></td>
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<td>1</td>
<td>-.078</td>
<td>-.378</td>
<td>-.128</td>
<td>-.072</td>
<td>-.072</td>
<td>-.073</td>
<td>-.073</td>
</tr>
<tr>
<td><strong>Sig. (2-tailed)</strong></td>
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<td>.000</td>
<td>.301</td>
<td>.000</td>
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<td>.334</td>
<td>.338</td>
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<td>180</td>
<td>180</td>
<td>180</td>
<td>180</td>
<td>180</td>
<td>180</td>
<td>180</td>
</tr>
<tr>
<td><strong>Level of Diversif.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Correlation</strong></td>
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<td>.198</td>
<td>1</td>
<td>.095</td>
<td>-.698</td>
<td>-.095</td>
<td>1.81</td>
<td>.024</td>
<td>.251</td>
</tr>
<tr>
<td><strong>Sig. (2-tailed)</strong></td>
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<td>.000</td>
<td>.208</td>
<td>.000</td>
<td>.210</td>
<td>.019</td>
<td>.764</td>
<td>.001</td>
<td>.001</td>
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<tr>
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<td><strong>Prior Success</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Correlation</strong></td>
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<td>-.078</td>
<td>.095</td>
<td>1</td>
<td>-.024</td>
<td>.045</td>
<td>.034</td>
<td>.007</td>
<td>-.138</td>
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<td>.070</td>
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<td>180</td>
<td>180</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Correlation</strong></td>
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<td>-.378</td>
<td>-.698</td>
<td>-.024</td>
<td>1</td>
<td>.328</td>
<td>.125</td>
<td>.063</td>
<td>-.123</td>
</tr>
<tr>
<td><strong>Sig. (2-tailed)</strong></td>
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<td>.000</td>
<td>.752</td>
<td>.000</td>
<td>.000</td>
<td>.097</td>
<td>.402</td>
<td>.109</td>
<td>.109</td>
</tr>
<tr>
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<td>180</td>
<td>180</td>
<td>180</td>
<td>180</td>
<td>180</td>
</tr>
<tr>
<td><strong>Market Competitiveness</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Correlation</strong></td>
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<td>-.148</td>
<td>-.095</td>
<td>.045</td>
<td>.328</td>
<td>1</td>
<td>-.092</td>
<td>1.44</td>
<td>-.126</td>
</tr>
<tr>
<td><strong>Sig. (2-tailed)</strong></td>
<td>.903</td>
<td>.048</td>
<td>.210</td>
<td>.000</td>
<td>.220</td>
<td>.055</td>
<td>.097</td>
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Table 13: Regression Results
### Table 1 (cont.): Regression Results

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informative relative to understanding the characteristics of the innovation and its underlying relationship with the firm’s product portfolio. In addition, the dummy variable for brand extensions is positive and significant, consistent with our suggestion that brand extensions should generally outperform new brands. While we reserve judgment until we further decompose the influence of innovative brand extensions on new value, this result may indicate that financial markets interpret innovative brand extensions as having greater marketing efficiency and higher inherent demand than new brands, thus creating more new value.

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R-Squared: 0.159, 0.241, 0.237
Regarding the interactions, given the direction of the parameters generally do not vary in stepwise form (Models 2-9), we directly interpret the results in the full model (Model 10) and its reduced form (Model 11).³⁴

As shown in Figure 10, positive rewards to increasing product portfolio diversification appear to consistently occur only after firms change their diversification above and beyond the sample mode (e.g., 50th percentile). In addition, the rewards to high levels of diversification increases (e.g., 90th percentile) are most significant for the relatively focused firm. As a firm becomes more diversified (i.e., progresses along the x-axis), these rewards diminish (consistent with H3a) but then being to increase as a firm obtains a more conglomerate-based structure (i.e., diversification level surpasses a certain level). Thus, we only obtain partial support for H3a. However, note that the returns remain positive even as they diminish to the bottom of the curve for firms who use innovation to make big changes (i.e., 90th percentile) in their portfolio. This result indicates that, at least within the range of our sample, firms can improve the returns to innovation by continually using them to make major increases in the diversification of

³ We removed the nonsignificant interactions from Model 10 to determine if it further clarified our results (see Model 11). We indeed find that the significance of several effects is improved, but that the overall model fit remains statistically the same. These results are robust to the inclusion of other control variables such as the number of products the firm has introduced in the past and whether or not the firm possessed multiple innovations used in our sample.

⁴ Our results also do not substantively change when using our alternative measurement methodologies for our independent variables. Results also remain directionally consistent (and statistically significant for most of our moderating effects) with the use of alternative event windows. Generally, shorter event windows result in fewer significant effects, consistent with our suggestion that information regarding new products may be characterized by both leakage (with respect to retailers) and require diffusion time with respect to the overall investor market. Results are also weaker with the operating cash flows dependent variable indicating that perhaps stock price movements are tied to longer-term cash flow expectations rather than immediate diffusion (and revenues) from the innovation introduction. This supports our later discussion that leverage, by definition a future-focused variable, is a key driver of innovation value.
the firm. In addition, within our sample, firms who refocus (diversify less than the 50th percentile value) appear to be punished for doing so except at some optimal level of diversification. At this point, firms are not rewarded for reducing portfolio diversity but do not appear to be significantly punished for it either. These results are somewhat inconsistent with Markides’ (1992) findings that firms are rewarded for reducing the diversity of their portfolio under certain circumstances. This shape of our diversification relationship as shown in Figure 10 implies that returns are highly contingent upon both the magnitude of the diversification change and the firm’s resulting overall level of diversification. Essentially, one can find examples of firms at each level of diversification who are both highly rewarded or punished in the stock market dependent upon the magnitude and direction of the diversification change (see Figure 11). These results are in contrast to those of Palich et al.’s (2000) meta-analysis and indicates that one must consider the range of the sample as a factor in assessing the nature of the relationship.

Figure 10: New Value as a Function of Change in Diversification and Level of Diversification
between diversification and firm value as well as the interaction of this level with how the firm reached the level of diversification (i.e., did they expand or refocus).

![Graph showing New Value as a Function of Change in and Level of Diversification](image)

**Figure 11: New Value as a Function of Change in and Level of Diversification**

Contrary to H3b and consistent with H3c, firms that are more successful receive more extreme outcomes associated with changes in their portfolio diversification as demonstrated by the positive parameter estimate in Table 12. However, it appears as though highly successful firms do not necessarily outperform less successful firms when undertaking large increases in diversification as shown in the pattern of results in Figure 12.

