

## When does a new product introduction create value for rivals?

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### Abstract

The extant literature provides unclear findings on how innovation impacts the profit metrics and market performance of the announcing firm as well as its rivals, particularly in different contexts regarding the relative positions of these firms in the market. Therefore, the primary objective of this study is to investigate the effects of new product introductions by focal firms on the corporate value of their competitors. The analysis is based on a dataset comprising 2,452 new product announcements in the United States spanning the period from 2010 to 2020. The findings reveal that the innovativeness of new products has a positive impact on the abnormal returns of large rival firms but a negative impact on the abnormal returns of small rival firms. Further examination of moderation effects indicates that the positive effect of product innovativeness on the abnormal returns of large rival firms is strengthened when these firms possess advantages regarding media presence and market positioning. Conversely, the negative effect of product innovativeness on the abnormal returns of small rival firms is mitigated when these firms have advantages in terms of brand reputation and media influence. These findings suggest that the market expansion and market penetration hypotheses hold true only under specific firm conditions. Furthermore, the results indicate that when a rival firm holds a dominant market position and receives significant positive electronic word-of-mouth signaling customer satisfaction with its products, focal firms tend to respond by increasing their innovation efforts to create distance between themselves and the leading rival firms.

**Keywords:** *product innovativeness, product breath, competition, eWOM, rival firms*

**JEL Classification:** M10, M30

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### 1 INTRODUCTION

As competition in the market increases, businesses must pay more attention to the strengths and capabilities they possess to ensure their success and sustainable development. Managers are forced to change their mindset to maintain a competitive advantage in the market. They tend to pursue actions to increase innovation in the face of increasingly fierce competition in virtually all business sectors (Galasso & Simcoe, 2011). To be able to compete effectively, product imitation will not work unless a company decides to pursue a cost-leadership strategy. Therefore, an optimal strategy to compete in the market must focus on increasing innovation. When competitive pressure increases, most businesses decide to increase their innovation capacity (Rubera & Kirca, 2012). With the pressure to innovate more often and create more unique and new products, the production of copied products has become increasingly unconvincing for management. Thus, as focal firms receive increasingly positive eWOMs in highly competitive business environments, rival firms will have less incentive to produce replicas in the context of increased competition.

Competitive intensity will further increase a firm's market-based innovation activities (Zhou et al., 2005) regardless of whether rival firms receive positive evaluation and praise and evaluation through eWOM. In highly competitive business environments, firms must

maximize any opportunities available to improve their market position. If the enterprise feels satisfied with its existing position and does not pay attention to the innovation capacity due to being subjective in the context that the rival enterprises are facing failure, the competitive advantage of the enterprise itself vanishes rapidly in highly competitive markets (Menguc & Auh, 2006). The fact that rival businesses receive negative eWOMs from customers is a sign that they are not meeting customer needs; hence, the focal businesses need to take advantage of that opportunity to improve their market position by increasing innovation activities. This effect is even more pronounced in more competitive industries as competitors are likely to invest more heavily in advertising, reducing prices or developing innovative products with higher originality and innovativeness (Porter, 1980; Teece, 2010). Therefore, the impact of negative eWOM on rival firms regarding innovation capacity and innovation scale will be amplified by the level of competition in the existing market. In this context, the present study explores the extent to which new product introductions by focal firms affect the corporate value of competitors. The results support the market expansion hypothesis, which states that a new-to-the-market product signals new opportunities for rival firms in the new product category. This finding is consistent with our market penetration hypothesis that suggests that an incremental innovation poses a threat of cannibalization for rivals' existing products.

## 2 THEORETICAL BACKGROUND

### 2.1 The impacts of product innovation on launching firms and rival firms

The impact of innovation can be assessed from multiple angles. Significant changes have potential to ripple through an industry, spilling beyond just the firm responsible for innovation to its competitors. However, these effects are typically contrasting, meaning what is good for one firm will have a negative impact on competitors. This study summarizes previous literature to explore the impact of innovation across profit metrics, market performance, and competition.

The introduction of new products generally has a positive impact on the launching firm. Pauwels et al. (2004) found that new product introductions are positively associated with top-line performance, bottom-line performance, and firm value in the long run and short run. Nevertheless, the magnitude of the impact varies by firms and product categories as the characteristic business strategies and consumers' tastes and preferences. Sorescu and Spanjol (2008) considered the measurement of firm performance from a multidimensional perspective, which includes normal profits, economic rents, and total firm risk. Similarly, firm innovations are two-fold: breakthrough and incremental. Those innovations are relevant to new products launched by firms in the market to earn the market advantages over incumbent competitors. Findings reveal that normal profits and economic rents are positively influenced by breakthrough innovations, while incremental innovations significantly enhance normal profits only. Bayus et al. (2003) investigated the influence of new product innovations on profit rate, profit-persistence rate, and firm size. Their findings indicate that new product innovations significantly affect the profit rate and firm size, whereas the impact on profit-persistence rate is not validated. The insignificance results from the ever-changing competitive environment of the PC industry, in which technologies are introduced frequently by competitors, which undermines the profit stability. Slotegraff and Pauwels (2008) and Hoskins and Griffin (2019) showed that new product introductions exert greater impact on the extent to which lower-equity brands achieve long-term benefits. Meanwhile, the obtainability of higher-equity brands appears to be constrained by stronger associations with the incumbent product lines, which hampers the willingness of consumers to change their existing habits.

