Strategic management of product and brand extensions: Extending corporate brands in B2B vs. B2C markets

ABSTRACT

Decisions about expanding an existing product portfolio and capturing new markets are of critical importance to a firm's financial performance and growth. Yet, important questions remain in regard to the extent to which product and brand extensions contribute to a firm's profit in B2B and B2C markets, respectively, and how firms with corporate brands in these markets should pursue an extension strategy that provides maximum impact on firm profit. The authors theorize and empirically address these questions based on a study of firms listed in the U.S. *Fortune 500* published ranking. Findings of this research have important prescriptive implications for the management of B2B and B2C firms' growth-based extension strategy and contribute to B2B theory.

Keywords*:* Brand extension; Product extension; Profit; B2B; B2C; Corporate brands

1. Introduction

Be it Caterpillar, Microsoft or Nike, to remain relevant to customers and sustain profitable growth over time, firms across industrial markets must further develop their existing markets and pay attention to potential opportunities. In this regard, the critical questions for marketing theory and practice are: How should a firm expand existing markets and unlock new market opportunities to ensure strong firm growth? And are the findings from a business-to-consumer (B2C) brand necessarily applicable to a business-to-business (B2B) firm?

Considering product and brand extensions as two primary growth strategies for firms (Aaker 2004), the pressing concern is the extent to which each growth strategy contributes to a firm's profit. Moreover, due to several important differences between the B2B and B2C market structures, including identifiability and accessibility of customers and their level of product and market knowledge as well as the relative importance of customized solutions and relationship management to name but a few (Abrahamsen, et al., 2016; Calantone, Di Benedetto, & Song, 2010; Hutt & Speh, 2012; Mudambi, 2002), the effects of product and brand extensions on firm profit in the B2B market are likely to differ from the B2C market. We thus aim to complement and extend the current body of work in B2B markets (Kohtamäki & Rajala, 2016; La Rocca et al., 2016; Lindgreen et al., 2012; Vallaster & Lindgreen, 2011; Grewal, Corner, & Mehta, 2001).

Addressing the above concerns is challenging for several reasons. First, there is remarkably few prior research work that helps us to understand the relationship between product extensions and firm profit. There is previous research (Kadiyali, Vilcassim, & Chintagunta, 1998; Ramdas & Sawhney, 2001) that examined the relationship between line extensions and firm profit. We find it difficult, however, to decipher the true relationship between product extensions and firm profit based on such research due to the different definitions of line

extensions, used in the previous research, versus product extensions, examined in the present research. Kadiyali, Vilcassim, and Chintagunta (1998, p. 339), for instance, defined a line extension as "the introduction of a new product that is a variant of the firm's existing product in a given category," and Reddy, Holak, and Bhat (1994, p. 243) defined a line extension activity as "the use of an established brand for a new offering in the same product class or category that differs from its parent brand in relatively minor ways, such as flavors, sizes, and compositions."

In this paper, we define product extensions as variants or modified versions of a firm's initial product that are intended to capture *new markets*. New markets are operationalized in terms of new customers for existing usage applications, new usage applications for existing customers, or new customers for new usage applications. This definition of product extensions is more specific and narrow in scope than that of line extensions used in prior work because the former is applied only to the primary feature-based variations of the initial product but not to the minor, secondary feature-based variations (see the Method section for a more specific discussion). As will be discussed later, including both primary and secondary feature-based variations of an existing product as part of line extensions is most likely to distort their respective impacts. Furthermore, product extensions, when defined in the context of capturing *new markets*, may also have different impacts on firm-level profit, depending on the type of market (B2B versus B2C).

Second, the relationship between brand extensions and firm profit in a B2C vs. B2B context has not been previously examined. Although research on brand extensions has proliferated for the last two decades, resulting in an impressive set of findings (see Stahl, Heitmann, Lehmann, & Neslin, 2012 for a review), by and large, the extant research has examined only the effects that brand extensions have at the individual consumer level, primarily

addressing consumers' responses toward brand extensions in terms of product evaluation, brand attitude, and purchase intention (see Sattler, Völckner, Riediger, & Ringle, 2010 for a review). Critical questions still remain about the firm-level profit contribution of brand extensions. Therefore, it is still not clear to what extent brand extensions contribute to a firm's profit and, further, whether this contribution varies depending on the type of market in which firms operate (B2B versus B2C).

Third and finally, brand extensions also raise issues concerning what comprises them. This is because, unlike product extensions that all operate within the *same* initial product category, brand extensions enter product categories that are *different* from the initial product category and can, thus, have varying relationships with the initial product. They have either a substitutable (e.g., Apple's iPad instead of a Macintosh computer, Lockheed Martin's helicopter versus its small-sized aircraft), complementary (e.g., a Nike sport watch with a heart rate monitor and GPS functions used with Nike running shoes, Intel computer chipsets and software used with Intel processors), or independent relationship (e.g., Google's Hangouts messaging service versus search, John Deere golf greens mowers versus tractors) with the initial product at the time of the consumption/usage of the initial product. Important differences exist in terms of the way these types of brand extensions serve customer needs and the nature of opportunities and risks they pose to a firm. Therefore, it is important to take the type of brand extension into consideration when examining the profit contributions of brand extensions, and it is likely that different types of brand extensions have a varying impact on firm profit across B2B and B2C markets.

With a sharper definition of product extensions and three different types of brand extensions, in the present research, we empirically address the following questions: (1) what is the contribution of product extensions to a firm's profit in B2B versus B2C markets, and (2)

what is the contribution of each brand extension type to a firm's profit in B2B versus B2C markets? Based on a sample of firms from the published list of *Fortune 500* companies, we find significant different roles of both extensions between B2B and B2C markets. Figure 1 illustrates our conceptual model. The current findings should help B2B firms to make important strategic decisions on how to use each extension strategy for the optimal contribution to firm profit. They also inform current knowledge in the B2B literature and help build B2B theory.

[Insert Figure 1 about here]

2. Theoretical background

2.1. Resource based view on growth strategy

Firms that seek stronger revenue and profitability often adopt growth strategies such as product development and diversification. Literature has extensively examined when and why some growth strategies improve or harm firm performance (Ramanujam & Varadarajan, 1989; Montgomery, 1994; Chakrabarti, Singh, & Mahmood, 2007). In the marketing literature, the resource based view (hereafter RBV) has been employed to understand the effect of such growth strategies on firm performance (Dutta, Narasimhan, & Surendra, 1999; Lieberman & Dhawan, 2005). According to RBV, a firm adopt a diversification growth strategy aims to extend its resources into new markets and new products. By doing it, firms are able to obtain economies of scale by 1) lowering operational costs, and 2) leveraging business efficiency via shared tangible assets such as product facilities and distribution channels, and intangible assets such as brand names (Hitt, Hoskisson, & Kim, 1997).

Although diversification should have a positive influence on firm performance conceptually (Rumelt, 1982), empirical studies also suggest different results. Diversification can have negative impact on performance (Montgomery, 1994), due to increased cost of operation or

conflict in terms of greater managerial and organizational complexities (Chakrabarti, Singh, & Mahmood, 2007; Grant, Jammine, & Thomas, 1988). Based on the heterogeneity of market structure, firms in B2B market have been noted to focus more on the competitor analysis and the differentiated strategies among competing firms to build up connections over the distribution network (Rindfleisch & Heide, 1997) while firms in B2C market tend to focus on customer segmentation and the differentiated strategies attractive to certain customer groups (Dacin & Smith, 1994). Although RBV argues that firms utilize their competitive advantages to develop diversification strategies to leverage firm performance, the impact of such growth strategies on firm's performance in B2B and B2C markets is different and complex which deserves further work.

Firms' performance has been examined in literature on firms' growth strategies by focusing on performance outcomes at different levels (Krasnikov & Jayachandran, 2008), including financial outcomes, such as sales, revenue, return on investments (Song, Benedetto et al., 2007; Song, Droge et al., 2005), and non-financial outcomes, such as market share, customer evaluation, market efficacy (Smith and Park, 1992; Morgan and Rego, 2009). See Katsikeas, Morgan, Leonidou, and Hult (2016)'s work for a comprehensive framework on assessing performance outcomes in marketing. Among the outcomes, profitability has been widely accepted as an effective indicator of the efficacy of the firm's resource-output transformation (Nath, Nachiappan, & Ramanathan, 2010). Therefore, we consider it is important to examine the firm's growth strategies on profitability, in consistent with existing literature on the similar topics (Rumelt, 1982; Palepu, 1985; Nath, Nachiappan, & Ramanathan, 2010).