Interestingly, it appears as though less successful firms are expected to be more focused (i.e., reducing the diversification of the firm’s portfolio or undertaking smaller increases in diversification) thus resulting in effectively no change in new value from innovation when it increases the focus of the firm. This provides some support for the idea that firms are rewarded for “sticking to their knitting” (Peters and Waterman 1982).
if they are refocusing (e.g., Markides 1992) and not performing up to expectations. However, successful firms that refocus are punished for not growing and expanding their portfolio of products. This may be due to the market’s perception that the firm is “cutting off its nose to spite its face” and become overly focused on one given category and thus complacent about its success.

Poorly performing firms can also undertake changes in an attempt to progressively move away from failing markets but cannot make major moves that garner them greater benefits than more successful firms. This may indicate that our leverage argument only applies when relatively unsuccessful firms are making incremental, rather than drastic, strategic changes. In fact, the market may perceive large diversification moves (90th percentile and beyond) as extremely risky. Thus successful firms are the only firms that may be able to weather such risk and utilize their current capabilities to be successful even though markets perceive moving away from areas of business that have made firms unsuccessful in the past beneficial. Based on these results, we see that diversification moves indeed interact with a firm’s past performance to change the market’s perceptions about the firm’s potential in the future, indicating that both underperforming and successful firms should consider how their innovation behavior modifies their overall portfolio and thus perceptions of the firm’s future direction.

Moving to the characteristics of individual innovations, we find that, in our final model, that relatedness has no influence on the degree to which changes in diversification of a product portfolio are rewarded. This result disputes H3d and H3e
even though, when considered alone (see Model 6), the interaction is positive, supporting H3d. This indicates that the interaction of relatedness and diversification changes on the new value is not as strong as the interaction effects of other variables.

![Figure 12: New Value as a Function of Change in Diversification and Prior Success](image)

In sum, our results indicate that prior work equating level of diversification with the degree of relatedness of the diversification may be incorrectly generalizing that relatedness is the primary driver underlying the rewards to diversification. Relatedness does have a significant, negative correlation with level of diversification, indicating that as a firm become more diversified, it is less likely that they are entering markets in which they have experience. However, the two are not perfectly correlated, suggesting that prior work which has equated the two concepts is misguided. In fact, based on our results, firm experience in a given category does not appear to enhance perceptions of future cash flows above and beyond any increase in risk associated with pursuing products that might be considered too closely related.
In terms of market competitiveness, H3f is also rejected. While small in absolute value, the positive result for the market competitiveness interaction indicates that the value to increasing innovation portfolio diversification increases as a function of the competitiveness of the market (see Figure 13). As noted in our theory section, this result may be a function of the dual nature of market competitiveness. Specifically, while increased competition in a market may decrease the returns to diversification, this negative effect may be counterbalanced and overcome by the increase in returns to diversification that are caused by entering a more attractive (i.e., larger) market. In addition to being more attractive in terms of potential market size, larger markets may also represent greater underlying heterogeneity in customers that can be exploited by firms. In other words, diversification represents an opportunity to exploit unaddressed heterogeneity that does not exist in smaller markets.

Figure 13: New Value as a Function of Change in Diversification and Market Competitiveness
We also see that as the adoption uncertainty associated with an innovation increases, the benefits to increasing the diversification using this innovation marginally decrease. This result is consistent with H3g. A chart of this interaction (see Figure 14) seems to indicate that as firms refocus (i.e., reduce diversification at the 10th percentile), little difference exists between

Figure 14: New Value as a Function of Change in Diversification and Consumer Adoption Uncertainty

pursuing high and low risk innovations. In addition, the negative effect of uncertain innovations on new value outweighs the positive effects of diversification increases until the magnitude of the diversification change reaches a certain level (near the 90th percentile). This may indicate that the financial markets perceive large-scale changes in diversification to be a risky proposition for firms, but one that generally pays off for the firm.

Finally, we also reject H3h and instead find that as competitor protection for a given innovation increases, the benefits to increasing diversification via this innovation
do not change. While counterintuitive, this result may be due to the fact that market may believe that this additional risk reduction method does not affect the returns to diversification but instead only the returns to the innovation itself as indicated by the main effect in Model 1. However, it is worth noting that the parameter estimate is directionally positive as suggested in our hypothesis. An overview of our expected and actual results is shown in Table 14.

Table 14: Review of Product Portfolio Results

<table>
<thead>
<tr>
<th>Moderator</th>
<th>Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
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<td></td>
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<tr>
<td>Diversification Change</td>
<td>Null to positive</td>
<td>Null</td>
</tr>
<tr>
<td><strong>Interaction Effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of diversification</td>
<td>+ (diminish)</td>
<td>+ (diminish)</td>
</tr>
<tr>
<td>Prior success</td>
<td>?</td>
<td>+</td>
</tr>
<tr>
<td>Relatedness</td>
<td>?</td>
<td>Null</td>
</tr>
<tr>
<td>Market competitiveness</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Consumer adoption uncertainty</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Competitor protection</td>
<td>+</td>
<td>Null</td>
</tr>
</tbody>
</table>

5.2 **Within-Brand Portfolio Analysis**

5.2.1 **Descriptives and Correlations**

Descriptives for the within-brand portfolio analysis are shown in Table 15 and correlations are shown in Table 16. The 165 original brand extensions in our analysis represent 128 unique brands. This sample size was reduced to 140 to remove introductions with confounding events and to remove brands with too few reliable results to include in the analysis. For example, the “Airforce” brand was unknown by 90% of respondents who answered questions regarding this brand.
Consistent with the prior analysis, we have chosen an event window of [-5, +5] consistent with prior research (e.g., Sood and Tellis 2009). However, we examine other event windows as a robustness check. In addition, given the presence of multiple brands per company, we examined the robustness of our analysis to account for the parent brand through a random effects specification with a brand- and firm-specific intercept. We also examined a potential multi-level analysis whereby we allow variation by individual. Neither specification produced a model with a better fit so we maintain an analysis whereby we regress the CAR attributable to the brand extension component on the average response for any survey questions.

