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The role of a large competitor's entry and level of innovativeness in consumer adoption of new products

A comparison between market uncertainty and technological uncertainty

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Abstract

Purpose – This paper aims to examine the role of a large competitor's entry and level of innovativeness in consumer adoption of new products.

Design/methodology/approach – This paper is based on a comparison between market uncertainty and technological uncertainty. This paper henceforth defines and analyzes the following key factors affecting the purchase intention of small- and medium-sized enterprise (SME) new products: type of new products and entry of large competitors. The study further verifies mediator variables that exert impacts: uncertainties regarding both technology and market.

Findings – The findings are as follows: purchase intention of SME new products does vary according primarily to the product types and entry of large competitors. More specifically, the entry of large competitors reduces uncertainties about really new products, thereby positively affecting SME new products.

Originality/value – There was no causal relationship found, however, on incrementally new products. Further findings clarify that the mediator variables affecting reciprocal interactions between purchase intention of SME new products and the entry of large competitors hold valid only for market uncertainties and not for technological uncertainties.

Keywords Small- to medium-sized enterprises, Incrementally new product, Really new product, Entry of a large competitor, Technological uncertainty, Market uncertainty

Paper type Research paper

1. Introduction

As the ramifications of new engines of growth are increasingly gaining significance for our modern societies, innovation has become a national agenda, emerging above and beyond the personal and organizational dimension, where technological and managerial innovations

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are critical to any company's growth regardless of its size (Kim and Park, 2015). Innovation for a firm's engine of growth enables entry into a new industry or a new market. From such viewpoints to develop a successful new product is a highly critical objective. Especially for those small- and medium-sized enterprises (SMEs) with limited resources, the question of whether the firm's new product can succeed or not becomes a matter of survival. Despite the fact that the success of new products is of a critical issue, the studies in this important field of consumer response to SME new products are relatively limited.

A new product can be classified into two different categories: incrementally new product (INP) and really new product (RNP); the former provides customers with an incrementally more improved product than currently existing models, whereas the latter provides radically new functions or benefits (Chandy and Tellis, 1998; Lee *et al.*, 2014). Advantages of an INP include stable cash flows to the firm. However, at the same time, disadvantages can limit the future values of the same company. On the other hand, a RNP demonstrates such advantages as providing a new engine of company's growth, but the disadvantages of a high failure rate pose a threat of high risk for the firm (Fang *et al.*, 2016). Therefore, these two different categories of new products are equally important for any company.

Previous research in this field reveals that most articles have focused on what causes variations in both the evaluation and adoption rate of new products, given the type of products, information processing approach and propensity of consumers (Herzenstein *et al.*, 2007; Castaño *et al.*, 2008). However, we came to believe that what is left much understudied still is the scope of the research upon the extrinsic cues about the new product may or may not affect a consumer's attitude toward a new product. Henceforth, this article will focus on analyzing the response of consumers toward SME new products and examine highly influential extrinsic cues such as the entry of large competitors which may incur impacts upon consumers' choices.

Many prior studies regarding new products have clarified that uncertainty has critical impacts upon the evaluation of any new product. However, most attention has been limited within the boundaries of uncertainty in product performances (Hoeffler, 2003; Herzenstein *et al.*, 2007). It must be explicitly noted that uncertainties, as well as risks, of a new product might be recognized by consumers not only from intrinsic aspects such as product capacity and performance but also, equally importantly, from extrinsic aspects such as brands (Castaño *et al.*, 2008; Yeo and Saboori-Deilami, 2015). Therefore, this study classifies the uncertainties perceived by consumers into the two distinctive categories of technological uncertainty and market uncertainty; the former has much to do with the uncertainties of product performance, whereas the latter has mostly to do with the uncertainties of popularity or estimated market share. Our particular attention is, then, rendered upon the impacts of each uncertainty over purchase intention of SME new products. In conclusion, the gist of this article's purpose is such that we set out to verify how purchase intention changes in proportion to the product type and the entry of large competitors and further measure the impacts of such mediator variables as technological uncertainty and market uncertainty.