2.2. Product extension and brand extension

There is widespread in both marketing and strategy that brand is one of the key marketing resources of a firm. It has been suggested that strong brand equity is a rare and valuable resource when extended to new product variants (i.e. product development) and product categories (i.e. brand extensions) (Dacin & Smith, 1994). In order to maintain the branding benefit when introducing new product, the first and most frequently used growth option is to introduce variations of the initial product (service) within the existing product category, without changing brand names (Aaker, 2004; Reddy, Holak, & Bhat, 1994). Examples of what were often referred to as line extensions in the past, but named as *product extensions* in this paper, include Nike's latest running shoes with enhanced ventilation, John Deere tractors for mountainous terrain, and Caterpillar's compact earthmoving equipment.

The other frequently used option for diversification growth strategy is to expand a firm's current businesses through brand extensions (e.g., Park, Jaworski, & MacInnis, 1986). Firms introduce a product with the same brand name in a category different from the one from which the brand originated, for example, Nike's extension from footwear and athletic clothing to watches and Caterpillar's extension from earthmoving equipment to oil and gas drilling engines and generator sets. Depending on the relationship between the parent and the extensions, three types of brand extensions emerge, i.e., *substitutable, complementary,* and *independent* brand extensions. However, the distinctions among them have not received sufficient attention in the literature. In terms of differences, substitutable and complementary brand extensions have a direct consumption or usage relationship with the initial product, while the independent brand extensions do not. The first two types of brand extensions, particularly the complementary brand extensions, aim at primarily the same customers of the initial product, while the third type does

not necessarily aim at the same customers. We will discuss each brand extension type in detail and offer brand extension type-specific hypotheses in the next section.

According to RBV, both of product extensions and brand extensions are important strategic devices that allow a firm to grow, not only by leveraging its current customer base and current (parent) brand image (Balachander & Ghose, 2003; Park, Jaworski, & MacInnis, 1986), but also through utilizing other operating resources, such as technology, logistics, and manufacturing capabilities (Essig, Glas, Selviaridis, & Roehrich, 2016; Kaipia, & Turkulainen, 2017; Lacoste, 2016; Srivastava, Shervani, & Fahey, 1998). However, in contrast to product extensions, brand extensions require technological and product-market expertise and configurations of business relationships that are different across sectors and face a different set of competitors from those of the existing product (Fleming, Lynch, & Kelliher, 2016; Kohtamäki, & Rajala, 2016; Mudambi, et al., 2017; Nerkar & Roberts, 2004; Peters, Pressey, & Johnston, 2017). This will introduce differential effect of product extensions and brand extensions on firms' performance.

2.3. Importance of branding in B2B and B2C

Although the concepts of product extension and brand extension have received extensive attention in the B2C context, similar academic research on B2B is more likely to be found under terms such as "product development" and "diversification". It is only until recently when branding such as brand equity (Bendixen, Bukasa, & Abratt, 2004) and brand architecture (Douglas, Craig, & Nijssen, 2001) have been considered to influence industrial buyer and then further companies' market performance. A strong brand will provide customers with a positive perception of the qualities the company wants to be associated with, such as reliability and

integrity. Therefore, in the current paper we use “brand extensions” and “product extensions” to refer to such growth strategies.

Firms could adopt different brand architecture as their branding strategies. Depending on the level in the organization at which a brand is used, three major pattern of brand architecture are identified as corporate-dominant, product-dominant, and mixed (Douglas, Craig, & Nijssen, 2001). Although it is still unclear which brand architecture a company should be employed, there are some patterns identified. Firstly, most firms are moving towards to using a mixed structure, which consists of a combination of corporate-level brands and product-level brands (Douglas, Craig, & Nijssen, 2001). A common way is to have a mix of product-level brands or different structures for different product lines and a corporate brand (Douglas, Craig, & Nijssen, 2001). Secondly, it seems difficult for a B2B firm to brand at the product level due to the product variation and customized products (Baumgarth & Schmidt, 2010) and thus in B2B context, corporate brands seem to be more important than product brand (Aspara & Tikkanen, 2008). Because of frequent transactions with the upstream suppliers and downstream clients, the firms in B2B market build up their corporate brand identity through the personal network instead of specific products. Clients, thus, recognize the corporate brand as the set of service and customized products in B2B market (Tang, 2008). There are therefore more corporate brands than product brands in B2B, while in B2C the opposite is true (Mudambi 2002). Given the current research context and the increasing significance of corporate branding, we will thus not focus on brand in general but on corporate brands in the current study.

Another important aspect of brand architecture is regarding the internationalization of the branding (Dougl, Craig, & Nijssen, 2001). Nowadays, large firms are increasingly developing international business and establishing international branding, which reflect the geographic scope

of the branding (e.g. global, regional, or national). Combining with the dimension of level in organization, an international branding architecture could be very complex, such as P&G and Nestlé. It would be an impossible task to include all the brands in one study, such as 700 local strategic brands for Nestlé (Parsons, 1996). We thus focus on the corporate brands at a higher level (e.g. a global level).

3. Hypothesis development

Extensions have been proved to benefit firms on the success of both the original and the new products. Some literature examine the effect of extensions strategy on the evaluations of parent brand and extensions at customer level and suggest that many factors will influence the extensions evaluations, including brand extension typicality, brand breadth (Boush & Loken, 1991), parent brand reputation brand extension fit, and brand extensions benefit innovativeness (Chun, Park, Eisingerich, & MacInnis, 2015). Some other research focus on the effect of extension strategy on performance at firm's level, such as market share, advertising efficiency (Smith & Park 1992).

The underlying process behind the effect is threefold. Firstly, from the resource perspective, firms extend its resources into new markets and new products by adopting extensions. They benefit from resources sharing and business efficiency among original products and new products, such as operational cost, product facilities, distribution channels (Hitt, Hoskisson, & Kim, 1997). Secondly, established brands serve as a reliable quality cues (Wernerfelt, 1988), which should in turn promote trail. Thirdly, extensions facilitate customers' use of brand name as a decision–making heuristic. Research suggests that brand extensions provides the opportunities for consumers to contact with a brand in multiple product contexts and thus should be more accessible and easily to be retrieved from memory. This will then enable

customers to use brand name as a heuristic and reduce the amount of external information consumers need to evaluation the extensions. The firms will then benefit from attain its sales objectives at reduced costs on communication, advertising and promotion (Smith & Park, 1992).

When a firm introduces an extension of its current products, the extension may (1) operate within the same product category of the initial product or enter a different product category that has a (2) substitutable, (3) complementary, or (4) independent relationship with the initial product category. The effect of these types of extension varies between B2B and B2C context. In this section, we develop our hypotheses about how product extensions (i.e., extensions within the same initial product category) contribute to profit in B2B versus B2C markets, followed by a discussion of how the three types of brand extensions (i.e., extensions with a substitutable, complementary, or independent relationship with the initial product category) converge or diverge from product extensions in their contributions to a firm's profit.

3.1. Product extensions and firm profit

As noted earlier, we define a product extension as the introduction of a modified version of the existing product with the same brand name that is intended to *capture new markets* (i.e., attract new customers, increase the consumption frequency of existing customers, or both). For instance, consider Boeing introducing a new, fuel-efficient airplane. Prior work has noted a positive effect of deeper product lines on profit due to their ability to stimulate demand by catering to different segments of customers (Kadiyali, Vilcassim, & Chintagunta, 1998; Kohtamäki & Rajala, 2016). Given that customers differ in their preferences, frequent product extensions increase the chances of meeting an individual customer's preference (Lancaster, 1979). Further, firms that offer different versions of the same product are able to benefit from synergy effects by spreading overhead and fixed costs across their product portfolio (Kekre &

Srinivasan, 1990; Schmitz, Schweiger, & Daft, 2016; Zhang & Wu, 2017; Wagner & Eggert, 2016). Specifically, product extensions cultivate new markets for the existing product category by, for example, attracting consumers who want to enjoy the strong coffee flavor without the caffeine, and thereby expand its market boundary. This allows a firm to further leverage its resources, including R&D, production, marketing, and logistics, which results in the spreading of fixed costs and trading upon cost advantages while increasing revenue (Kadiyali, Vilcassim, & Chintagunta, 1998; Teller, Alexander, & Floh, 2016). Product extensions also help a firm to preempt market entry by competitors, improve its overall competitive position, and serve finer market segments (Draganska & Jain 2005; Schmalensee, 1978).

We, however, expect that the effectiveness of product extensions in driving firm profit is likely to vary across B2B and B2C markets. Specifically, one of the key differences between these two markets is that the B2C market consists of numerous consumers resulting in a larger targeted market whose identity, needs, and wants are targeted and filled by firms, and their individual-level identifiability and accessibility are often limited to the firm. In comparison, the B2B market consists of relatively fewer customers who are more easily identifiable and more accessible resulting in a small and focused market (Hutt & Speh, 2012; Kohtamäki & Rajala, 2016; Sheth, 1973; Ziggers & Henseler, 2016).