However, given that we received multiple responses for each brand and brand extension on each of our questions, we must assess the reliability of the responses to these questions to determine the validity of our measures and in taking this average response approach. In terms of our brand measures, brand familiarity, brand strength,
<table>
<thead>
<tr>
<th></th>
<th>Brand Familiarity</th>
<th>Brand Strength</th>
<th>Brand Purchase Frequency</th>
<th>Level of Substitution</th>
<th>Image Fit</th>
<th>Extension Quality</th>
<th>Propensity to Purchase Extension</th>
<th>Difficulty in Extension Production</th>
<th>Extension Innovativeness</th>
<th>Divers. Change</th>
<th>Level of Diversif</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brand Familiarity</strong></td>
<td>Pearson Correlation</td>
<td>1</td>
<td>0.842</td>
<td>-0.129</td>
<td>0.377</td>
<td>0.534</td>
<td>0.432</td>
<td>0.337</td>
<td>0.337</td>
<td>-0.073</td>
<td>-0.114</td>
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<td>Sig. (2-tailed)</td>
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<td>0.000</td>
<td>0.154</td>
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<td><strong>Brand Strength</strong></td>
<td>Pearson Correlation</td>
<td>0.844</td>
<td>0.856</td>
<td>-0.130</td>
<td>0.389</td>
<td>0.754</td>
<td>0.596</td>
<td>0.349</td>
<td>0.559</td>
<td>-0.054</td>
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<td><strong>Brand Purchase Frequency</strong></td>
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<td>0.664</td>
<td>0.642</td>
<td>0.388</td>
<td>0.452</td>
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<td>-0.130</td>
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<td>-2.05</td>
<td>-0.322</td>
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<td>0.193</td>
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<td>0.000</td>
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<td><strong>Image Fit</strong></td>
<td>Pearson Correlation</td>
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<td>0.389</td>
<td>0.333</td>
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<td>0.507</td>
<td>0.337</td>
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<td>0.664</td>
<td>-0.322</td>
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<tr>
<td><strong>Difficulty in Extension Production</strong></td>
<td>Pearson Correlation</td>
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<td><strong>Extension Innovativeness</strong></td>
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<td>0.098</td>
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<tr>
<td><strong>Divers. Change</strong></td>
<td>Pearson Correlation</td>
<td>-0.073</td>
<td>-0.054</td>
<td>0.077</td>
<td>-0.880</td>
<td>-0.137</td>
<td>-0.034</td>
<td>0.023</td>
<td>-0.047</td>
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</tr>
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<td>Sig. (2-tailed)</td>
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</tr>
<tr>
<td><strong>Level of Diversif</strong></td>
<td>Pearson Correlation</td>
<td>-0.114</td>
<td>-0.097</td>
<td>-0.015</td>
<td>-0.203</td>
<td>-0.669</td>
<td>-0.014</td>
<td>0.014</td>
<td>0.006</td>
<td>-0.098</td>
<td>0.754</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>0.174</td>
<td>0.303</td>
<td>0.853</td>
<td>0.909</td>
<td>0.416</td>
<td>0.885</td>
<td>0.944</td>
<td>0.246</td>
<td>0.000</td>
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</tr>
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</tbody>
</table>
and brand purchase frequency achieve a Cronbach’s alpha of .863, .861 and .907, respectively. Our extension measures of substitution, image fit, quality, own purchase propensity, difficulty, innovativeness, and other purchase propensity achieve a Cronbach’s alpha of .182, .535, .676, .706, .369, .536, .587, and .605, respectively. Generally, this indicates that our brand-level measures are fairly reliable across individuals but that differences appear to exist at the extension level for certain variables (substitution and difficulty in particular).

5.2.2 Regression Analysis

We begin our discussion with a brief review of the main effects of our variables of interest. As shown in Table 17, the only main effect that is at least a marginally significant predictors of the cumulative abnormal return (CAR) attributable to brand extensions during the innovation launch window is purchase likelihood. This is consistent with our concept of consumer adoption uncertainty from the product portfolio analysis and indicates that, indeed, the market may take demand potential into account when evaluating how innovative brand extensions will influence the firm’s ability to achieve new value. However, none of the other variables are significant, indicating that the value generated by brand extensions is perhaps best thought of as potentially contingent upon the context of the brand extension. It is also interesting to note that the intercept for is not significant. This may indicate that the positive parameter estimate on the brand extension dummy in the product portfolio analysis

---

5 Recall from Section 4.2 that the dependent variable in the branding analysis is the residual from the product portfolio analysis with the brand extension dummy added back in.
Table 17: Brand Regression Results

<table>
<thead>
<tr>
<th>Model 1: Main Effects Only</th>
<th>Model 2: Main Effects w/ Quadratic</th>
<th>Model 3: Main Effects w/ Quadratic &amp; Level Interaction</th>
<th>Model 4: Diversification Level Quadratic Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>S.E.</td>
<td>B S.E.</td>
<td>B S.E.</td>
</tr>
<tr>
<td>-0.05</td>
<td>0.12</td>
<td>-0.03 0.12</td>
<td>-0.16 0.13</td>
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Table 1 (cont.): Brand Regression Results

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represented the overall value of innovative brand extensions, which are then themselves highly contingent upon other variables such as fit, etc., and thus not considered, on their own, to necessarily generate positive value.

Regarding the interactions, given that direction of the parameters generally do not vary in stepwise form (Models 2-9), we directly interpret the results in the full model (Model 10). The parameter estimates for the linear and quadratic diversification level terms are almost equivalent. This indicates that perhaps specifying the relationship as nonlinear is incorrect. Furthermore, the interaction with image fit and diversification change presents multicollinearity problems in the analysis. Consequently, our final
model does not include either the squared level of diversification, its interaction with diversification change, nor the interaction between image fit and diversification change.

We see at least marginally significant interactions with level of diversification, difficulty in extension production, purchase likelihood and the dummy variable representing line extension. These interactions must be interpreted with care given that, on average, firms are making very small changes to their within-brand portfolios which also tend to be very focused at the brand-level (unlike at the product portfolio level).