Nevertheless, new product introductions are confirmed to be conducive to the long-term effectiveness of marketing promotions.

In a study tracking the market's true appreciation of innovation, Sood and Tellis (2009) found that average innovation events generate \$49 million in stock market returns, but the total market returns are more than 13 times greater at \$643 million for an innovation project. In this study, innovation is considered from the temporal perspective, which includes initiation, development, and commercialization stage. The impact of innovation on market returns varies by stages. Specifically, new product launch events have the lowest returns, while returns to development activities are the highest. Generally, the market favors new product strategy announcements by smaller firms and those with better governance mechanisms over those with worse governance mechanisms (Lin & Chang, 2012). In addition, investors look for high-quality, pioneering innovations backed by plenty of advertising in large and growing categories. These result in returns which are seven times greater than those of minor updates (Srinivasan et al., 2009). More noticeably, the impact of three innovation stages on market returns of the launchers are greater than that of other competitors (Sood & Tellis, 2009).

Announcement is a key element of this performance. Positive payoff can be expected when firms announce independent innovations or plans to ally with others for the same purpose (Borah & Tellis, 2015). Meanwhile, the outsourcing decision appears to reduce the payoffs of the focal firm (Borah & Tellis, 2015). More interestingly, the current outsourcing decision is arguably not dependent on prior consequent payoffs, while the decision on inhouse innovation is influenced by previous payoffs evidence (Borah & Tellis, 2015). Sorescu et al. (2007) investigated the impact of new product announcements on short-term and long-term financial returns of the announcers. They found that the long-term financial returns of the announcers are positively associated with new product announcements, while short-term payoffs are only positive when announcers are willing to provide the transparent and detailed description of the pre-launched products. Some of the trivial information have only been editorially checked at its face value, but they can be uncovered through diligent endeavors. Furthermore, it is indicated that the long-term abnormal returns could be gained in the period of post-announcements if the market is adequately informed about the innovation progress by the announcers. In addition, the moderating effect of the announcers' credibility on the link between new product announcements, short-term and long-term financial returns is confirmed in this study.

Although product market performance may suffer slightly when firms deploy an innovation ratchet strategy, the stock market prefers it – particularly with public firms (Moorman et al., 2012; Wies & Moorman, 2015). In this study, the timing of innovation introduction exerts a two-fold effect on firm performance. On one hand, it may increase the stock returns of public innovators. On the other hand, the product market payoffs are sacrificed. Therefore, the impact of innovation on an announcer's performance is arguably determined by the frequency of innovation introduction, which is shaped by the corporate innovation strategy. Unsurprisingly, the stock market favors the announcing firm over competitors throughout the development process (Sood & Tellis, 2009). Most recently, Wang (2019) has investigated the impact of radical and incremental innovation on the firm performance of small and medium-sized enterprises (SMEs). Findings indicated the positive impact of radical innovation on firm performance, while exploring the negative impact of incremental innovation.

Competitors see significant negative valuation and wealth effects upon the introduction of new products in their industry. Share price response is least favorable when frequent announcers introduce new products and when there is a large wealth effect on announcers. In relation, smaller rivals and highly-leveraged firms with better investment opportunities and/or