2. Theoretical background and hypothesis

2.1 Competition between small- and medium-sized enterprises and large firms

Brand awareness means the degree to which consumers can recognize and recall a particular brand in a particular product category and plays a highly critical role in consumers' decision-making (Keller, 1993). A brand is utilized as one of the extrinsic

cues for a consumer to estimate the performance and quality of a certain product (Brucks *et al.*, 2000) and reduces the perceived risks about the specific product by clarifying to the customer who manufactured the product (Choi *et al.*, 2011). Therefore, the higher the brand awareness of a product, the more likely it comes within consideration and the more increased its possibility of being selected for purchase (Macdonald and Sharp, 2000). And because the quality of a new product by the large firm can be estimated to be reliable based upon brand awareness (Oakley *et al.*, 2008; Spiggle *et al.*, 2012), new products of large firms are absolutely more favorable in comparison to those of SMEs.

In this context, SMEs are at an absolute disadvantage as far as brand awareness level is concerned, and they generally seek a niche market to avoid direct competition against large competitors. However, a large competitor can still enter into a market where there have been no other companies, but, SMEs until that time, or a startup with innovative technology, can enter the market with a new product where large competitors have long been dominating. Especially in cases where there have been only SMEs in that particular market and a large competitor newly enters, serious threats are unavoidable for the SMEs. Many extant studies (Gielens *et al.*, 2008; Ailawadi *et al.*, 2010) have already confirmed the negative impacts on SME sales and revenues on the occasion of the entry of a large competitor from a similar industry.

On the other hand, a recent study (Paharia *et al.*, 2014) has demonstrated that the advertised act of competition between SMEs and large competitors as promoted by SMEs can have a positive impact for the SMEs. In their study, Starbucks Coffee was presented as the competition for an independent coffee shop, and two different conditions of proximity are manipulated; one is the short distance between the Starbucks and the independent coffee shop, and the other is a long spatial distance, for the analysis of competitive salience. The result shows that in the case where the distance between the Starbucks and the independent coffee shop is very close, consumers' purchase intention toward the independent coffee shop was high, and, in the case where the distance is rather considerable, the opposite was true. As clearly evidenced in this study, competition against the large companies may not necessarily render negative impacts only for SMEs. Taking note of the abovementioned research (Paharia *et al.*, 2014), this study examines whether or not the competition between the SMEs and the large corporations can positively affect SMEs in the market for a new product.

2.2 New product type: incrementally new product vs really new product

A new product type can be classified as INP and RNP according to the level of newness in comparison with current technology or performance that is being used for the products (Ma *et al.*, 2014). The INP is a new product which is incrementally improved from the product already distributed in the market, whereas the RNP is a new product which creates a new product category, as well as a new market, that provides new benefits to consumers that they have not been able to expect from the previous product category (Min *et al.*, 2006).

Many previous studies about new products have shown a number of contributing factors that affect the evaluation of new products: new product types (INP vs RNP); regulatory focus; temporal distance; and self-construal. Hoeffler (2003) showed that consumers tend to have higher purchase intention toward INPs than RNPs because it is much more difficult for them to estimate correctly the utilities of RNPs and further indicated that consumers could increase their purchase intentions through mental

simulation. Herzenstein *et al.* (2007) showed how regulatory focus affects the choice of new products and found that consumers with promotion focus make more purchases of new products than those with prevention focus.

On the other hand, Castaño *et al.* (2008) analyzed how temporal distance and self-construal affect the new product choice. The results showed that process simulation has much higher purchase intention on the new product than the outcome simulation as long as the temporal distance is close enough. If the temporal distance is long, however, the outcome simulation influences the purchase intention much more than the process simulation does. Ma *et al.* (2014) proved that the evaluation of a new product can change according to the new product type and self-construal. They verified that those consumers with independent self-construal showed much higher purchase intentions on RNPs than INPs, whereas those consumers with interdependent self-construal revealed stronger purchase intentions toward INPs than RNPs.