First, we see that the interaction with level of diversification is positive and significant. As shown in Figure 15, at relatively high levels of diversification, the effect of changing diversification is relatively minimal; however, when a firm is relatively focused, the initial move to diversify the brand appears to be perceived negatively in the market. This is contrary to H4a and indicates that, on average, the market prefers firms to maintain focus within a brand portfolio. This result may thus suggest that the market perceives brands as providing the most value when they are not over-extended. In other words, the brands associated with a focused set of attributes and values, a circumstance more likely to occur with the brand is established within a given category rather than across multiple categories. However, if a firm has sufficiently diversified a brand already, additional diversification moves can still help the brand. These results are consistent with Berger et al.’s (2007) work that demonstrates that brands need to have sufficient depth before pursuing breadth and Boush and Loken’s (1991) work showing that broad brands are particularly extendible into new, more distant categories.
In testing H4b, we see that the interaction between parent brand strength and diversification change is not significant. While the interaction is not significant, the main effect for parent brand strength, while not significant, is positive. This positive parameter would be consistent with the premise that stronger parent brands should have more successful brand extensions, on average, although the brand strength does not moderate the relative success of brand extensions that diversify the brand versus those that do not.

With respect to testing the influence of brand attribute fit on the value generated by brand extensions (H4c), we also see that the interaction between attribute fit (level of substitution/complementarity) and diversification change is not significant. However, the parameters on both the main and interaction effects are negative. Recalling that higher scores indicate greater complementarity, this potentially indicates that the lack of...
fit of innovative brand extensions perceived as complements (as opposed to substitutes) for existing products outweighs the positive benefit of lower direct cannibalization.

As shown in Figure 16, we find that, while both types of extensions generate little (if any) positive value in marketplace, the negative reaction to diversification via a brand extension, is mitigated as firms enter new categories with an existing brand. This result, contrary to H4d, indicates that the market perceives greater relative value for a firm entering a new untapped category with an existing brand than redistributing the balance of a brand across multiple categories in which the brand already existed. Such results are consistent with prior work which shows that extending a brand to a new category successfully can broaden the product categories associated with the brand (e.g., DelVecchio 2000) enabling the firm to pursue further category extensions in the future.

In addition, this is consistent with the idea that category extensions cannibalize the current brand product line to a much lower degree, if at all, relative to line extensions.

Figure 16: Diversification Change by Brand Extension Type
Finally, we find some directional evidence indicating that negative brand
dilution risk, operationalized as level of substitution, increases the value associated with
innovative brand extensions, consistent with H4e. This may indicate that cannibalizing
products may actually be viewed positively in the marketplace, consistent with prior
work by Chandy and Tellis (1998). However, this directional result may be due to the
relative inconsistency of the substitution measure (as demonstrated by the low
Cronbach’s alpha of this measure).

In addition, we find contradicting evidence for H4e in that production difficulty
possesses a positive significant interaction in the opposite direction of our hypothesis.
To see how, recall that as difficulty scores increase, the product is perceived as easier to
make. Specifically, as shown in Figure 17, we see that little difference exists in the CAR
attributable to innovative brand extensions as a function of the perceived difficulty of
production at low levels of diversification change. However, as firms undertake larger
relative brand diversification moves, decreases in the perceived difficulty of the
extension (alternatively, increases in the ease of producing the extension) enhances the
incremental value of the extension. This is counter to work by Aaker and Keller (1990),
which suggests that the difficulty associated with manufacturing a brand extension
increases the perceived congruity of the extension with the brand and reduces the
possibility that the extension will dilute the parent brand image. Furthermore, an
examination of the correlations supports our result in that extensions perceived as easier
to manufacture were also perceived as being of higher quality and were associated with
higher quality brands and higher purchase likelihood.
We also find that purchase likelihood (another component of negative brand dilution risk) has a positive main effect, consistent with our hypothesis that decreased purchase likelihood increases brand dilution risk (and thus reduces the value generated by an extension). However, the interaction is negative and marginally significant. As show in Figure 18, the plots of this interaction suggest that purchase incidence is only important in determining value for innovations which do not substantially increase the diversification of a brand. This result suggests that the market may believe that increased purchase likelihood at low levels of within-brand diversification change can outweigh the potential cannibalization associated with brand extensions. However, at high levels of brand diversification change, the market perceives the move as risky regardless of whether or not consumers express an intention to purchase such a product. An overview of our expected and actual results is shown in Table 18.
Table 18: Review of Brand Portfolio Results

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<th>Moderator</th>
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<th>Actual Result</th>
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<tr>
<td>Parent brand dilution risk</td>
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<td>- and +</td>
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5.3 Decomposing the Drivers of Innovation Value

Overall, these results indicate that the effects of an innovation launch on the future new value generated by the firm may be primarily driven by the effects of the innovation on the portfolio, not necessarily the innovation alone. If we revisit Figure 5, we find that the primary mechanisms that appear to be critical in assessing the new value to innovation are the firm’s ability to leverage the innovation (and the resulting product portfolio) and to generate demand (see Figure 19).
Three significant moderators – level of diversification, prior success and adoption uncertainty – influence the leverage mechanism while another three moderators – level of diversification, market competitiveness and adoption uncertainty – influence the demand mechanism. To decompose the movement of these effects, let us reconsider the moderator arguments in Table 6. Level of diversification was suggested to have a diminishing positive effect on demand but a negative effect on leverage (supported by the diminishing returns to increasing diversification in our results) while prior success was hypothesized to positively impact leverage (supported by the positive interaction in our results). Adoption uncertainty decreases demand potential by slowing down diffusion and decreases leverage by increasing the uncertainty of future cash flows. While this leverage effect of adoption is not a growth-related concept, it increases the risk that the firm will become insolvent in the future and thus does not provide a base of cash flows to leverage in the future. Finally, market competitiveness, as indicated by our results, appears to indicate the presence of an attractive market with heterogeneous customer preferences, indicating high demand potential.

Both demand and leverage are reflective of the firm’s ability to grow which is consistent with prior work that suggests innovation is the driver of the growth within the firm (Day 2007). In addition, both mechanisms indicate that the risk of the innovation (in creating demand) and the portfolio (in being able to leverage it in the future) is critical in assessing the degree to which the innovation will help (or hurt) the firm in achieving future growth. Given that we find only one significant main effect for the innovation characteristics variables but find significant moderating effects between
many of these variables and portfolio diversification changes, one can conclude that ignoring portfolio effects in any analysis of innovation may be extremely detrimental to the validity of any analysis of the impact of an innovative introduction.