those in concentrated industries tend to see the biggest wealth losses. This is especially true for firms in technologically-based industries, as these firms tend to see the most significantly negative wealth effects. All this suggests that innovation spillover is not enough to counteract the negative effects on competition (Chen et al., 2005). When innovations are primeval, however, wealth effects improve slightly (Chen et al., 2005). The research of Aboulnasr et al. (2008) on radical product innovations shows that a competitive response is most likely with large or market-dependent introducing firms. Mahajan et al. (1993) suggest a parsimonious diffusion model to assess the overall impact on sales and market size because it explicitly incorporates word of mouth communication effects and substitution dynamics without requiring long time series data. Akhigbe (2002) examined the impact of new product innovations on the rivals' market value. Findings reveal that, upon the announcement, the introducers would achieve financial gains, while those of incumbent competitors may be undermined. Most importantly, the short-term innovation spillover does not alleviate the loss of rivals' competitive disadvantage. Nevertheless, persistent competitors may revitalize their performance thanks to the alternative innovation or imitation in the long term. Mutlu et al. (2015) considered competitive strategies as the sequence of actions taken to mitigate the competitive disadvantages vis-à-vis their incumbent competitors. Stock market returns are employed as the measurement of firm performance, thus becoming the determinant of the competition decision-making process. In line with this logic, new innovations, which cause competitive disparity between announcers and other rivals, are the initiator of market competition as the result of shrinking stock market returns. Chen et al. (2005) investigated the relationship between new product introductions and a rival's performance from the perspective of the wealth effect hypothesis. New innovations could either expand the current market size (market expansion effect), which enlarges the potential for both announcers and other competitors, or lessen the attractiveness of rivals' current products and services, which causes subsequent loss due to the switching behavior of current consumers (market substitution effect). Findings reveal that the market substitution effect is larger than the market expansion effect, which results in the net negative effect of new innovations on rivals' share price responses. Industry and firm characteristics are used to moderate the impact of new innovations on the share price responses. Firm characteristics include firm size, investment level, debt opportunities, and R&D intensity. Aboulnasr et al. (2008) argued that radical product innovations trigger competitive reactions, as a result of a decrease in rival firms' performance, especially those of announcers, which are large and market-dependent. Findings presume that the impact of launching new products on rivals' performance is considerable and should be considered by the innovation managers. The gains from introducing new products could be offset by the loss resulting from competitors' reactions. Thus, the performance assessment of new product introductions should encompass the rivals' financial value creation and contraction, which are caused by the introduction.

All this considered, it is unclear that innovation has a positive impact on the announcing firm's profit metrics and market performance and negatively affects rivals. The short-term benefits offered by pre-announcement can be converted to long-term financial gains through frequent development updates, particularly with regard to breakthrough innovations and brands with low equity. Smaller rivals and those in concentrated industries will be hindered accordingly, as evidenced by negative effects on share price and wealth, and innovation spillover is not enough to remediate this. In sum, new product introduction favors the innovator.

## 2.2. Hypothesis development

### 2.2.1 Impact of new product introduction on rival firm's stock returns

The market compression and entry thresholds theory holds that a new-to-the-market product signals new opportunities for rival firms in the new product category (Aboulnasr et al., 2008). We argue that the value effect of new products introduced by the focal firm on the rival firms will be conditional on the type of product and the rival firm's ability to respond to the new product introduction. Specifically, radical innovation signals new opportunities for rival firms (i.e., market expansion). The first hypothesis is that the benefits of new product innovation may spill over to competitors within the industry. Spence (1984) uses this hypothesis to explain why spillovers of R&D expenditures may benefit rival firms. Since new product innovation may be viewed as enhancing a firm's competitive position, it may emit positive signals about the firm. Rival firms will attempt to keep up with the efforts of the new product firm by imitating the new technology. Chen et al. (2017) indicated that the likelihood of a firm enhancing and introducing new products is magnified by the R&D intensity of incumbent competitors. In addition, the relative firm size, relative firm performance, and strategic homogeneity appear to either strengthen or weaken the link between a firm's R&D activities and its rivals' reactions. In line with this logic, the moderating effect of firm characteristics on the link between new product introductions and rivals' financial performance appears to be significant. If investors believe that new product innovation signals favorable news for the firm, and that rivals will benefit as well, then spillover effects are possible. The spillover effect causes a positive change in the market value of rival firms at the time of the new product announcement. This is consistent with the notion of introducing a new product in a 'blue ocean'. Introducing radical new products also creates competition that may affect existing products. However, the competitive effect should be compensated by the spillover effect, resulting in more positive abnormal returns. Furthermore, Pekovic et al. (2020) argued that innovation activities could facilitate the cooperation between the innovators and their incumbent competitors. Despite findings not supporting the positive payoffs of the innovators from such cooperation, it could be deduced that the spillover effect has encouraged rivals to establish cooperative agreements with the innovators as a result of changes in their financial returns.

In addition, incremental innovations signal less market opportunity, but more competition for rival firms. A competing hypothesis to the spillover effect posits that rival firms may be adversely affected by the new product innovation. The research of Pekovic et al. (2020) and Chen et al. (2017) has implied that the negative effect of new innovations on rivals' performance could exist, which consequently forces them to enter cooperative agreements with incumbent competitors. According to the research by Yuan et al. (2020), firms that introduce new products may obtain a distinct competitive advantage over rival firms because of their pioneer products. If consumers prefer the new product to existing products in the industry, the firm will experience an increase in demand for its product. In a perfectly competitive industry, the increase in demand would have no economic effect. However, with imperfect competition, the new product firm would gain and rival firms may be adversely affected by this change in demand. If the new product announcement signals information about the demand shift to investors, such a signal may exert a downward pressure on the market values of rival firms. This is consistent with the notion of introducing a new product in a 'blue ocean'. This does not create new opportunities for rival firms. In the worst situation, it even leads to the negative value effect on the rival firm. Kaul (2012) argued that the rival innovation appears to force firms to change their corporate scope, which implies that the new products launched by any firms in the industry could reverse the competitive position and decrease the financial returns of the others, which ultimately results in the changing decision on corporate scope. For larger rivals, the launching could increase the stock returns and the current market size, which implies that the market substitution effect could be offset by obtaining benefits from the market expansion effect. Meanwhile, for smaller rivals, the new

product introductions could initiate the switching behavior of their current customers because of the lack of resources and capabilities to catch up with the larger innovators. McGahan and Silverman (2006) explored the possibility that the effect of rival innovation on a focal firm is significantly positive. From this discussion, we hypothesize the following:

*H1: (a) New product innovativeness has a positive effect on a big rival firm's abnormal return, but (b) has a negative effect on a small rival firm's abnormal return.*

#### 2.2.2 Moderating effect of the rival firm's brand advantage (high vs. low brand equity)

Kim et al. (2018) have considered brand advantage from a multidimensional perspective, which includes brand loyalty, perceived quality, brand image, and brand awareness. Findings reveal that the aggregated brand equity appears to increase the financial performance. Loyal customers are less likely to switch to products and services provided by competitors. This implies that the negative effect of rivals' new product introductions on a firm's sales growth and financial performance could be mitigated by its customers' brand loyalty. Similarly, brand awareness and brand image are positively associated with firm performance, which implies that the brand equity is an important contributor to the financial performance. To some extent, it could be argued that brand equity would hinder the negative effect of industrial shocks of smaller firms while magnifying their positive effects on bigger firms. Rival innovation is one of the major industrial shocks of the external environment. Similarly, Wang et al. (2017) pointed out that brand equity could enhance firm value and performance in high-tech industries which are the fertile ground for innovation activities. Most recently, Rahman et al. (2019) have posited that brand equity appears to enhance future firm performance, which implies that shareholders tend to expect larger firms with lower brand equity to develop in the future. This may strengthen the positive impact of innovations on firm performance of rivals with higher brand equity. Moreover, in the case of smaller firms, higher brand equity and better firm performance could help shareholders believe that those firms would be able to overcome the challenges relevant to rivals' product innovations. Overall, smaller firms of brand advantage are more likely to be better protected from the loss relevant to competitive disadvantages as a result of rivals' innovation, while larger firms are more effectively fueled by established brand advantages to benefit from the rivals' innovation spillover. Thus, we will test the two-fold effect of brand advantage on the link between new product introductions and the performance of small and big rival firms.

*H2a: The positive effect of product innovativeness on a big rival firm's abnormal return is stronger when the firm has a brand advantage.*

*H2b: The negative effect of product innovativeness on a small rival firm's abnormal return is weaker when the firm has a brand advantage.*

#### 2.2.2 Moderating effect of the rival firm's media advantage (media coverage, social media engagement)

Karjaluoto et al. (2016) have indicated that participation in social media could improve firm performance. Social media engagement enhances customer involvement, customer loyalty and customer satisfaction, which consequently increases firm value and performance. To that end, big firms could benefit from their media advantage to increase gains from the market expansion effect caused by the others' new product introductions. They could use social media to attract new customers by advertising their future innovative products. In the case of smaller firms, media advantage could help retain current customers by advertising promotional packages, intensive customer service, and future cooperation on innovative products with larger firms. In other words, the market substitution effect could be curbed by the media advantage of smaller firms. Wang et al. (2023) explored the fact that negative media coverage

could decrease firm valuation of the controlling shareholders. Reversely, authentic positive media coverage is expected to enhance the firm valuation. Muninger et al. (2019) have investigated the firm's objectives of using social media in the innovation process. Findings indicated seven objectives of using social media as a channel to obtain complementary innovation resources and capabilities from the community. This implies that media advantage could help innovators enhance their innovative products and services in the innovation process. In light of this argument, big firms could employ their media advantage to benefit from the market expansion effect, while smaller firms could be able to catch up with the announcers in the innovation process and mitigate the market substitution effect by communicating their promising innovation projects to their current customers. Overall, media advantage appears to accelerate and enhance the innovation process of rival firms, which ultimately improve firm performance and valuation. Thus, we propose the following hypotheses:

*H3a: The positive effect of product innovativeness on a big rival firm's abnormal return is stronger when the firm has a media advantage.*

*H3b: The negative effect of product innovativeness on a small rival firm's abnormal return is weaker when the firm has a media advantage.*

### 2.2.3 Moderating effect of the rival firm's market advantage (mainstream vs. niche market, numbers of segments the firm is serving)