2.3 Technological uncertainty and market uncertainty

Prior research regarding innovation and new products has proved that the uncertainty factor plays an important role in affecting a consumer's acceptance towards innovation and purchase of new products (Hoeffler, 2003; Herzenstein *et al.*, 2007). However, each study indicates different definitions and classifications upon uncertainty. Moriarty and Kosnik (1989), who offered a definition of high-tech marketing, for instance, classified the uncertainty of new products into two categories of market uncertainty and technological uncertainty from the viewpoint of manufacturers. According to their definition, market uncertainty is not knowing what consumers want from new products whereas technological uncertainty is not knowing whether new products could meet consumers' needs. They suggested that the sources of market uncertainty were ambiguity about the size of potential market, industry standards, customer needs and the rate of diffusion of new products. From the customer's perspective, these sources were closely related to the adoption rate of new products by other customers such as popularity or estimated market share. On the other hand, technological uncertainty is linked with new technology and the performance of a new product and is determined by the factors such as side effects, malfunction, delayed release, quality maintenance and risk of technological obsolescence.

Prior studies regarding uncertainty from the viewpoint of consumers also confirm that most research has been done with the focus on uncertainty of product performance. In one of the most prominent studies, Herzenstein *et al.* (2007) suggested a new definition including the concept of performance uncertainty that encompasses all unstable factors recognized by consumers and proved that performance uncertainty significantly affects the evaluation of new products. Other studies (Ziamou and Ratneshwar, 2002; Ma *et al.*, 2015) also confirmed that performance uncertainty plays a role as a mediator variable affecting product choice by consumers. It should be noted, however, that previous research has been conducted with a focus upon technological uncertainty, leaving market uncertainty, which captures the uncertainty recognized by consumers regardless of the product performance, unexamined.

In the fields of consumer studies, the concept of market uncertainty has not been directly suggested, but some concepts similar to market uncertainty have been brought forth by Ram and Sheth (1989). They established that the risk barrier is one of the resistance-inducing factors against innovation and defined it as the risk

linked with production usage. Ram and Sheth (1989) further classified the risk barrier into different categories including physical risk, functional risk, economic risk and social risk, of which the physical risk and functional risk are linked with technological uncertainty and economic risk and social risk with market uncertainty.

Taken together, uncertainty about products is defined differently according to each researcher. However, from a comprehensive overall context, uncertainty about new products would be divided into the two aspects: market uncertainty and technological uncertainty. From the viewpoint of the manufacturing firm, the concept of both market uncertainty and technological uncertainty applied to new product development can be further expanded into research on the product choice by consumers. Therefore, this study adopts the concept proposed by Moriarty and Kosnik (1989) and defines market uncertainty as uncertainty linked with the adoption rate of new products by customers and technological uncertainty as uncertainty linked with new product performance.

2.4 Brand endorsement effect

Celebrity endorsement is an advertisement campaign used to promote the products and services of a firm that utilizes a celebrity whose social fame and popularity are known to the majority of people. Careful reviews of celebrity endorsement studies reveal that this method raises the level of consumer interest in the advertisement (Muda *et al.*, 2012), helps consumers remember the product brand easily (Petty *et al.*, 1983), induces positive attitudes towards the advertisement (Felix and Borges, 2014) and positively affects purchase intention (Ohanian, 1990).

In this section, this study suggests the brand endorsement effect based on the idea of celebrity endorsement. The brand endorsement effect means that a well-known brand performs a supporting role for a particular object, in the same way that celebrities help to promote particular objects. Brand-related studies have rarely examined the brand endorsement effect directly, but one can still find research that is done indirectly through prior studies regarding brand extension and ingredient branding. To be more concrete, in the case of brand extension, which promotes new product purchases based on the parent brand with high brand awareness and brand assets, the parent brand plays a role of assurance for the new product (Spiggle *et al.*, 2012). And in the case of utilizing the ingredient brand that supplements host brands to reduce the risks recognized by the consumers and to improve the quality of the product, the ingredient brand plays a role of assurance for the host brand (McCarthy and Norris, 1999; Desai and Keller, 2002).