While price and cost may play a more limited role (to the degree to which they are affected by level of diversification and market competitiveness), the ability of an innovation to generate incremental demand for the firm and to position the firm for success in the future appear to be the most vital components. Fundamentally, these components represent both the short- and long-term outcomes associated with innovation (Woolridge 1988; Rappaport 1998).

![Revisited Product Portfolio Framework](image)

**Figure 19: Revisited Product Portfolio Framework**

These same components of demand and leverage appear to operate within the brand portfolio context as well. However, as shown in Figure 20, it also becomes apparent that cannibalization also plays an important role through understanding the degree to which an extension directly cannibalizes revenues of existing products (through line extensions) and also increases the possibility of brand dilution.
Three significant moderators – level of diversification, brand dilution risk and line extension influence the demand, leverage and cannibalization mechanisms. To decompose the movement of these effects, let us reconsider the moderator arguments in Table 7. Level of diversification was suggested to have an inverse-U shaped effect on demand and leverage, but our results indicate that in fact, brands with relatively high levels of diversification create positive value, as long as they demonstrate sufficient breadth (i.e., pursuing small diversification relative to large diversification moves). This value can be driven by either demand, by having greater exposure to the brand in various categories, or by establishing a platform for growing the brand in the future. Otherwise, increasing diversification hurts the brand, particularly for relatively focused firms indicating the potential for cannibalization through consumer confusion regarding brand meanings in the future.

Similarly, brand dilution risk, as seen through the product adoption uncertainty variable, highlights the effect of brand dilution on both immediate demand and leverage by decreasing immediate demand potential by slowing down diffusion and decreasing leverage by increasing the uncertainty of future cash flows. While this leverage effect of adoption is not a growth-related concept, it increases the risk that the firm will become insolvent in the future and thus does not provide a base of cash flows to leverage in the future. In addition, the uncertainty associated with purchasing a given brand extension may call into question the existing quality of a given brand and product line, thus causing cannibalization of (or reduction in) future revenues.
Finally, line extensions, as indicated by our results, appear to indeed drive incremental demand when firms are making little to no changes in the brand portfolio perhaps to satisfy customer variety-seeking in spite of the potential for greater cannibalization and lower leverage in the future. However, if firms use line extensions to redistribute products across categories, then the line extension is perceived to create a less powerful platform for growth and greater potential for negative reciprocal brand effects (on any of the existing categories for the firm).

While cost may play a more limited role (to the degree to which it is affected by level of diversification and line extension), the ability of an innovation to generate incremental demand for the firm beyond any cannibalization that may occur and to position the firm for success in the future appear to be the most vital components.

![Figure 20: Revisited Within-Brand Framework](image_url)
6. Discussion

6.1 General Discussion

The purpose of this work has been to demonstrate that while innovation is critical to value generation both conceptually and empirically, innovation alone may not be the ultimate driver of new value creation. In fact, one must consider the innovation with respect to the portfolio in which it operates. In other words, does the innovation set the firm up for success in the future by not only contributing positive value on its own, but also by altering the structure of the firm’s overall product portfolio to be more successful in the future? Our theoretical development suggests that innovation can interact with the firm’s portfolio on two possible levels – at the overall product portfolio level and at the within-brand level. Specifically, we suggested that the introduction of an innovation may alter the diversity of the firm’s overall product and/or the within-brand portfolio. To examine these questions, we have proposed and empirically analyzed a conceptual framework that broadly defines the new value generated by an innovation as a function of (1) such changes in the product and within-brand portfolio, (2) the characteristics of the innovation and the firm and (3) the interaction of the two concepts.

Our results indicate that innovations in the consumer packaged goods industry can generate greater new value if they dramatically increase the diversification of a firm, particularly for firms that are (1) relatively more focused, (2) relatively more successful in the past, (3) entering relatively more competitive (or heterogeneous) markets, and (4) introducing innovations with less uncertainty.
While relatively more focused firms achieve greater benefits to increasing diversification, relatively more diversified firms still receive positive benefits to increasing diversification. However, interestingly, firms that refocus or reduce their diversification are often punished for their behavior. The fact that larger moves, whether they have a positive (i.e., more diversifying) or negative (i.e., more focusing) effect on the firm’s portfolio, indicates that the market needs to have new (or “surprise”) information in order to significantly adjust stock price, consistent with the efficient markets theory.

In addition, the directional outcomes associated with these larger moves indicate that firms can expect to receive greater benefits (or negative outcomes) when a firm resides at the extremes of diversification level. In other words, firms that are either highly focused or highly diversified gain (lose) more by increasing (decreasing) their diversification. These firms can expect to receive greater (lose) incremental demand and to leverage their portfolios to a greater (lower) degree in the future. Interestingly, the average firm in terms of diversification level can achieve either positive or negative expected value from an innovation depending on whether the innovation diversifies or focuses the firm’s portfolio. The average and modal firm, however, make few changes to their portfolios, resulting in predominantly negative returns. This may be an indication of the market punishing product proliferation (e.g., Bayus and Putsis 1999).

In addition, contrary to what we might expect given the existence of earnings persistence, firms that are more successful can gain more than less successful firms by increasing their diversification through innovation. However, this generally only occurs
when firms are making large diversification moves. This indicates that the market perceives more successful firms as being able to handle the risk associated with making “bigger” steps away from its current portfolio structure. However, poorly performing firms receive relatively greater rewards for taking “smaller steps” and for refocusing. This result indicates that diversification acts as a mechanism for poorly performing firms to change their trajectory while successful firms are rewarded for going after distinctly new markets. Both results are consistent with our leverage theory but suggest that leverage is somewhat contingent upon capabilities, at least if the firm makes higher risk choices. In addition, these results reflect the concept that successful firms may be expected to become complacent (or experience inertia) while poorly performing firms are expected to cut down their current lines of business. Consequently, successful firms that make any changes in their portfolio (whether it be to refocus or further diversify) may actually surprise the market more than unsuccessful firms who the market expects will need to make changes in order to remain a viable competitor in the market.

We also find that firms are rewarded for diversifying into competitive markets, presumably because these markets offer potential high demand opportunities. For example, markets with many products may indicate the existence of a large market consisting heterogeneous customer needs which provide an opportunity for competitive differentiation that would ostensibly give the firm a monopoly over a small portion of the overall market which may reduce the price pressure of being in a competitive market. The net expected value in such a market appears to be higher than pursuing a larger portion of a less competitive market where customers may be less attractive, more
homogeneous and price pressure may actually be greater (due to the relative substitutability of products in markets with homogeneous customers).