Due to the difference in the number and accessibility of customers between the B2B and B2C markets, the inter-organizational interactions in the B2B market are often deeper and more long-term oriented than are the firm-consumer interactions in the B2C market (Fleming, Lynch, & Kelliher, 2016; Hingley, Lindgreen, & Grant, 2015; Hutt, & Speh, 2012). Firms that operate in a B2B context put significant effort into selecting appropriate exchange partners (Dwyer, Schurr, & Oh, 1987; Wagner, & Eggert, 2016). On the one hand, suppliers actively and heavily invest in

relationship maintenance activities (D'Amico et al., 2017; Wathne & Heide, 2004; Fang , Fang , Chou, Yang &Tsai, 2011) to identify evolving customer needs and offer timely, tailor-made solutions. On the other hand, a crucial task for industrial customers is to identify reliable suppliers who, on a long-term basis, can and are willing to readily meet their changing needs, which are often difficult to predict in advance, through customization (Heide, 1994; Lindgreen et al., 2013; Pomirleanu, Mariadoss, & Chennamaneni, 2016; Rauyruen & Miller, 2007). Through the co-evolving process of information sharing and learning, innovation is mutually developed by B2B partners (Fang, Fang, Chou, Yang &Tsai, 2011). For this reason, frequent activities in introducing product extensions are perceived as a signal of reliability by industrial customers in terms of meeting their uncertain future needs (Toon et al., 2016). Therefore, in the B2B market, a firm that introduces product extensions on a more frequent basis is not only more attractive to potential exchange partners but also more likely to prevent existing industrial customers from switching to competitors. Thus, in the B2B market, increased product extension frequency can strengthen a firm's customer acquisition/retention capability, which has a positive impact on firm profit.

In the B2C market, however, consumers do not necessarily choose a brand based on this long-term relationship consideration (Reimann, Castaño, Zaichkowsky, & Bechara, 2012) or on the number of product variations that each brand offers. They also often do not have the same level of motivation or expertise to assess or to pay attention to the nuances of the differences among the multiple product variations, as do industrial customers in the B2B market (La Rocca et al., 2016; Mudambi, 2002; Wagner, & Eggert, 2016; Ziggers, & Henseler, 2016). Instead, when the variations of the same product increase above certain number, consumers often become confused and often fail to see the value added by the different products (Quelch & Kenny, 1994).

Further, due to the large number and the less accessibility of consumers, firms in B2C markets often face high communication costs in informing consumers of the benefits of additional variations of an existing product. Previous research that examined the potentially negative effect of too-frequent product extensions has found that a higher number of product extensions might not always lead to a corresponding increase in revenue, while such frequent extensions are linked to higher unit production costs, product design costs, additional inventory holding costs (Pomirleanu, Mariadoss, & Chennamaneni, 2016; Ryzin & Mahajan, 1999; Schmitz, Schweiger, & Daft, 2016; Wagner, Jönke, & Eisingerich, 2012), and marketing communication costs (Quelch & Kenny, 1994; Ziggers & Henseler, 2016). Therefore, we predict that the benefit of product extensions on a B2C firm's profit will be diluted by the increased cost as the number of product extensions increases until a certain point, after which the cost will exceed the benefit.

We therefore expect that product extensions will have a positive impact on a firm's profit in the B2B market, while their impact will be either non-monotonically positive (a decreasing rate of profit contribution with an increased number of product extensions) or of an inverted U-shape in the B2C market. This expectation leads to:

> **Hypothesis 1.** The B2B market reveals a different pattern in the relationship between product extensions and their profit contribution from the B2C market.

3.2. Brand extensions and firm profit

Whereas we propose that frequent product extensions do not have a monotonically positive impact on a firm's profit in the B2C market as they do in the B2B market, we expect very different relationship patterns for brand extensions across the B2B and B2C markets, depending on the specific type of brand extension. The extant literature suggests that there exists

a mixed relation between diversification and firm performance (both positive and negative according to context) and the relationship is not a linear function but turns out to be U shaped curvilinear (Datta, Rajagopalan, & Rasheed, 1991; Geringer, Tallman, & Olsen, 2000; Narasimhan & Kim, 2002).

3.2.1. Substitutable brand extensions and firm profit

Substitutable brand extensions have a substitutable relationship with the initial product *at the time of the consumption of the initial product,* e.g., Apple's iPad instead of a Macintosh computer, Starbucks fresh-brewed coffee in-store versus Starbucks coffee machines that allow customers to enjoy a cup of coffee at home, Lockheed Martin's helicopter versus its small-sized aircraft, IBM's IT outsourcing services rather than the purchase of IBM computer systems. Brand extensions based on substitutability can positively influence firm profit in two cases. First, extensions attract a sizeable number of existing customers who replace their initial product with the substitutable brand extensions, which increases the revenue from the sales of the substitutable brand extensions and protects a brand by preventing customers from switching to competitors. Second, they attract a sizeable number of new customers who did not use the initial product. To illustrate, consider IBM's IT outsourcing service, on which firms may rely instead of purchasing IBM computer systems. At any given time, firms may opt for IBM's outsourcing services rather than buying and managing complex IT systems in-house, which helps IBM to secure additional revenue from these customers and prevents them from switching to other directly competing or substitutable alternatives. This substitutable brand extension also helps IBM to attract a new set of customers.

For substitutable brand extensions to meet one of the two conditions noted above and thus make a profit contribution, we examine the extensions from customers' perspective.

customers first need to be interested in identifying the availability of substitutable brand extensions to the initial product, able to appreciate their unique benefits over the existing initial product, and willing to make trade-offs to adopt them over the existing product that they currently have. Problems with any of these requirements will impede customers' acceptance of a substitutable brand extension (Alexander, Lynch, & Wang, 2008; Kohtamäki, & Rajala, 2016; Moreau, Lehman, & Markman, 2001; Pomirleanu, Mariadoss, & Chennamaneni, 2016; Zhang et al., 2010; Ziggers & Henseler, 2016). We expect that customers in the B2C and B2B markets will react differently to substitutable brand extensions.

Specifically due to industrial customers' greater technological and market expertise and stronger appreciation of efficiency-boosting customized products and services (Mudambi, 2002; Wagner, & Eggert, 2016), we expect that customers in the B2B market are in a better position to appreciate the benefits offered by substitutable brand extensions and, thus, are more likely to respond favorably and quickly to them than are consumers in the B2C market. Moreover, strong coordination and frequent interaction among exchange partners in B2B markets will provide greater opportunities for disseminating information to industrial customers about the benefits of the substitutable brand extensions and significantly reduce uncertainty and risk perceived by the customers (Wathne & Heide, 2004). In sum, the greater expertise of industrial customers and the deeper firm-customer interactions facilitate acceptance of substitutable brand extensions in the B2B market. In contrast, the effective introduction of substitutable offerings is relatively more challenging in B2C markets because consumers tend to have limited knowledge and motivation to assess the pros and cons of the substitutable brand extension relative to the initial product (Di Benedetto & Song, 2008; Ram & Sheth, 1989) and lack the direct and deep interactions with firms that are seen in B2B markets.

In addition, just like frequent product extensions, frequent substitutable brand extensions provide industrial customers in B2B markets with more choices for enhancing cost efficiency and signals a firm's capability to satisfy uncertain needs that its B2B customers may have in the future. For these reasons, B2B customers are more willing to initiate a new relationship or maintain an existing relationship with a firm that frequently introduces substitutable brand extensions. In contrast, a long-term relationship can be a less important concern for consumers in the B2C market. Although it is difficult to assess the exact nature of the relationship between substitutable brand extensions and firm profit in the B2C market a priori, we predict that the impact of substitutable brand extensions on firm profit is positive and significantly stronger in the B2B market than in the B2C market:

> **Hypothesis 2.** The B2B market reveals a different pattern in the relationship between substitutable brand extensions and their profit contribution from the B2C market; the impact of substitutable brand extensions on firm profit in the B2B market is positive and significantly stronger than their impact in the B2C market.

3.2.2. Complementary brand extensions and firm profit

Complementary brand extensions have a complementary relationship with the original product/service *at the time of consumption* of the initial product, e.g., Nike running shoes used with a Nike sport watch with a heart rate monitor, Nike lightweight sunglasses and eyewear designed for comfortable fit while running and training, Intel processors used with motherboards, chipsets, wireless adapters, and Ethernet products, International Paper's office paper and its recycling, document destruction, printing, and packaging services). Complementary brand extensions not only increase the functional desirability and/or usage convenience (or ambience)

of the initial product but also create an opportunity to generate revenue for the complementary extensions. Firstly, it improves firms' performance by reducing the cost because of better use of resources and capabilities (Tallman & Li, 1996).