The brand endorsement effect can appear in new product markets. When a large firm with high company brand awareness launches a RNP, it can utilize the endorsement effect with the parent brand guaranteeing the extended brand, thus reducing the uncertainty perceived by the consumers over the RNP (Corkindale and Belder, 2009). On the other hand, from the viewpoint of consumers, the fact that a large company manufactures and sells a new product may suggest that the new technology adopted in the new product is reliable enough for commercialization and high enough in its marketability. Preceding studies also confirm this finding that consumer's interests in new products increase and product uncertainty also tends to decrease when large firms manufacture and sell new products (Brown and Dacin,

1997; Teas and Agarwal, 2000). That is, if a well-known large company enters the market, the brand endorsement effect can be applied to the whole array of product lines, guaranteeing the performance and marketability of the new product while also reducing the product uncertainty that may have risen from the new products manufactured by SMEs.

However, the brand endorsement effect of large firms against the new products of SMEs can vary widely according to new product types. For INPs using technology with a low level of innovation, the level of uncertainty perceived by consumers is not that high. For INPs that continue to maintain similar functions and forms of previous products, consumers can easily comprehend the product within the context of the previous product because they face far fewer burdens of having to learn new technologies to use the new product (Hoeffler, 2003; Zhao *et al.*, 2009). Furthermore, INPs can make the estimation of customer response possible, to some degree, based upon the sales figures and market data of the previous product. On the contrary, technologies used in RNPs are not familiar to the consumers yet, thus making them difficult for consumers to understand and raising the level of perceived uncertainty by consumers regarding many aspects of the product, including performance, benefits, cost of learning and diffusion speed (Min *et al.*, 2006; Alexander *et al.*, 2008). What is more, it is highly difficult to predict the popularity or estimated market share of a RNP because there are not much market data pertaining to the RNP.

In conclusion, the RNP carries much higher market uncertainty, as well as technological uncertainty, compared to the INP. Thus, in the case of the RNP, the production information on the RNP that is manufactured by a large firm reduces the overall uncertainty pertaining to the whole array of product lines. In the case of the INP, on the contrary, the production information exerts limited impacts upon the consumer's decision-making because the uncertainty level perceived by the consumer is much lower. Therefore, in the case that SMEs are competing against large competitors in RNP markets, the brand endorsement effect works to reduce uncertainty regarding both technology and market as perceived by consumers and to affect positively upon the purchase intentions toward new products manufactured by SMEs. However, in the case of the INP, the level of uncertainty recognized by consumers is relatively low compared to the RNP, which leads to a limited brand endorsement effect of the entry by a large competitor, making it very difficult to expect any positive effect on purchase intentions regarding the new product of a SME. Based on the above arguments and rationale, this study formulated the hypothesis as follows:

H1. Purchase intentions on small- and medium-sized enterprise new products will vary according to the new product type and the entry of large competitors. Purchase intention on small- and medium-sized enterprise really new product will be much higher when there are entries of large competitors, as opposed to when there is no entry of large competitors. However, in the case of small- and medium-sized enterprise incrementally new product, the positive effect of entries of large competitors will not occur.

H2a. The interaction of small- and medium-sized enterprise new product type and the entry of large competitors for the purchase intention will be mediated by technological uncertainty.

H2b. The interaction of small- and medium-sized enterprise new product type and the entry of large competitors for the purchase intention will be mediated by market uncertainty.