Furthermore, increased levels of consumer adoption uncertainty reduce the benefits of diversification through innovation. We suggested that such an effect may be due to the fact that both diversification and innovation are risky activities; consequently, pursuing two types of high risk activities at once is detrimental to the firm. It is worth noting here that innovations that are highly uncertain in terms of consumer adoption rarely achieve positive returns in our analysis, a testament to the importance of introducing products that consumers value and will actually purchase. Such an idea is consistent with the predominance of a consumer focus in the prior innovation literature in explaining how innovation generates value and how it diffuses in the marketplace.

Using these results, we uncover that the primary mechanisms driving new value from innovation at the overall product portfolio level appear to be innovation’s influence on demand and the firm’s ability to leverage the innovation in the future. Specifically, the market considers how much incremental demand can be generated by an innovation by asking questions regarding (1) how different the innovation is from the firm’s other products (i.e., how much does it diversify the firm), (2) whether or not the market is an attractive one and (3) if consumers in this market will actually buy the product. In addition, the market considers the degree to which the new portfolio can be leveraged in the future by considering (1) how much this innovation gives the firm a foothold in multiple markets (i.e., how much does it diversify the firm), (2) to what degree does this innovation reflect the firm’s efforts to change or utilize its own
capabilities (i.e., how successful has the firm been in the past) and (3) to what degree can this innovation, through diversification, lower the risk associated with the firm’s future cash flows (i.e., how much uncertainty is associated with acceptance of this innovation).

To demonstrate the managerial importance of such findings, we can quantify our results in real dollar terms to the firm rather than simply the percentage change in abnormal returns. If we consider that the average share price in our sample prior to the innovation introduction is $48.37, we see that diversification changes can generate significant negative or positive value per share as shown in Table 19. However, the firm-level magnitude of such a share price change is highly dependent upon the firm’s number of shares outstanding. Consider two firms, one with 100,000 outstanding shares and one with 1,000,000 outstanding shares. We can see, based on Table 19, that the firm with fewer shares could lose up to $175,000 and gain up to $817,000 considering only the partial effects of each interaction. For the firm with more shares, the range is much higher with a potential loss of $1.7 million and a gain of over $8 million. Thus, we can

Table 19: Stock Price Value Generated at the Average Firm Share Price

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</tr>
<tr>
<td>10th Percentile</td>
<td>$1.64</td>
<td>$3.17</td>
</tr>
<tr>
<td>90th Percentile</td>
<td>$1.64</td>
<td>$3.17</td>
</tr>
<tr>
<td>Mean</td>
<td>$1.64</td>
<td>$3.17</td>
</tr>
</tbody>
</table>
see that the equity generated (or destroyed) by one innovation in the consumer packaged goods industry, an industry consists of hundreds of firms with ten thousands of products, has a measurable impact on the firm.

It is important to note, however, that the returns to innovation for all types of firms, regardless of where they stand in terms of diversification change or any of our significant moderators, become positive if the innovation is also a brand extension (see Table 17). This result reflects the importance of brand equity as a mechanism for reducing the risks associated with innovation in general and for allowing the firm to achieve greater benefits, on average, from an innovation.

With respect to decomposing this benefit to diversifying by using a brand extension, we find innovative brand extensions in the consumer packaged goods industry can generate greater new value if (1) they are pursued by relatively more diversified firms, regardless of the degree of diversification change induced by the brand extension (2) are expected to generate greater incremental demand, particularly if the firms is making relatively small changes in the diversification of the brand, and (3) have less potential for brand dilution through potential brand incongruity.

First, we see that the effect of changing within-brand diversification is relatively minimal when the brand is already diversified; however, when a firm is relatively focused, the initial move to diversify the brand appears to be perceived negatively in the market indicating that, on average, the market seems to prefer greater focus within a brand portfolio. This is consistent with our results which demonstrate that while both types of extensions generate little (if any) positive value in marketplace on their own, the
negative reaction to diversification via a brand extension is mitigated as firms enter new categories with an existing brand. This is consistent with the idea that brand dilution risk may actually be mitigated with category extensions since they are, by definition, different from what the firm has done in the past (e.g., Loken and Roedder John 1993).

To demonstrate the managerial importance of such brand-specific findings, we can quantify our results in real dollar terms to the firm rather than simply the percentage change in abnormal returns. If we consider that the average share price in our sample prior to the innovation introduction is $48.37, we see that diversification changes can generate significant negative or positive value per share as shown in Table 20. However, the firm-level magnitude of such a share price change is highly dependent upon the firm’s number of shares outstanding. Consider two firms, one with 100,000 outstanding shares and one with 1,000,000 outstanding shares. We can see, based on Table 20, that the firm with fewer shares could lose up to $308,000 and gain up to $925,000 considering only the partial effects of each interaction. For the firm with more shares, the range is much higher with a potential loss of $3.08 million and a gain of over $9.25 million. Thus, we can see that the equity generated (or destroyed) by one brand extension in the consumer packaged goods industry, an industry consists of hundreds of firms with ten thousands of products (with the majority of them being brand extensions at least as represented by our sample), has a measurable impact on the firm.
Table 20: Stock Price Value Generated by Brand Extensions at the Average Firm Share Price

<table>
<thead>
<tr>
<th>Diversification Level</th>
<th>Brand Extensions</th>
<th>10th Percentile</th>
<th>Mean</th>
<th>90th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10th Percentile</td>
<td>$ -</td>
<td>$(0.95)</td>
<td>$(2.35)</td>
</tr>
<tr>
<td></td>
<td>90th Percentile</td>
<td>$ 1.25</td>
<td>$ 0.99</td>
<td>$ 0.62</td>
</tr>
<tr>
<td>Line Extension</td>
<td>Line</td>
<td>$ 0.44</td>
<td>$(0.99)</td>
<td>$(3.08)</td>
</tr>
<tr>
<td></td>
<td>Category</td>
<td>$ -</td>
<td>$(0.95)</td>
<td>$(2.35)</td>
</tr>
<tr>
<td>Difficulty in Production</td>
<td>10th Percentile</td>
<td>$ 1.98</td>
<td>$ 3.98</td>
<td>$ 6.93</td>
</tr>
<tr>
<td></td>
<td>90th Percentile</td>
<td>$ 2.47</td>
<td>$ 5.21</td>
<td>$ 9.25</td>
</tr>
<tr>
<td>Adoption</td>
<td>10th Percentile</td>
<td>$ 1.82</td>
<td>$ 0.01</td>
<td>$(2.66)</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>90th Percentile</td>
<td>$ 3.18</td>
<td>$ 0.72</td>
<td>$(2.89)</td>
</tr>
</tbody>
</table>