Lee et al. (2014) have explored that bank portfolio diversification could enhance financial performance. In other words, the number of business areas is positively associated with firm performance. Diversification allows firms to allocate relevant risks to gain the net payoffs from their strategies. Because new product introductions are risky, a larger number of segments could allow innovators to reduce risks of those innovations not appropriate to consumers' tastes and preferences in certain segments. Thus, firms with a large number of market segments could benefit from cross-subsidization when introducing new products. Bhatia and Thakur (2018) and Gyan et al. (2017) indicated a significant positive link between industrial diversification and firm performance. In their studies, industrial diversification is a firm's strategy to extend its current product portfolio and market segments. Industrial diversification is based on innovative activities, which allow the introduction of new products and services for new segments. Therefore, it appears that diversification, which facilitates firm market advantage over its competitors, enhances financial performance and firm value, and consolidates the link between innovation and performance. Overall, market advantage could help big firms benefit from the market expansion effect because a diversified product portfolio could satisfy a wide range of segments, which allows those firms to gain larger market share and obtain high financial returns. In the case of small firms, market advantage allows cross-subsidization, which mitigates the loss in the product or service facing the threat of rivals' new introductions. Thus, we will examine the following hypotheses:

*H4a: The positive effect of product innovativeness on a big rival firm's abnormal return is stronger when the firm has a market advantage.*

*H4b: The negative effect of product innovativeness on a small rival firm's abnormal return is weaker when the firm has a market advantage.*

## 3 METHOD

To test the propositions, we collected data on eWOM, product innovation, and control variables from the Infegy Atlas social media analytics platform, Eoustics, Datamonitor

Product Launch Analytics, Center for Securities Sources Prices (CRSP), and COMPUSTAT. Table 1 summarizes information about the data sources and methods of measurement in this study. We took several steps to establish the study sample. We started with the collection of data on new product innovation activity in the United States for the period 2010–2020 from Ecoustics and Product Launch Analytics database of Datamonitor. Both databases store information about new products at the time of market launch, including product name, brand, product description, image, price, and delivery conditions. In addition, data regarding positive eWOM and negative eWOM were extracted from the Infegy Atlas database by the research team.

The sample includes businesses that are publicly traded in four business lines: food, drinks, computer-related products, and telecommunications. The standard industrial classification (SIC) codes are 0100, 2086, 3571, and 3663, respectively. These fields are suitable research contexts for the topic for two reasons. First, the products of these industries play an important and essential role in the life of a typical customer, and therefore it is likely that customers will be more willing to express their feelings about those products on social media sites. Second, these industries include both tangible (processed and manufactured goods) and intangible products (services), which enhances the generalization of the research findings. The sample size of the study is 2,451 firm-year observations from 181 enterprises in the period from January 1, 2010 to December 31, 2020.

Tab. 1 – Variable description

Main variable	Measure	Source
Product innovativeness	The ratio of radical new product to incremental new product introduced by the focal firm in a year.	Ecoustics Datamonitor’s Product Launch Analytics
Product breadth	The number of radical and incremental new products introduced by the focal firm in a year.	Ecoustics Datamonitor’s Product Launch Analytics
Competition	Herfindahl industrial concentration index. HHI is the sum of squares of market shares of all firms in the four-digit SIC industry in the year preceding the focal cobranded product introduction.	COMPUSTAT
Control variable	Measure	Source
Firm size	Natural log of the focal firm’s total assets.	COMPUSTAT
Market value	Natural log of the focal firm’s market value of equity.	COMPUSTAT
Financial leverage	Ratio of long-term book debt to total assets of the focal firm.	COMPUSTAT
Dividend	Ratio of cash dividends to market value of equity of the focal firm.	COMPUSTAT
Sales	Ratio of sales to total assets of the focal firm.	COMPUSTAT

We assume that businesses can collect social media data from independent intermediaries or research departments affiliated with the business itself. Independent intermediaries like Infegy Atlas and Datamonitor provide customer sentiment data at a relatively affordable cost. As a result, businesses do not necessarily have to put all the effort into collecting and analyzing data on their own, which cuts down on data-related costs reasonably. Therefore, we assume that businesses will take advantage of independent intermediaries to acquire data related to social media. We collected data related to customer posts about rival businesses during the research period from Infegy Atlas’ social media analytics source. Infegy is an American enterprise that uses data mining software to collect millions of conversations on various communication channels of social networking sites. There are more than 500 businesses registered with regular access to Infegy’s database, of which 108 are listed on the S&P 500



stock index. Most of the companies ranked in the Fortune 1000 use Infegy’s database through registration of the company’s own access rights or of market research and business consulting firms. Infegy uses data mining algorithms related to search, classification, clustering, association and the application of natural language processing techniques to conduct sentiment analysis. In order to draw deeper discoveries on the research topic, we examined actual survey data collected from U.S. businesses’ marketing/brand/product/social media managers.