3. Experiment

3.1 Preliminary survey

A focus group survey was conducted on graduate students at the business schools in Korea. The students were asked to select a skin care device as an experimental stimulus product, popular among adults whose ages range between 20s and 30s. Among the various products, devices using new light-emitting diode (LED) technology were considered appropriate for the purpose: an LED mask for a RNP sample and an LED face massager vibrator for an INP sample. A preliminary survey was conducted over 71 Korean adults aged between 20s and 30s to examine whether or not consumers could recognize the LED face massager vibrator and the LED mask as samples of INP and RNP, respectively. During the on-line survey, the introduction was conveyed in such a way that the LED face massager vibrator was a newly developed skin care product with a soft yet powerful vibration function and with the LED light as luminous source, assuring the effects that range from improvement of skin elasticity to wrinkle treatment, skin whitening and skin toning. The LED mask, on the other hand, was introduced as an innovative skin care device that illuminates the face using light waves, assuring the effects that range from improvement of skin tone, skin texture, skin elasticity to lifting, soothing skin trouble, skin pore care and sorbefacient functions and so forth.

Participants were asked to answer the questionnaire on the innovativeness of each product after the explanation was given on the product manual and characteristics. This study revised the items used by Zhao *et al.* (2009) and measured product innovativeness based on two questions ("technology adopted in this product is new"; "this is an innovative product that is different from the other products", $\alpha = 0.89$) on two seven-point scales (1 = "not much"; 7 = "a lot"). To compare the mean value of the innovativeness of the products, a *t*-test was conducted, and the results were as follows – participants considered the LED mask (M = 5.01) to be more innovative than the LED face massager vibrator (M = 4.21) ($t = 2.982, p < 01$). Therefore, this study identified the LED face massager vibrator and LED mask as samples representing INP and RNP, respectively.

3.2 Experiment design and procedure

In total, 166 Korean women aged between 20s and 30s were recruited by a market research firm and asked to answer the online questionnaire to conduct the experiment. The reason for recruiting women only was that the targeted products were skin care devices, and women also show high product involvement tendencies and carry higher purchase intentions. The experiment was a 2 (new product type: INP vs RNP) × 2 (entry of large competitor: with large competitor vs without large competitor) between-subjects design.

The objectives of the experiment were described to the participants as a market survey for a new product and offered the stimulus products according to the product type. In this experiment, the new product types were manipulated by using LED face massager vibrator and LED mask as confirmed in the preliminary study, and two SMEs with low brand

awareness (Ludea, Busome) and one large firm with high brand awareness (Philips) were used for the manipulation of the large competitor. First, participants read brief explanations and saw photos of the new products and were asked to begin the experiment where each group was allocated randomly according to the condition of the large competitor entry. Those participants who were allocated to the group with no entry of the large competitor were given the guidelines that said "the new product as you saw earlier is currently manufactured and sold by Ludea and Busome", thus offering the choice between Ludea and Busome. Participants who were allocated to the group with the entry of the large competitor were given the guidelines that said "the new product as you saw earlier is currently manufactured and sold by Ludea and Philips", thus offering the choice between Ludea and Philips.

For the brand choice task, participants were given product information explaining the characteristics of each new product along with the brand. Product characteristics included weights (e.g. 220 G or 230 G), country of origin (e.g. Republic of Korea), warranty (e.g. one year), battery discharge time (e.g. 2 or 3 h) and rating (e.g. ★★★★☆). For uncritical characteristics such as weights and usable time length, different values were assigned for each product choice, and the rating was provided as the implicit indication that there was not much quality difference among the products. As participants completed the choice task, they were asked to respond to questions on brand awareness, purchase intention, uncertainty about technology and market, product knowledge, consumer's innovativeness, regulatory focus and sympathy toward SMEs.

We designated such important variables that affect the innovation and product choice as evidenced by prior research, including product knowledge, consumer's innovativeness and regulatory focus, as control variables (Herzenstein *et al.*, 2007; Choi and Kim, 2014; Kuester *et al.*, 2015). In the case of the group with the entry of the large competitor, the market structure can be described as the competition between large firms and SMEs. In such cases, one can expect to witness the underdog effect which can encourage purchase intentions on the SME products. The underdog effect is a phenomenon that occurs when the weaker party competes against the stronger opponent and is thus expected to lose but instead receives unexpected support and popularity out of sympathy, in the same way that the dog with apparent disadvantages is expected to lose but instead collects support. That is to say, in the new product market, consumers can feel sympathy and be compelled to support SMEs competing against a large firm, thus affecting the purchase intentions. Therefore, to control the underdog effect that might affect the purchase intentions toward the SME new products, this study reflected the sympathy to SMEs and designated it as a control variable.