The work presented in this dissertation contributes both theoretically and empirically to prior work on innovation and branding and also provides substantive implications for the firm. Theoretically, the conceptual framework offered in this dissertation is the first of its kind and is one of very limited set that considers diversification (or portfolio modification) as a dynamic process that is rewarded as it changes over time, rather than one that achieves static rewards at a given point in time (see also Helfat and Eisenhardt 2004). This process of portfolio adjustment, both outside of and within a brand, influences the degree to which the innovation helps create new value for the firm and is moderated by characteristics of the individual innovation and the firm which introduces the innovation. This framework is broadly applicable in a wide variety of industries and has been shown, in this dissertation, to possess significant explanatory power in the consumer packaged goods industry.

In addition, empirically, despite the vast literature examining the effects of innovation, relatively little work has examined innovation in an event-study context (see
Sorescu et al. 2003 and Sood and Tellis 2009 for examples), particularly with regard to brand extensions (see Lane and Jacobson 1995 for an exception). This methodology offers an insightful context for studying innovation in that it enables a fine-grained analysis of not only innovation characteristics and their interaction with the product portfolio, but also the causality between innovation and value creation. This dissertation is the only research conducted thus far that considers both the individual innovation and its interdependency on the portfolio in which it operates as a series of interactive effects. Other work has suggested that the portfolio may be representative of the firm’s capabilities and thus reflective of the firm’s ability to successfully introduce and leverage an innovation (e.g., Sorescu et al. 2003), yet no other work has suggested that the innovations themselves fundamentally alter the firm’s portfolio (e.g., through changing diversification) and thus have a direct impact on the future success of a firm’s portfolio.

Our empirical results thus far provide insight into why prior work on innovation and on corporate diversification has exhibited so much variability related to their outcomes. In terms of innovation, we demonstrated that the returns to innovation are not only a function of the individual innovation characteristics, but also how the individual innovation changes the firm’s overall product or within-brand portfolio and the interaction of the two. In fact, the majority of the returns to innovation explained in this model seem to be derived from the interaction of the innovation and the portfolio as represented by the relative frequency of significant interaction effects relative to significant main effects. This work suggests that considering either the portfolio or the
innovation alone, while important individually, may indeed create biased estimates of the influence of predictor variables on the returns to individual innovations, regardless of if the firm is looking at the overall product or within-brand portfolios.

From a corporate diversification point of view, these results demonstrate that it is not just where the firm is, in terms of diversification level, that determines the new value the firm can generate. One must consider not only the range of diversification values available in the sample, but also how the firm achieved its diversification level. In other words, has the firm recently made strategic moves that have increased or reduced the firm’s diversification level both at the overall product portfolio and at the brand level? Given our results show that one could indeed find cases in which firms with the same diversification level are rewarded differentially for innovating, whether through a new brand or brand extension, making a broad-sweeping statement that one level of diversification is better than another, as has been done in prior work, seems unjustified. In addition, given our results do not conclude that related diversification is necessarily better than unrelated diversification (or vice versa), this work calls into question the decision in prior research to equate high levels of diversification with unrelated diversification.

Finally, these results indicate that consumer perceptions regarding brands are only somewhat informative when explaining stock market valuations of brand extension introductions. In particular, only level of manufacturing difficulty and purchase uncertainty appear to influence the predicted value from brand extensions. While our results show varying levels of consistency with prior work on consumer acceptance of
brand extensions, perhaps the most important contribution here is that consumer perceptions may not be the only source of brand information that financial markets evaluate in assessing the degree to which innovative extensions create new value for the firm.

Substantively, these results suggest that firms are, in general, rewarded for making major efforts to explore rather than exploit their current lines of business, particularly if the firm is relatively focused at the overall product portfolio level or relatively diversified at the brand level. This suggests that firms should consider whether or being very focused is truly necessary. If it is necessary, firms may want to engage in such behavior by using innovative brand line extensions rather than creating new brands, particularly if the firm expects that consumers will be more likely to purchase such extensions thus increasing the potential incremental demand above and beyond any potential cannibalization. In addition, successful firms are encouraged to either to actively seek out new markets rather than narrowing their focus. However, successful firms do not outperform less successful firms without undertaking large changes in diversification, which may be of higher risk to the firm. These results may explain why successful firms tend to succumb to organizational inertia from a strategic point of view and product proliferation from a product portfolio point of view, since, in some respects, they are rewarded for doing so. Furthermore, the stock market encourages unsuccessful firms to gradually move out of their current lines of business to find one that may prove more attractive. The important things to note, however, is that
both sets of firms are rewarded for seeking new ways to grow and to reduce future risk by diversifying.

If a firm is diversifying, it should do so by introducing an innovation that can be readily accepted in a relatively attractive (or more competitive) market. This may be particularly attractive through the use of already diversified brands, which are expected to generate more value from entry into distant markets. From a financial markets point of view, diversification cannot help the firm leverage its portfolio in the future if the firm cannot develop a successful foothold in another market. Developing this successful foothold requires that the market offer a significant opportunity in which the innovation being introduced is valued. Such logic suggests that firms would be well-advised to diversify into proven markets with relatively less risky solutions (e.g., diversified brands that possess less uncertainty in adoption) before introducing higher risk innovations.

6.2 Limitations and Future Research

While our event study methodology enables us to pinpoint the incremental change in future cash flows associated with the introduction a given innovation, several avenues represent limitations that may be fruitful for future research. First, our analysis is limited to examining only the commercialization of a given innovation. Consequently, our estimate of the effect of innovation on the future cash flows of the firm is conservative at best. Following Sood and Tellis (2009), future research should examine the total returns to innovation by considering the abnormal stock returns generated at multiple phases of the process (e.g., R&D, preannouncements, etc.). Such work would be
particularly critical in other industries, such as pharmaceuticals or high technology, where such announcements are more prevalent and expected from the firm.