Through a complementary brand extension, a firm may be able to increase the demand for the initial product at cost efficiency as a result of the resource sharing (e.g., brand reputation, distribution channel) with the initial product. Secondly, it will also be able to create an opportunity to generate increased revenue for the complementary extensions. According to categorization theory, consumers categorize products under the same brand name together and hold a lay belief that products from the same brand are better coordinated with each other when consumed together (Rahinel & Redden, 2013; Wagner, Jönke, & Eisingerich, 2012). At the product consumption stage, complementary products from the same brand is believed to deliver a better consumption experience to consumers in the B2C market and also help a firm build an even stronger brand image that enables the firm to charge a premium and earn more profit. We thus expect a positive relationship between complementary brand extensions and firm profit in the B2C market; that is, a greater number of complementary brand extensions is associated with greater firm profit.

We expect an even stronger positive relationship between complementary brand extensions and firm profit in the B2B market. First, similar to frequent product extensions and substitutable brand extensions, frequent complementary brand extensions serve as a quality assurance to industrial customers that a firm can be a potentially reliable partner that can meet their uncertain needs during a long-term relationship. Second, compatibility is often of critical importance to and highly valued by industrial customers, which increases their willingness to purchase complementary offerings from existing suppliers, as the complementary offerings are

seen as augmented service and product solutions (Kohtamäki & Rajala, 2016; Mudambi, 2002). Because complementary brand extensions involve largely the same customers with greater technological and market expertise and stronger appreciation of efficiency-boosting complementary options (Mudambi, 2002; Teller, Alexander, & Floh, 2016), efficiencies associated with identifying, communicating, and selling complementary brand extensions to B2B customers are even greater than to consumers in the B2C market (Ziggers & Henseler, 2016). Therefore, we predict:

> **Hypothesis 3.** The B2B market reveals a different pattern in the relationship between complementary brand extensions and their profit contribution from the B2C market: (a) The impact of complementary brand extensions on firm profit in the B2C market is positively strong, while (b) the positive effect of complementary brand extensions on firm profit is even stronger in the B2B market than in the B2C market.

3.2.3. Independent brand extensions and firm profit

Independent brand extensions serve customers' other needs that are *independent of the needs at the time of the consumption of the initial product* (e.g., Amazon's online shopping site and independent publishing services, Google's web search and Hangouts messaging service, John Deere tractors and golf greens mowers, dozers, forestry swing machines, and waste equipment, Unisys' commercial digital computers and life and pension insurance services).

Independent brand extensions, although bearing no consumption-related relationship with initial product categories, still benefit firms with the efficient demand stimulation through the quality assurance of the same strong brand name (Balachander & Ghose, 2003; Park, Jaworski, & MacInnis, 1986).

We expect a positive impact of independent brand extensions on firm profit in the B2B market due to the positive effects of a strong brand name (Brown, Zablah, Bellenger, & Johnston, 2011; La Rocca et al., 2016). We predict, however, that the relationship between the frequency of independent brand extensions and their profit contribution is weaker in the B2B market than in the B2C market with an increasing number of independent brand extensions. This expectation is due primarily to the way in which independent brand extensions are marketed and, thus, have an impact on costs in the B2B versus B2C markets.

Independent brand extensions are suggested to be detrimental to firm performance when they exceed the range of resource utilization and surpass management capabilities (Tallman & Li, 1996). Firms in the B2B market are generally required to have closer relationships with their customers and make continuous investments in relationship maintenance when compared with firms in the B2C market (Heide, Kumar, & Wathne, 2014), which means managing many independent brand extensions will require much heavier resources from a B2B firm than will managing only a few independent brand extensions. In addition, a firm's promoting many independent brand extensions creates non-trivial problems in designing and operating the sales force teams. This is because, unlike complementary brand extensions and, to some extent, substitutable brand extensions that primarily serve existing customers, independent brand extensions often may have to target new customers from entirely different markets to generate strong demand. Thus, we predict although independent brand extensions does benefit a B2B firm at the beginning, when the numbers of intended brand extensions exceed the range of resource utilization and management capacity, the benefit becomes less.

Firms in the B2C market require fewer resources when it comes to independent brand extensions compared with B2B market. For example, whereas firms in the B2B market rely

heavily on personal selling, those in the B2C market rely on mass promotion (e.g., advertising, distribution channel) (Fleming, Lynch, & Kelliher, 2016; Hutt & Speh, 2012; Lacoste, 2016), and, thus, it is more efficient for B2C firms to promote many independent brand extensions that may target entirely different markets. In sum, it is much more challenging and costly for firms in the B2B market to promote a large number of independent brand extensions than for firms in the B2C market.

This leads us to predict that the profit contribution of independent brand extensions will show an inverted U-shaped pattern in the B2B market, while their profit contribution is positively strong in the B2C market.

> **Hypothesis 4.** The B2B market reveals a different pattern in the relationship between independent brand extensions and their profit contribution from the B2C market: (a) The impact of independent brand extensions on firm profit in the B2C market is positively strong, while (b) the impact of independent brand extensions on firm profit in the B2B market takes the form of an inverted U-shape.

4. Method

4.1. Data sample

We examined corporate brands from *Fortune* magazine's database of the 500 largest U.S. firms ranked by revenue. In no case did a firm in the sample generate more than 25% of its revenues with a brand other than the corporate brand. We employed this sampling procedure because databases, such as *Fortune*, provide key financial performance data for the listed firms. It should be noted that all of the brands examined in this paper used the same company brand name of the initial product when they entered a new market or business. They used either the

same corporate brand name with or without minor descriptors (e.g., Nike Vintage 72) or a sub-branding format (e.g., Apple iPod) for their brand and product extensions. We limited our analysis to corporate brands (i.e., identical company name and brand name) as a means to measure the impact of a brand's extension portfolio on firm profit. A comparison between the corporate and individual (product) branding strategies in their relative impact on a firm's profit is a very different research issue and is not the focus of the present work.

The raw sample included 175 corporate brands. We further followed a conservative rule and excluded six firms, whose product extensions, substitutable brand extensions, complementary brand extensions, or independent brand extensions exceeded four standard deviations above the sample means of those variables. Thus, the final sample contained 169 corporate brands that were, on average, 69.36 years of age with a standard deviation of 48.58 years and generated average annual sales of US $22.58 billion with a standard deviation of US $42.64 billion, with 17.2% of the firms ranking first in their respective industries in terms of revenue. On average, these firms made US $1.19 billion profit per year, with a standard deviation of US $2.81 billion.

4.2. Independent measures

To measure a firm's product and brand extension frequencies, we counted the total number of product and brand extensions from when a brand was initially established until 2015, including brand and product extensions that have been introduced and subsequently discontinued. Three independent raters collected extension data from company websites (press releases, historical timelines), and crosschecked and complemented findings with industry reports as well as newspaper and business magazine articles through Factiva. The use of multiple sources of publicly available data ensured that we obtained as complete extension data as

possible. Because different independent raters worked on the data collection over the years, we offered clear and simple working definitions and instructions of what constitutes a product extension or a specific type of brand extension, respectively. This was to ensure consistency of the collected data across the years.

4.2.1. Product extensions

We followed our earlier definition of product extensions, that is, variants or modified versions of an initial product that are intended to capture new markets (new markets refer to new customers for existing usage applications, new usage applications for existing customers, or new customers for new usage applications). This definition of product extensions did not automatically include every variation of the initial product, which was often understood as line extensions. Specifically, product extensions were identified based only on the primary features of the extensions that serve as the basis for the development of new markets, not on the secondary features. We applied the following four criteria for product extensions as primary features: When a variation aimed at new markets in terms of "why," "when," "where," and "how," we then classified them as product extensions. That is, when a new variation differed from the initial product in when customers use the product (e.g., McDonald's breakfast burger, Exxon Mobil special winter lubricants), where customers use the product (e.g., Harley Davidson off-road motorcycles, John Deere four-wheel drive tractors with active suspension for special terrains), how it is used by customers (e.g., Nike yoga shoes, Lockheed Martin's cargo airplanes), or the reasons why customers use it (e.g., Diet Coke as a low-calorie soda, Caterpillar's fuel-efficient hybrid excavators), we counted it as a product extension. Because these criteria are highly interlinked (e.g., a new way to use a product may also be the reason why customers want it), and all the product extensions still operate within the initial product category, we did not examine

these four criteria as separate bases for product extensions like three types of brand extensions (i.e., substitutable, independent, and complementary). Instead, we treated them as a single form of product extensions.