3.3 Measuring variables

Purchase intention, a dependent variable in this study, was measured using three items ("I have the intention to buy this product"; "I will recommend this product to the people around me"; "I will purchase this product", $\alpha = 0.95$). Technological uncertainty, a mediator variable in this study, was measured using the following four items ("I am not convinced that this product will work very well"; "I cannot expect how good the performance of this product is"; "I am afraid this product will not work properly"; "The performance of this product is not up to my level of satisfaction", $\alpha = 0.82$) adapted from Zhou and Nakamoto (2007). Market

uncertainty was measured using the following five items modified from prior studies (Zhou *et al.*, 2010; Irmak *et al.*, 2010) to adjust to this study's purpose ("This product will lead the market in the near future"; "Popularity of this product will only increase from now on"; "This product will become very popular soon"; "The number of the users of this product will increase from now on"; "This will become the product everyone trusts", $\alpha = 0.91$). Brand awareness was measured using the following two items modified from Zhou *et al.* (2010) ("This brand is a familiar brand to me"; "This brand is a well-known brand to many people", $\alpha = 0.87$).

Product knowledge was measured by using three items ("I know this product relatively well"; "I have a lot of experience with this product"; "I know much more about this product than most people", $\alpha = 0.96$) adapted from Ma *et al.* (2014). Consumer's innovativeness was measured by using two items ("I tend to use new products much earlier than others do"; "I enjoy buying a new product that is different from existing products", $\alpha = 0.88$) based on Ma *et al.* (2015). Regulatory focus was measured by using two questions each, two for the promotion focus and two for the prevention focus, using the items based on Ma *et al.* (2014): promotion focus ("My purpose of purchasing the product is to make the most beneficial choice"; "When I make purchases, I always expect to have positive results", $\alpha = 0.84$) and prevention focus ("When I purchase a product, my purpose is to avoid a bad choice"; "When I make a purchase, I always try to avoid potential risks that come with the purchase", $\alpha = 0.79$). Sympathy toward SMEs was measured by asking the following three items ("I feel sympathy for the SMEs"; "I feel sympathetic towards SMEs"; "I feel sympathetic about SMEs", $\alpha = 0.95$) modified from Gruen and Mendelsohn (1986). All questions in the experiment used a seven-point scale (1 – "highly unlikely"; 7 – "very much so").

3.4 Experiment results

To check the manipulation of the entry of the large firm, *t*-tests were performed according to each condition of the entry. The results verified that there was no significant statistical difference between the brand awareness of Ludea and that of Busome in the condition of no entry ($M_{Ludea} = 2.25$, $M_{Busome} = 2.26$, $t = 0.033$, $p > 0.10$). However, in the other condition, Philips had much higher brand awareness value than Ludea ($M_{Ludea} = 2.08$, $M_{Philips} = 5.85$, $t = 22.205$, $p < 0.001$), affirming that this study's manipulation of the entry of a large competing firm was successfully done.

Analysis of covariance (ANCOVA) was performed to verify *H1* by designating purchase intention as a dependent variable, new product type and entry of large competition as fixed factors and designating product knowledge, consumer's innovativeness, promotion focus, prevention focus and sympathy for SMEs as covariates. The result of ANCOVA shows that such covariates as product knowledge [$F(1,157) = 9.546$, $p < 0.01$] and consumer's innovativeness [$F(1,157) = 6.544$, $p < 0.05$] had significant effects. Also, interactions of the new product type × the entry of large competition, which was related to the hypothesis proved to be statistically significant [$F(1,157) = 12.547$, $p < 0.001$]. To examine the hypothesis in a more elaborate manner, multiple comparisons (least significant difference) were performed to compare the mean value differences among subject groups. As confirmed in [Figure 1] for the case of RNP, participants from the group with the condition of the large competitor entry ($M = 3.96$) showed much higher purchase