The following models were analyzed:

(1) Product innovativeness (breath)<sub>it+1</sub> = α<sub>0</sub> + α<sub>1</sub> Rival brand advantage<sub>it</sub> + α<sub>2</sub> Rival Media advantage<sub>it</sub> + α<sub>3</sub> Rival market advantage<sub>it</sub> + α<sub>i</sub>control<sub>it</sub> + ξ<sub>it</sub>;

(2) Product innovativeness (breath)<sub>it+1</sub> = α<sub>0</sub> + α<sub>1</sub> Rival brand advantage<sub>it</sub> + α<sub>2</sub> Rival Media advantage<sub>it</sub> + α<sub>3</sub> Rival market advantage<sub>it</sub> + α<sub>4</sub> Rival brand advantage<sub>it</sub> x Product Innovativeness (breath)<sub>it</sub> + α<sub>5</sub> Rival media advantage<sub>it</sub> x Product Innovativeness (breath)<sub>it</sub> + α<sub>4</sub> Rival market advantage<sub>it</sub> x Product Innovativeness (breath)<sub>it</sub> + α<sub>i</sub>control<sub>it</sub> + ξ<sub>it</sub>.

According to Petersen (2009), we gathered all standard deviations by enterprise in these two models. Mediation analysis procedures from Zhao et al. (2010) and Hayes (2009) were applied.

#### 4 RESULTS

From the results presented in Table 2, we see that the positive relationship between New Firm Innovativeness on Rivals CARs is at the 5% statistical significance level. In the context of Big Rival CARs (model 1a), there is a positive relationship between new firm innovativeness and Rival CARs with statistical significance p<0.001. In addition, there is a positive relationship between rival market advantage and rival CARs with statistical significance of p<0.05, which confirms the hypothesis H1 is accepted with statistical significance of p<0.001. Also, in the context of Big Rival CARs (model 1b), we also found an intermediate relationship of Rival media advantage between Firm innovativeness and Big Rival CARs and another intermediate relationship of Rival market advantage between Firm innovativeness and Big Rival CARs with statistical significance of p<0.05.

Tab. 2 – Impacts of New Product Innovativeness on Rivals CARs

	<u>Big Rival CARs</u>				<u>Small Rival CARs</u>			
	<i>Model 1a</i>		<i>Model 1b</i>		<i>Model 2a</i>		<i>Model 2b</i>	
	<i>(Main effect)</i>		<i>(Full model)</i>		<i>(Main effect)</i>		<i>(Full model)</i>	
	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.
Intercept	.067 **	(.020)	.074 ***	(.020)	-.118 ***	(.028)	-.127 ***	(.028)
Firm Innovativeness	.066 ***	(.007)	.077 ***	(.020)	-.095 ***	(.010)	-.100 ***	(.029)
Firm Innovativeness × Rival brand advantage			.049	(.026)			.071	(.036)
Firm Innovativeness × Rival media advantage			.042 **	(.013)			.049 **	(.019)
Firm Innovativeness ×			.008 *	(.004)			-.013	(.059)

Rival market advantage								
Rival brand advantage	.016 †	(.008)	.010	(.009)	-.023 †	(.012)	-.014	(.013)
Rival media advantage	.009	(.006)	.008	(.006)	-.012	(.009)	-.011	(.009)
Rival market advantage	.004 *	(.002)	.004 *	(.002)	.007 **	(.003)	.006 *	(.003)
<i>Control variable</i>								
Firm brand equity	-.001 ***	(.000)	-.001 ***	(.000)	.002 ***	(.000)	.002 ***	(.000)
Firm niche market	-.076 ***	(.005)	-.076 ***	(.005)	.123 ***	(.008)	.122 ***	(.008)
Firm Cobrand	.001	(.006)	.001	(.006)	-.001	(.009)	-.001	(.008)
Firm age	.000 *	(.000)	.000 *	(.000)	.000 *	(.000)	-.001 *	(.000)
Firm high-tech	.025 ***	(.007)	.026 ***	(.007)	-.018 †	(.010)	-.019 †	(.010)
Firm market value (log)	-.002	(.001)	-.002 †	(.001)	.003	(.002)	.003 †	(.002)
Firm total assets (log)	.003 *	(.001)	.003 *	(.001)	-.004 †	(.002)	-.004 †	(.002)
Industry dummy	Included		Included		Included		Included	
Year dummy	Included		Included		Included		Included	
No. of observations	1,556		1,556		1,556		1,556	
Chi-square	272.614***		286.735***		307.846***		319.078***	

Notes: \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ , †  $p < .10$ .

However, in the context of Small Rival CARs (model 2a), we found the opposite result with a negative relationship between new firm innovativeness and Rival CARs with statistical significance of  $p < 0.001$ . In addition, there is a positive relationship between rival market advantage and rival CARs with statistical significance of  $p < 0.05$ , which confirms that the hypothesis H2 is accepted with statistical significance of  $p < 0.001$ . At the same time, in the context of Small Rival CARs (model 2b), we also found an intermediate negative relationship of Rival market advantage between Firm innovativeness and Small Rival CARs with statistical significance at  $p < 0.05$ . However, the difference from model 1b is that the intermediate relationship of Rival market advantage between Firm innovativeness and Big Rival CARs is not statistically significant, which should be cautiously interpreted. This finding is consistent with Shen et al. (2018) and Vo et al. (2017), since the meta-synthesized dataset was carefully checked and the discrepancy was replaced. Thus, the biggest difference between the two models 1 (1 and 1b) and 2 (2a and 2b) is the positive impact between firm innovativeness on Big Rival CARs in model 1 and the opposite effect between firm innovativeness to Small Rival CARs in model 2, which shows a unique approach in forming business strategies in two groups of businesses Big Rival and Small Rival, especially in how to behave when businesses innovate.