We excluded new product variations that were secondary features-based (e.g., color of T-shirt, size of a shoe, etc.). Including every possible variation of the initial product as a product extension that results in several hundreds or even thousands of line extensions for some brands in our current sample does not allow us to distinguish the impact of trivial secondary feature-based variations (e.g., Starbucks' coffee variations in terms of different cup sizes) from major and significant primary feature-based variations (e.g., Diet Coke). To illustrate the distinction between the primary feature-based and secondary feature-based variations, consider the case of Nike. When Nike introduces new running shoes with light reflectors to enhance runners' safety, these new variations belong to the primary feature-based ("why"-based) category. Any subsequent variations of these extensions, such as colors (e.g., Nike running shoes with light reflectors in green, blue, or pink) or sizes (e.g., Nike running shoes with light reflectors in shoe sizes 6.0, 6.5, or 7.0) belong to the secondary feature-based category and were not counted as additional product extensions.

To compute product extension frequency, independent raters counted a brand's total number of product extensions after having discussed with one member of the author team several examples of product extensions and how they differed from line extensions. The inter-rater agreement for product extensions exceeded 79%, with the remaining cases being agreed upon after discussion. As we note and show in our General Discussion section, by including every minor variation of the initial product as part of product extensions, we were unable to detect any

meaningful or significant relationship between total number of new product variations and firm profit.

4.2.2. Type of brand extensions

Three independent raters examined the different types of brand extensions. More specifically, we examined whether brand extensions were positioned in a new product category as offering benefits that complement or substitute or are independent of the initial product at the time of the consumption of the product. To identify the three extension types (i.e., substitutable, independent, and complementary brand extensions), raters examined brands' marketing communications, including slogans and advertising material through company websites, and newspaper and business magazine articles through Factiva. We first studied the history of 25 well-known corporate brands, which we later included in our final sample, to test whether clear and unambiguous identification of different brand extension types was indeed possible. As a next step, to ensure clarity and common understanding of each particular brand extension type, we established clear working definitions of what constitutes different types of brand extensions and discussed them with the raters. Overall, there was a high degree of consistency and agreement among raters, with a percentage agreement exceeding 86%. In cases where raters disagreed, agreement was obtained through discussion. Of all brand extensions in our sample, 46% were consumption independent, 29% were substitutable, and 25% were complementary.

4.2.3. Type of business

Whether firms in our sample were noted as operating primarily in the B2B or B2C markets was based on an analysis of the firms' published annual report to shareholders or the SEC-mandated 10-K report, which includes a description of a firm's business, operating segments, and products as well as potential risk factors (e.g., competitors, changes in customer

preferences, economic environment) associated with the business. Based on the published information in the shareholder and 10-K reports, which addresses the main markets, sources of revenue, and competitors of a business, the classification of the firms as competing and operating primarily in a B2B or B2C market was clear and unambiguous. In cases where a firm was noted as doing business in both B2B and B2C markets, its business type was classified based on whether the majority of its total revenue, that is, over two-thirds, was generated in either B2B or B2C markets. The final sample consisted of 76 B2C firms and 93 B2B firms.

4.3. Dependent measure

As the dependent variable for the present research, annual profit data for individual firms were obtained from the published *Fortune* database of the U.S. *Fortune 500* largest firms by revenue. To reduce the possibility of endogeneity bias and to allow for a stronger test of causality, we ensured a time window of one year between the measurement of our dependent and independent variables. Specifically, we used the profit data published by *Fortune 500's* ranking, which lists profit data for the fiscal year ended on or before January 31, 2016, while data for all our control and independent variables were collected until January 31, 2015.

4.4. Control measures

In our study, we controlled for a firm's age (in years), total revenue, and assets (both in $ millions), because younger and smaller firms face a liability of newness and size due to a shorter track record in the market and higher levels of risk and uncertainty in terms of future cash flow prediction (Thornhill & Amit, 2003), which makes the effective deployment of future investments and assets more difficult (Sapienza & Gupta, 1994). Further, firms with longer versus shorter histories and of varying sizes may possibly differ from each other on a number of other variables. For example, younger and smaller firms may use social media or public relations

campaigns more or in different ways than do older firms. We therefore decided to include a firm's age, total revenue, and assets as control variables. In addition, we accounted for a firm's stockholder equity (in $ millions), which was obtained from the U.S. *Fortune 500* published database. Stockholders' equity or the book value of a firm captures the retained earnings of a firm, accumulated over the time of its business, and the amount of investments made in a firm, which are likely to influence its financial performance (Shin & Lee, 2002).

[Insert Table 1 about here]

5. Analysis and results

Means, standard deviations, and correlations of the variables in our study are reported in Table 1. To test the hypotheses, we first examined an overall model in which the moderating roles of business type were estimated in a hierarchical regression analysis. To allow for the possibility that the effects of product and brand extensions take a non-linear form, we also tested the squared terms of product extensions and brand extensions. We mean-centered numbers of extensions before creating their squared terms and their interaction terms with business type, which was a dummy variable (Aiken, West, & Reno, 1991).

We tested the overall model in five steps: In Step 1 (M1), we estimated the direct effects of a set of control and moderating variables, including individual firm's age, individual firm's revenue, individual firm's stockholder equity, individual firm's assets, and individual firm's business type (0 = "B2C", 1 = "B2B"), on individual firm's profit. In Step 2 (M2), we entered the linear terms of the total numbers of product extensions, substitutable brand extensions, complementary brand extensions, and independent brand extensions that a firm had introduced until January 31, 2010. In Step 3 (M3), we added the first-order interactions between business type and product extension, substitutable brand extension, complementary brand extension, and

independent brand extension. In Step 4 (M4), we included the squared terms of product extension, substitutable brand extension, complementary brand extension, and independent brand extension to test the quadratic effects of those extensions. In Step 5 (M5), we added the second-order interactions between business type and product extensions, substitutable brand extensions, complementary brand extensions, and independent brand extensions. For a detailed explanation, see the Appendix.

We first examined whether there were significant second-order interactions in M5. If a second-order interaction was not significant, we focused on M3 to examine whether the related first-order interaction was significant. If the second-order interaction in M5 or the first-order interaction in M3 was significant for a specific type of extension, it indicated that the effects of this type of extension differed across the B2C and B2B markets. Further, to examine which form (linear or quadratic) the effect of a specific type of extensions on firm profit took, we ran regression analyses in the B2B and B2C samples respectively, employing a hierarchical regression procedure as follows:

In Step 1, we included a set of control variables. In Step 2, the linear terms of product and brand extensions were entered. In Step 3, the squared terms of product and brand extensions were further added to the model. If the squared term of a specific type of extensions was significant, we focused on Step 3 for hypothesis testing. If the squared term was not significant in Step 3, we focused on the linear effect in Step 2 instead. M6, M7, and M8 were tested in the B2C sample, while M9, M10, and M11 were tested in the B2B sample. See Appendix B for the details.

5.1. Product extensions

H1 predicted that product extension would have a strongly positive influence on a firm's profit in the B2B market but a non-monotonic or an inverted U-shaped effect in the B2C market. As Table 2 shows, although in M5 the moderating effect of business type on the squared term of product extension was not significant (β = -.02, t = -.29, *p* = ns), in M3 the first-order interaction between product extension and business type was significant (β = .13, t = 2.44, $p < .05$). This result suggests that the effects of product extension on firm profit differed between the B2C and B2B markets.

[Insert Table 2 and Figure 2 about here]

For the B2C firms in our sample, as can be seen in M8, Table 2, there were a non-significant, positive linear term (β = .15, t = 1.44, *p* = ns) and a marginally significant negative squared term of product extension (β = -.17, t = -1.73, *p* = .09). Further analyses show that, in the B2C market, firm profit reached its maximum value when the number of product extensions was 39.20 (i.e., 1.15 standard deviation above the mean of product extensions), which indicates that the effect of product extension on firm profit was not always positive and, instead, took an inverted U-shape (see Figure 2A). Thus, H_{1a} was supported.

In the B2B sample, M11 in Table 2 shows that the quadratic effect of product extension was not significant (β = -.07, t = -.85, *p* = ns). Thus, we focused on M10 to examine the linear effect of product extension, which was significantly positive (β = .18, t = 2.59, $p < .05$). This result supported H_{1b} that product extension positively influences firm profit in the B2B market. Taken together, the results support H_1. The B2C and B2B markets revealed a significantly different pattern in the relationship between product extensions and their profit contribution, such that the influence of product extensions on firm profit was inverted U-shaped in the former, while it was monotonically positive in the latter.

5.2. Substitutable brand extensions

H2 predicted that substitutable brand extensions would have a stronger positive influence on a firm's profit in the B2B market than in the B2C market. As shown in Table 2, although business type did not moderate the quadratic effect (β = -.01, t = -.17, *p* = ns; see M5) of substitutable brand extensions on firm profit, it moderated its linear effect (β =.10, t = 1.76, *p* = .08; see M3), which indicates that the effects of substitutable brand extensions were different across the B2C and B2B markets.