Second, our branding survey makes the implicit assumption that the stock market can predict the mind of the consumer when assessing the value that brand extensions will generate. While stock price movements in themselves represent the development of an expectation (or estimate) of how a given action influences the future cash flows of the firm, it is highly possible that the market, particularly analysts, may turn more frequently to firm-specific perceptions of brand extensions. In other words, what is upper management telling analysts regarding the rationale for introducing a given brand extension? While, theoretically, the firm would want their own perceptions and rationale to be duplicated by the consumer, the reality is that the marketing communications of the firm are subject to high levels of noise and thus the message the firm desires to convey regarding a brand extension may not be the same message decoded by consumers. Future research should examine the potential for such discrepancies between managerial and consumer perceptions regarding brand extensions and assess the degree to which stock market reactions to extensions are more reflective of one type of perception of another. This issue is particularly important for brand extensions for which consumers have few, if any, expectations or concepts associated with a given brand.¹

¹ As noted in our branding section, we were unable to examine perceived fit due to issues with multicollinearity and non-response error. Future research should attempt to reexamine these issues in order to determine the degree to which fit also may play a role in the success of a brand extension.
Third, we examine our results purely within a domestic, U.S.-based context. This limited geographic focus inhibits our ability to make inferences regarding how the stock market may perceive innovations that are introduced internationally or to consider how international diversification may play a role in the value that innovations generate (e.g., Hitt et al. 1994). To the degree that firms may introduce innovations internationally, future research may include a third dimension of diversification – geographic diversification – and examine how the firm’s worldwide portfolio of products is adjusted by the introduction of a given innovation.

Finally, these results and their managerial implications make the assumption that our event and data source is a meaningful signal of information for the investment community. It seems highly unlikely that we would find the empirical results in this dissertation when innovation launches as listed by Product Launch Analytics do not convey any information (or the information as suggested by our theoretical development). However, given that the degree that information conveyed at other points in the innovation process may differ from the information conveyed at commercialization or differ across industries, the managerial implications of this work must be interpreted with caution when informing corporate policy. Consequently, while the framework is useful in examining the value of innovation in general, the empirical implications for this work with respect to the generation of stock market value should not be generalized outside of the empirical context in which the framework is studied.
6.3 Conclusion

Overall, while we understand the importance of innovation to the firm, innovations do not operate within a vacuum. The hope is that this research offers insight into the importance of the overall product and within-brand context of an innovation and the ways in which innovation not only generates value on its own, but also changes the value of other products owned by the firm.
Appendix A: Survey Questions for One Brand-Product Combination

Brand-Level Questions

1. Please rate how familiar you are with the Revlon brand. (1-7; Not familiar – Very Familiar)
2. What are the words or concepts you associate with the Revlon brand? (open-ended)
3. What are your beliefs about the quality of products with the Revlon brand name? (1-7; Low quality – High quality)
4. How frequently do you purchase or use products with the Revlon brand name? (Never; Very rarely; Rarely; Occasionally; Frequently; Very frequently)
5. If anything but “Never” is selected for Q4: How satisfied are you with your past experience with the Revlon brand of products? (-3 to +3; Very dissatisfied – Very satisfied)

Product-Level Questions

Please carefully read the following description of a product introduced by a consumer packaged goods firm. Once you have read the description, please click “Next” below to answer a series of questions about this product. (Click time recorded as a proxy for reading time)

Product description: Revlon Age Defying Spa Foundation is new in the USA from Revlon Consumer Products Corp. Literature states that the product "instantly revitalizes and brightens for radiant, flawless coverage (and) protects against fine lines." The foundation is said to contain stone therapy minerals that help energize stressed skin, vitamin C fusion that brightens, and antioxidants and SPF 18 that strengthens skin's natural defense systems. Shades include Fair, Fair/Light, Light, Light/Medium, Light Medium/Medium, Medium, Medium/Deep and Deep.

1. Assume you had decided to purchase a foundation product from Revlon. Which of the following options best describes your purchase: (I would (always/often/occasionally) purchase only this product OR another Revlon foundation product - I would (occasionally/often/always) purchase this product AND another Revlon foundation product).
2. To what degree do you think this product and other products with the Revlon brand name are similar? (-3 to +3; Very dissimilar - Very similar)
3. How relevant are the following words or concepts to this specific product (piped from #2 under Brand-Level Questions)? (-3 to +3; Very irrelevant - Very relevant)

4. What are your beliefs about the quality of the Revlon Age Defying Spa Foundation product? (1-7; Low quality - High quality)

5. How likely are you to purchase the Revlon Age Defying Spa Foundation product? (-3 to +3; Very unlikely – Very likely)

6. How difficult do you think it is for Revlon to design and manufacture the Age Defying Spa Foundation product? (-3 to +3; Very difficult – Very easy)

7. Which of the following best describes your awareness of the Revlon Age Defying Spa Foundation product? (I was aware and purchased; I was aware and have used but not purchased; I was aware but not purchased or used; I was not aware)

8. If aware and use/purchase, How satisfied are you with your past experience with the Revlon Age Defying Spa Foundation product? (-3 to +3; Very dissatisfied to Very satisfied)

9. Please rate how innovative you believe the Revlon Age Defying Spa Foundation product? (1-7; Not at all innovative – Very innovative)

10. In your opinion and considering only the information you have been provided, how likely are other consumers to purchase the Revlon Age Defying Spa Foundation product? (-3 to +3; Very unlikely – Very likely)
References


Zaltman, Gerald, Robert Duncan and Jonny Holbek (1973), Innovation and Organizations, New York: Wiley.


Biography

Fredrika Justesen Spencer was born in Fayetteville, North Carolina, in 1977. She graduated from the University of North Carolina at Chapel Hill *cum laude* with a Bachelors of Science in Business Administration in May 2000 where she held the Herbert Worth Jackson Scholarship. After working for Deloitte Consulting’s Strategy and Operations Group in Atlanta, GA, Ms. Spencer received a Masters in Business Administration from Wake Forest University in May 2005. She attended Wake Forest as a Dean’s Scholar and received multiple honors including the Kiplinger Award and the Babcock Award. She has received grant money from the Marketing Science Institute for her work at the intersection of marketing strategy and financial markets and is a member of the American Marketing Association and INFORMS.