Finally, we performed a robustness test to test the impact of new product innovativeness on Big Rival CARs (3a, 3b) and Small Rival CARs (4a, 4b). The results were similar and consistent with models 1 and 2 (Table 3). Specifically, the biggest difference between models 3 (3a and 3b) and 4 (4a and 4b) is the positive impact between firm innovativeness on Big Rival CARs in model 3 and the neutral effect between firm innovativeness to Small Rival CARs in Model 4.

Table 3 – Robustness Test: Impacts of New Product Innovativeness on Rivals CARs (new measure of innovativeness)

	Big Rival CARs				Small Rival CARs			
	Model 3a (Main effect)		Model 3b (Full model)		Model 4a (Main effect)		Model 4b (Full model)	
	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.
Intercept	.028	(.020)	.053 *	(.022)	-.060 *	(.028)	-.102 ***	(.031)
Firm Innovativeness	.022 ***	(.002)	.009 †	(.005)	-.032 ***	(.003)	-.012 †	(.007)
Firm Innovativeness × Rival brand advantage			.024 ***	(.007)			.036 ***	(.010)
Firm Innovativeness × Rival media advantage			.004 *	(.002)			.017 *	(.003)
Firm Innovativeness × Rival market advantage			.009 *	(.004)			-.013	(.009)
Rival brand advantage	.017 *	(.008)	-.032 †	(.017)	-.025 *	(.012)	.050 *	(.024)
Rival media advantage	-.004 *	(.002)	-.001	(.006)	.007 **	(.002)	.005	(.008)
Rival market advantage	.009	(.006)	-.008	(.013)	-.013	(.008)	.011	(.019)
<i>Control variable</i>								
Firm brand equity	-.001 ***	(.000)	-.001 ***	(.000)	.002 ***	(.000)	.002 ***	(.000)
Firm niche market	-.073 ***	(.005)	-.073 ***	(.005)	.118 ***	(.007)	.118 ***	(.007)
Firm Cobrand	.003	(.006)	.003	(.006)	-.004	(.008)	-.004	(.008)
Firm age	.000 *	(.000)	.000 *	(.000)	.000 *	(.000)	.000 *	(.000)
Firm high-tech	.024 ***	(.007)	.024 ***	(.007)	-.017 †	(.010)	-.017 †	(.010)
Firm market value (log)	-.002	(.001)	-.002	(.001)	.002	(.002)	.002	(.002)
Firm total assets (log)	.003 †	(.001)	.002 †	(.001)	-.003 †	(.002)	-.003	(.002)
Industry dummy	Included		Included		Included		Included	
Year dummy	Included		Included		Included		Included	
No. of observations	1,556		1,556		1,556		1,556	
Chi-square	308.574***		321.894***		351.875***		366.766***	

Notes: \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ , †  $p < .10$ .

## 5 DISCUSSIONS AND IMPLICATIONS

Our study provides quantitative evidence of the innovativeness and determinants of innovation as well as the performance of firms in the United States. Our findings should help firms find some important factors to drive their business success in the future.

First, we are familiar with the topic as well as product innovativeness and big rival or small rival. Second, we initially collected a small sample and conducted preliminary tests before we wrote a proposal. The results support our hypotheses. Third, the sample mainly used in our project is the secondary data collected from private and public data sources, including Infegy Atlas social media analytics platform, Ecoustics and Datamonitor's Product Launch Analytics, the Center for Securities Prices, and COMPUSTAT. We also supplemented our research by collecting survey data from U.S. marketing/brand/product/social media managers.

Research on the impact of firm innovativeness on Big Rival CARs and Small Rival CARs is still at its nascent stages (Urquhart & Vaast, 2012). This study fills this gap by examining how firm innovativeness drives firm competition. Our contribution to the extant literature is twofold. First, this is the first empirical study investigating the impact of firm innovativeness on Big Rival CARs and Small Rival CARs. Second, we quantified the impact of innovation on market capitalization (i.e., value) of U.S. firms.