In the B2C sample, M8 in Table 2 indicates that the quadratic term of substitutable brand extension was not significant (β = .02, t = .24, *p* = ns). Thus, we focused on M7 to examine the linear effect of substitutable brand extension. This model shows that substitutable brand extensions had no significant linear influence on firm profit in the B2C market, either (β = -.05, t = -.91, *p* = ns).

In contrast, as seen in Table 2, in the B2B sample, the quadratic term of substitutable brand extension was not significant in M11 (β = -.09, t = -.79, *p* = ns), but its linear term was positive and significant in M10 (β = .15, t = 2.05, $p < .05$). The results indicate that the effect of substitutable brand extensions was monotonically positive in the B2B market (see Figure 2B). In sum, the results confirm H_2. The B2C market revealed a significantly different pattern in the relationship between substitutable brand extensions and their profit contribution from the B2B market, and substitutable brand extensions had a stronger effect on firm profit in the B2B than in the B2C market.

5.3. Complementary brand extensions

H3 predicted that complementary brand extensions would have a positive influence on firm profit in both the B2C and B2B markets, but that this positive influence would be stronger in the B2B market than in the B2C market. As shown in M5 in Table 2, business type moderated the quadratic effect of complementary brand extension ($\beta = .21$, $t = 3.24$, $p < .001$), which indicates that the influence of complementary brand extensions differed between the B2C and B2B markets. Thus, we further explored the effects of complementary brand extensions in the B2C and B2B markets to examine how they differed.

In the B2C sample, the squared term of complementary brand extension was positive and significant ($\beta = .29$, $t = 2.97$, $p < .01$), as shown in Model 8 in Table 2. In the B2B sample, the quadratic effect of complementary brand extension in M11 was also positive and significant ($\beta = .26$, $t = 2.72$, $p < .01$). As Figure 2C illustrates, although in both the B2C and the B2B markets the effect of complementary brand extension on firm profit was initially negative when a firm introduced its first complementary brand extension (the firm profit was lowest when the number of complementary brand extensions was around one in both the B2C and B2B markets), it became increasingly positive as a firm introduced more complementary brand extensions. Further, this increasingly positive effect was even stronger in the B2B market than in the B2C market. These results partially confirm H_3 by showing that, in general, only after firms introduced their second complementary brand extensions did the additional complementary brand extensions have a stronger positive impact on firm profit in the B2B market than in the B2C market.

5.4. Independent brand extensions

In H4, we proposed that independent brand extensions would have a positive impact on firm profit in the B2C market but an inverted U-shaped effect on firm profit in the B2B market.

As shown in M5 in Table 2, the second-order interaction between independent brand extension and business type was marginally significant (β = -.10, t = -1.89, *p* = .06). This result suggests that the effects of independent brand extensions on firm profit differed between the B2C and B2B samples.

In the B2C sample, the quadratic effect of independent brand extension was not significant in M8 (β = .08, t = .85, *p* = ns), but there was a positive and significant linear effect in M7 (β = .16, t = 2.90, *p* < .01), which support $H4_a$ and suggests that the effect of independent brand extension on firm profit was positive in the B2C market.

Consistent with $H4_{b,}$ in the B2B sample, M11 indicates that the quadratic effect of independent brand extension was negative and significant (β = -.19, t = -2.69, *p* < 0.01), and the firm profit was the highest when the number of independent brand extensions was 3.99 (i.e., .69 standard deviation above the mean of independent brand extensions), which suggests that the effect of independent brand extension on firm profit took an inverted U-shape in the B2B market (see Figure 2D). In sum, these results support H_4. The effect of independent brand extensions on firm profit was positive in the B2C market but took the form of an inverted U-shape in the B2B market.

5.5. Summary of results

The results of the present study show that product and brand extensions have differential impacts on firm profit across the B2B and B2C markets. Differences in the profit contribution between the B2B and B2C markets exist most pronouncedly in both product extensions and independent brand extensions. One important finding of this research is that different types of extensions are more effective than others in terms of driving firm-level financial performance within the B2B and B2C markets. Our results show that, in the B2C market, complementary

brand extensions and independent brand extensions have a positive impact on a firm's profitability, while product extensions' and substitutable extensions' impacts on firm profit are in the shape of an inverted U and non-significant, respectively. After about 39 product extensions (around 1.2 standard deviation above the mean), product extensions' profit contribution starts to decline. Contrary to popular belief and common expectations, an increased number of product extensions hurts a firm's profitability in the B2C market. This finding lends additional support to prior work that noted the potential inefficiencies of too many line extensions (Bayus & Putsis, 1999; Bordley, 2003; Quelch & Kenny, 1994). Substitutable brand extensions do not show any significant contribution to firm profit of B2C firms. In contrast to the B2C market, the results show that, in the B2B market, the effects of product extensions, substitutable brand extensions, and complementary brand extensions on firm profit are strongly positive. Only in the case of independent brand extensions did we observe an inverted U-shaped pattern for the extension's profit contribution. After about four independent brand extensions (around .7 standard deviation above the mean), their profit contribution starts to decline.

6. Discussion

A fundamental concern for B2B firms is how to maximize the profit contribution of their extension strategies. We complement existing work and extend current knowledge in this area by uniquely defining and operationalizing product extensions and distinguishing three types of brand extensions. We find that product extensions have a strong, positive effect on the profit of firms that operate in B2B markets, while the effect takes the shape of an inverted-U for B2C firms. A very different picture emerges for brand extensions. Although the increasing number of complementary brand extensions positively affects the profit of both B2B and B2C firms, the substitutable brand extensions show a positive impact on firm profit only in the B2B market, but

not in the B2C market. The contribution of independent brand extensions is positive for a B2C firm's profit, but is in the shape of an inverted-U for a B2B firm's profit.

The current findings highlight the importance of proactively managing the number of product and brand extensions as well as the different types thereof. Instead of showing the traditional dichotomy of product versus brand extensions, the present findings suggest that managers need to consider both the frequency of product and brand extensions as well as different types of brand extensions (i.e., substitutable, complementary, and independent) when managing a portfolio of brand extensions. The strategic management of a brand's extension portfolio needs to be guided by the proactive management of the need space and mind space of customers.

6.1. Implications

To address customers' need space, a firm can employ product extensions to fit the evolutionary paths of customers' needs in regard to reasons, timing, and occasions for consuming a product. The purpose of this manipulation is to expand and capture as much space for the evolutionary paths of customers' needs for a product and to create a fit between a brand and customers' evolving needs. Firms can also expand the association of a brand name beyond the initial product to new business domains/products through brand extensions to enhance the mind space of consumers for a brand name. When a brand name is associated with other product categories that are conceptually coherent, the brand name becomes more prominent and salient to customers, thus expanding their mind space for a brand (Balachander & Ghose, 2003; Park, Jaworski, & MacInnis, 1986). This prominence and salience will make the brand name highly accessible from their memory and, consequently, customers can retrieve it easily.

The results of this study reveal that, while both product and brand extensions must be employed to expand the need and mind space of customers, these extensions need to be carefully arranged by taking into account the unique characteristics of a market. Specifically, product extensions, particularly their number, in the B2C market must be carefully managed to ensure their contribution to firm profit. How many product extensions a B2C firm should offer is critical to its profit. Although an increased number of product extensions may possibly protect or increase the market share of the initial product, it does not help firm profit in the B2C market. In contrast, frequent product extensions in the B2B market significantly contribute to firm profit by strengthening relationships with current customers of the initial product or by attracting previously non-users. For example, consider UPS's different B2B shipment solutions. They enable the firm to leverage its logistics management and global network resources to offer tailored offerings to different customer needs (e.g., special, expedited air shipment for finance and insurance companies, extra-care handling for pharmaceuticals and medical devices equipment, ocean freight for manufacturing supplies).

The results of the present study also show that substitutable brand extensions in the B2C market did not contribute to firm profit. This finding does not, however, suggest that firms in the B2C market should not introduce substitutable brand extensions. It is possible that, in the past, firms might not have been sufficiently strategic and did not fully capitalize on the benefits of substitutable brand extensions. As noted earlier, brand extensions based on substitutability can positively influence firm profit when (1) they attract a sizeable number of existing customers who replace their initial product with the substitutable brand extensions and, thus, increase the revenue from the sales of the substitutable brand extensions and protect a brand by preventing customers from switching to competitors, (2) they attract a sizeable number of new customers

who did not use the initial product, or (3) a substantial number of existing customers of the initial product not only buy the substitutable brand extensions but also continuously use the initial product. One way to strategically manage substitutable brand extensions may be to establish a relationship between the initial product and substitutable brand extensions that is *substitutable at a given point in time but interchangeably consumable over time* (i.e., customers switch from one option to another option and vice versa over time).