### 5.1 The role of competition

When competition increases in a market, firms must pay more attention to the forces at hand in order to ensure their success. Managers may shift their mindset in order to sustain their competitive advantage in the marketplace. CEOs may be more likely to pursue behaviors to increase innovation in more competitive industries (Galasso & Simcoe 2011). In order to effectively compete, producing imitation products may not work, unless the firm decides to follow a cost-leadership strategy. Therefore, an optimal strategy to compete in the market is to increase innovation. Thus, as competitive intensity increases, most firms decide to increase their innovativeness (Rubera & Kirca, 2012). With the pressure to innovate more frequently and create more radical products, the signals to produce imitative products decrease in strength. Therefore, when rivals receive increased volume of positive eWOM in highly competitive environments, focal firms have less incentive to produce imitative products due to the competitive intensity.

Competitive intensity leads to more market-based innovations (Zhou et al., 2005), whether or not rival firms are receiving praise from consumers through eWOM. In highly competitive environments, firms must maximize any opportunities to improve their market position. If firms become harsh in their position and neglect innovativeness when rivals are failing to succeed, their competitive advantage can quickly erode in competitive environments (Menguc & Auh, 2006). Therefore, when rival firms receive negative eWOM signaling that they are not meeting customers' needs, focal firms must take advantage of this opportunity to improve their position by increasing innovation. This effect is more prominent in more competitive industries, since rival firms may engage in investing in heavy advertising, engage in price wars, or develop new radical innovations (Porter, 1980). Therefore, the impact of positive rival eWOM on focal firm innovativeness and innovation breadth is magnified by the level of competition.

### 5.2 Rivals as leaders or followers

A firm's market position can have a large influence on the strategic decisions of its managers. Larger firms tend to react slower regarding the speed of innovation responses. However, larger (leader) firms may have more flexibility with increased resources available for more innovative projects. When the rival is a leader, follower firms are often responsive in nature and may enact a price-fighting strategy (Shankar & Malthouse, 2006). Introducing a price-fighting strategy implies that follower firms produce more imitation products in order to compete with the market leader. Therefore, when a rival firm is a market leader and receives large volumes of positive eWOM signaling customers' satisfaction with their products, focal

firms may engage in increased responsive behaviors. Therefore, the increase in innovation for focal firms is more pronounced when rivals are leaders and focal firms are followers.

When rival firms are leaders, focal firms have a heightened sense of urgency in order to take advantage of the competition. If rival leaders receive increased negative eWOM, this signals that consumers are unhappy with their products, providing increased market opportunities for focal firms. When market opportunities are high, firms are more likely to shift resources to explore new competencies (Atuahene-Gima, 2005). By exploring new competencies, firms engage in increased innovation activities and produce more radical innovations. Follower focal firms benefit more from increased innovation actions, since increased action by followers has a significant negative impact on the performance of rival market leaders (Derfus et al., 2008). Bureaucratic factors may lead to questionable written work, signaling the moralization of pseudo knowledge. Follower firms will also see a strong perverse halo effect where negative eWOM of the rival leader firm will have an extensive spillover effect on the follower focal firm (Borah & Tellis, 2015). Therefore, larger follower firms must ensure they distance themselves from their rival leader firms by increasing innovation. These follower firms want to continue to diminish the leader's position and to take advantage of the opportunity to overcome their rival firm.

## 6 CONCLUSIONS

In highly competitive business environments, companies must capitalize on available opportunities to enhance their market position. If an enterprise becomes complacent with its current position and disregards its capacity for innovation due to subjective assumptions that rival companies are failing, its competitive advantage will rapidly diminish in highly competitive markets. Negative eWOM received by rival businesses is indicative of their failure to meet customer needs. Consequently, focal businesses should seize this opportunity to improve their market position by intensifying their innovation activities. However, the impact of product innovations launched by focal firms on their competitors remains a subject of inquiry. Therefore, the objective of this study was to examine the extent to which new product introductions by focal firms affect their rivals. The study employs data from 2,452 new product announcements in the United States, spanning the period 2010–2020, which were collected from Infegy Atlas, Eoustics, Datamonitor Product Launch Analytics, CRSP, and COMPUSTAT. The findings support the market expansion hypothesis, which posits that the introduction of a new-to-the-market product signals new opportunities for rival firms within the same product category. This finding aligns with the market penetration hypothesis, suggesting that incremental innovations pose a threat of cannibalization to existing products of rival firms. The quantified effects of innovation on market capitalization presented in this study contribute to the understanding of business competition research. Additionally, the study reveals that when a rival firm holds a dominant market position and receives substantial positive eWOM indicating customer satisfaction with its products, focal firms may respond by increasing their innovation efforts to differentiate themselves from the leading competitor.

Despite its contributions, the present study is subject to certain limitations. Firstly, the data collected and analyzed were aggregated from a single country, thereby disregarding potential variations across different industries and national contexts. A more nuanced approach in future research would involve considering industry and country as moderators to elucidate the effects of product innovation and competition within social, cultural, and legislative contexts. Secondly, this research focused on a limited set of factors. Consequently, future studies could incorporate a broader range of innovation indicators, such as upward and downward product line extensions, to further explore the impact of innovation characteristics on competition.

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