To illustrate, consider Starbucks coffee machines that allow customers to enjoy a cup of coffee at home instead of coffee brewed in-store. Specifically, while, at any given time, consumers may enjoy a cup of Starbucks coffee brewed at home using a Starbucks' coffee machine and coffee pods rather than purchasing Starbucks brewed coffee in-store, over time, consumers may still consume both because brewing coffee at home cannot completely replace the consumption experience that consumers enjoy at a Starbucks store. Together, the coffee machine for brewing Starbucks coffee at home and freshly brewed coffee in-store can make the Starbucks name highly salient and ensure that customers remain loyal to Starbucks over time. Or consider the relationship between Lockheed Martin helicopters and smaller-sized aircrafts. They may be directly substitutable for each other at any given point of usage, but they also may become interchangeably used together over time if and when customers appreciate the unique benefits of each option in addition to their common and, thus, substitutable benefits. Depending on how a firm promotes these two products with a substitutable relationship in a market, substitutable brand extensions may or may not contribute significantly to firm profit.

In addition, both B2B and B2C firms have much to gain by employing complementary brand extensions more proactively. There may be several bases for complementarity, for example, functional complementarity that enhances the productivity or functional utility of a

product or service to consumers (e.g., computer workstations and cloud computing technology, loaders and trucks, automobiles and tires, aircrafts and missiles), financial complementarity that facilitates cost efficiencies (e.g., commercial airplanes and aviation management systems to help calculate more direct flight routes), and usage complementarity that "feels good (right)" and enhances the hedonic utility of a product or service (e.g., wine and mouth-blown crystal glass). Although initially two products may be seen as independent of each other, they may be perceived as highly complementary to each other at a later stage when a firm offers a strong base of complementarity to consumers. For example, while gym membership and home electricity bills are clearly unrelated to each other, the two may be understood as being highly complementary (on a financial basis) by consumers when the energy generated by a running machine in the gym is connected to an electric company that records gym members' energy production and offers a discount for their home electricity bill based on the amount of energy generated in the gym.

Firms can proactively manage complementary brand extensions to ensure that the complementary extension product not only makes the initial product perform better or more conveniently and be used more frequently or at a larger volume per usage, but also attracts new customers and strengthens its brand image. For instance, International Paper's services may help the firm retain and attract business customers by taking complete care of their customers' product solutions (from product usage to destruction and, finally, to recycling). This requires a firm to make the initial product and extension products tightly paired together.

Finally, the results of the present study reveal that, while independent brand extensions strongly contributed to firm profit in the B2C market, they did not have the same effect in the B2B market (an inverted U-shape). When considering several potential problems that many independent brand extensions may cause in the B2B market, it is prudent that firms in the B2B

market carefully control the number of independent brand extensions and their capability to market them. If and when they have many promising independent brand extensions, they should carefully examine whether there is a sufficiently strong and sizeable demand from their current customers because creating demand for these brand extensions from the current customers of their initial product is more cost efficient than creating demand from non-current customers.

Before closing this paper, we would like to note that we also examine the difference between the two classification bases, i.e. product extension and line extension. We performed analyses based on line extensions, which included every new product variation (M = 281.32), instead of product extensions (M = 19.21). The results showed that the linear and quadratic effects of line extensions on firm profit were not significant in either the B2C or B2B market (p's > .40) and that there was no significant difference in their linear or quadratic effects between the two markets (p's > .10). In other words, we did not find line extensions to significantly affect the profit of firms that operate in the B2C and B2B markets. As noted earlier, simply counting every small variation in color, shape, packaging, and so forth as an extension distorts the picture of the potential impact that product extensions have on firm profit and how the impact differs across the B2C and B2B markets.

6.2. Limitations and future research

Our analysis of product and brand extensions represents a novel approach to examining the impact of a firm's extension activity on its profit. However, we note that the findings need to be viewed in light of certain limitations. Particularly, we intentionally sought to study firms listed in the published U.S. *Fortune 500* ranking to identify successful product and brand extension strategies. Any significant findings about the extension strategy that pertain to this sample are noteworthy because U.S. *Fortune 500*-listed firms are all successful businesses, albeit to varying

degrees. They also have a relatively higher degree of internationalization and globalization compared to non-*Fortune 500* ranked firms. Thus, suggestions for differences in how a product versus brand extension strategy may be managed for the greatest impact on a firm's profit are based on a conservative test, as, arguably, being listed in the *Fortune 500* is, in and of itself, an achievement and a sign of successful financial performance. Moreover, as firms introduced extensions during a large time span, it would make sense to take into account the time-series nature of the effect. However, due to the limitation of the available variables in the dataset and the infeasibility of dealing with various times when new products were introduced, we have to limit our contribution to identify the accumulated effect of extensions on firm's current profit by treating the dataset as a cross-sectional data. We are also limited to the missing data from the listed companies when they fail to disclose new product information due to secrecy or any confidential agreement. Thus, future work on the effect of time series and the effects of geographical locations and complexity will be worthwhile. Additional research employing new sets of analyses with the given data and exploring the impact of individual extension strategies on profit margins as well as returns on investment (ROI) is richly deserving. Moreover, our study focused on exploring growth strategies for corporate brands. To allow for greater generalizability of current findings, we encourage future research to replicate our study and to extend it to less-successful brands and firms that manage various brand architecture types, involving sub-branding, endorsement-branding, etc. We also note that global exposure or presence may well have an important impact on the management of extensions. We invite additional work to explore the effects of global exposure on B2B firms' ability to manage extensions for profit across different industries.

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Appendix

A. Regression models for testing the overall effect

(1) Firm Profit =

Step 1 (M1): $\alpha_0 + \beta_1$ firm age + β_2 firm revenue + β_3 firm stockholder equity + β_4 firm assets + β_5 business type

Step 2 (M2): + β_6 product extension + β_7 substitutable brand extension + β_8 complementary brand extension + β_9 independent brand extension

Step 3 (M3): + β_{10} product extension × business type + β_{11} substitutable brand extension × business type + β_{12} complementary brand extension × business type + β_{13} independent brand extension × business type

Step 4 (M4): + β_{14} product extension^2 + β_{15} substitutable brand extension^2 + β_{16} complementary brand extension^2 + β_{17} independent brand extension^2

Step 5 (M5): + β_{18} product extension^2 × business type + β_{19} substitutable brand extension^2 × business type + β_{20} complementary brand extension^2 × business type + β_{21} independent brand extension^2 × business type + ε.

B. Regression model for testing the form (linear or quadratic) of effect

(2) Firm Profit =

Step 1 (M6, M9): $\alpha_0 + \beta_1$ firm age + β_2 firm revenue + β_3 firm stockholder equity + β_4 firm assets

Step 2 (M7, M10): + β_5 product extension + β_6 substitutable brand extension + β_7 complementary brand extension + β_8 independent brand extension

Step 3 (M8, M11): + β_9 product extension^2 + β_{10} substitutable brand extension^2 + β_{11} complementary brand extension^2 + β_{12} independent brand extension^2 + ε.

Table 1

Means, standard deviations, and correlations

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. Firm profit	1186.92	2810.03	1									
2. Product extension	19.21	17.43	.31***	1								
3. Substitutable brand extension	1.34	2.28	.40***	.38***	1							
4. Complementary brand extension	1.18	1.67	.66***	.32***	.44***	1						
5. Independent brand extension	2.24	2.54	.50***	.29***	.26***	.47**	1					
6. Business Type	N.A.	N.A.	-.16*	-.25***	-.13	-.18*	-.17*	1				
7. Firm age	69.36	48.58	-.03	.12	-.12	-.05	-.04	.00	1			
8. Firm revenue	22575.12	42640.46	.69***	.11	.21**	.49***	.39***	-.17*	-.05	1		
9. Firm stockholder equity	11457.51	19308.56	.62***	.15†	.25***	.35***	.18*	-.17*	.08	.67***	1	
10. Firm assets	55795.59	177057.11	.19*	.03	.02	.06	-.07	-.11	.28***	.30***	.76***	1

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed).

Notes: Profit, revenue, stockholder equity, and assets means (standard deviations) are in millions of U.S. dollars.

Table 2

Standardized regression coefficients (t-values)

	Dependent Variable = Firm Profit					
	Overall		B2C		B2B	
	M3	M5	M7	M8	M10	M11
Control Variables						
Firm age	.07	.06	.12*	.12*	.08	.06
	(1.53)	(1.49)	(2.37)	(2.48)	(1.15)	(.92)
Firm revenue	.13†	.07	.07	-.06	.09	.09
	(1.84)	(.90)	(.81)	(-.63)	(1.07)	(1.13)
Firm stockholder equity	.72***	.75***	1.06***	1.11***	.32**	.36**
	(7.45)	(7.99)	(8.96)	(9.21)	(2.78)	(3.20)
Firm assets	-.44***	-.51***	-.82***	-.86***	.21*	.12
	(-5.67)	(-6.66)	(-8.45)	(-8.93)	(2.08)	(1.14)
Business type	.03	-.03				
	(.78)	(-.45)				
Independent Variables						
Product	-.02	.16	-.04	.15	.18*	.20*
extension (PE)	(-.32)	(1.39)	(-.74)	(1.44)	(2.59)	(2.36)
Substitutable brand	-.00	.02	-.05	-.08	.15*	.30*
extension (SBE)	(-.02)	(.14)	(-.91)	(-.70)	(2.05)	(2.51)
Complementary brand	.28***	.02	.24***	.01	.21*	.01
extension (CBE)	(4.09)	(.24)	(3.84)	(.13)	(2.64)	(.06)
Independent brand	.20***	.19*	.16**	.09	.12†	.23**
extension (IBE)	(3.31)	(2.16)	(2.90)	(1.05)	(1.67)	(2.94)
PE^2		-.13		-.17†		-.07
		(-1.39)		(-1.73)		(-.85)
SBE^2		-.03		.02		-.09
		(-.28)		(.24)		(-.79)
CBE^2		.25**		.29**		.26**
		(2.84)		(2.97)		(2.72)
IBE^2		-.02		.08		-.19**
		(-.23)		(.85)		(-2.69)
Interactions						
PE × Business Type	.13*	.05				
	(2.44)	(.64)				
SBE × Business Type	.10†	.15				
	(1.76)	(1.63)				
CBE × Business Type	-.03	-.04				
	(-.41)	(-.51)				
IBE × Business Type	-.09†	-.03				
	(-1.72)	(-.39)				
PE^2 × Business Type		-.02				
		(-.29)				
SBE^2 × Business Type		-.01				
		(-.17)				
CBE^2 × Business Type		.21***				
		(3.24)				
IBE^2 × Business Type		-.10†				
		(-1.89)				
Model Fit						
Adjusted R^2	.73***	.77***	.86***	.87***	.63***	.67***
R^2 Change	.02*	.02**	.06***	.02*	.18***	.05*
Sample Size	169	169	76	76	93	93

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed).

Figure 1. Conceptual model

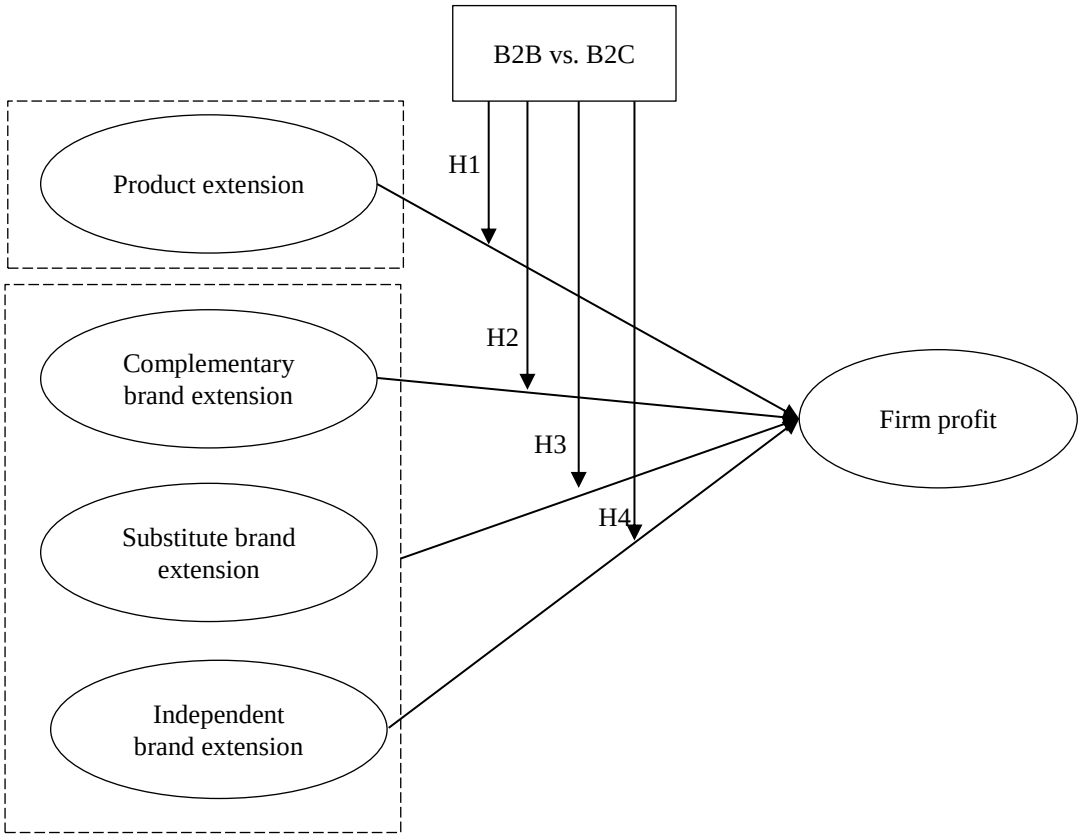
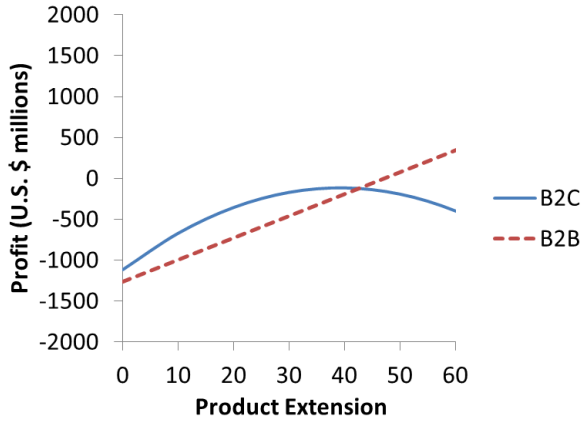
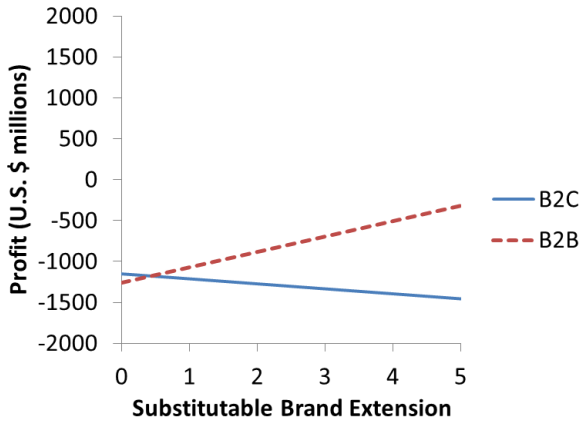


Figure 2. Effects of product and brand extensions on firm profit

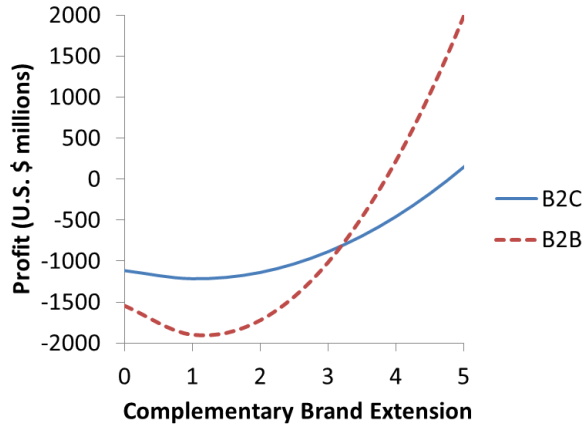
A. Product Extension



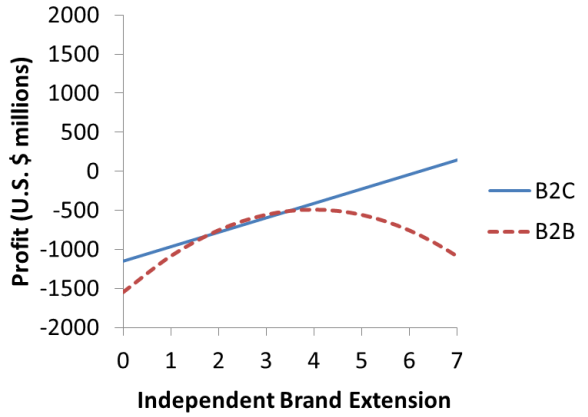
B. Substitutable Brand Extension



C. Complementary Brand Extension



D. Independent Brand Extension



Notes: The graphs are drawn based on unstandardized regression coefficients and the actual ranges of the extension frequencies. The linear effect of substitutable brand extension on profit in the B2C sample (Figure 2B) is not significant.