intentions [F (1,157) = 4.881, $p < 0.05$] than the group with no entry of large competition (M = 3.45). That is to say that purchase intention for RNP with the large firm brand is much stronger than that with SMEs only. On the other hand, for the case of INP, participants from the group with the condition of the large competitor entry (M = 3.25) showed much lower purchase intentions [F (1,157) = 8.197, $p < 0.01$] than the group with no entry of large competition (M = 3.89). That is, the purchase intention for the INP of SMEs showed negative impacts as soon as the competition from the large firm's brand was included. These results all support the outcome of the *H1*.

An analysis was performed using the Process Model 8 (Hayes, 2013) to examine whether or not the uncertainty of both technology and market functions as a mediator variable for interactions of a new product type × entry of a large competition. The analysis was conducted by designating purchase intentions as dependent variable, new product type as independent variable (INP = 1, RNP = 2), the entry of large competition as moderator variable (without large competitor = 1, with large competitor = 2), product knowledge, consumer's innovativeness, promotion focus, prevention focus and sympathy toward SMEs as control variables and designating uncertainty of technology and market as mediator variables.

First, the results of our analysis on the mediation effects of technological uncertainty showed that the main effects of new product type and entry of large competitor and a new product type × entry of large competitor interaction all turned out to be insignificant at Step 1, which designated technology as dependent variable. Next, at Step 2 where purchase intention was designated as dependent variable, technological uncertainty ($\beta = -0.304$, $t = -3.869$, $p < 0.001$), new product type ($\beta = -1.592$, $t = -3.280$, $p < 0.01$), entry of large competitor ($\beta = -1.820$, $t = -3.738$, $p < 0.001$) and a new product type × entry of a large competitor interaction ($\beta = 1.176$, $t = 3.773$, $p < 0.001$) were all significant. That is, technological uncertainty clearly made a meaningful impact on the evaluation of new products by SMEs, yet it could not function as useful mediator variable of a new product type × entry of large competitor interaction. Therefore, *H2a* was rejected.

Next, results of the analysis on the mediation effect of market uncertainty indicated that, in Step 1 where the market uncertainty was designated as dependent variable, new product type ($\beta = -0.943$, $t = -2.211$, $p < 0.05$), entry of large competitor ($\beta = -1.198$, $t = -2.800$, $p < 0.01$) and a new product type × entry of large competitor interaction ($\beta = 0.729$, $t = 2.661$, $p < 0.01$) all turned out to be significant. And for Step 2, where purchase intention was designated as dependent variable, the main effects of market uncertainty ($\beta = 0.689$, $t = 8.894$, $p < 0.001$), new product type ($\beta = -0.948$, $t = -2.255$,

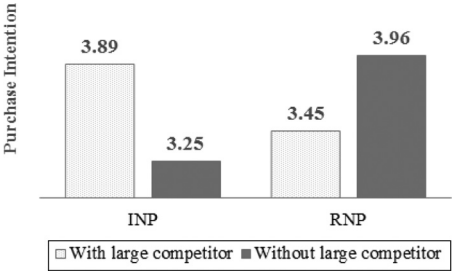

Figure 1.
Influence of new product type and entry of large competitor on purchase intention for SME new products

$p < 0.05$) and entry of large competitor ($\beta = -0.967$, $t = -2.273$, $p < 0.05$) and a new product type × entry of large competitor interaction ($\beta = 0.650$, $t = 2.393$, $p < 0.05$) proved to be significant. Additionally, as far as the conditional indirect effect adopted from Process Model 8 is concerned, the 95 per cent confidence interval of bootstrap for the RNP did not include value 0 (indirect effect = 0.354, 95 per cent CI = [13, 0.65]). However, the 95 per cent confidence interval of bootstrap for the INP did include 0 (indirect effect = −0.148, 95 per cent CI = [−0.45, 0.10]). As for the conditional indirect effect, statistical results become significant only when the confidence interval of bootstrap did not include 0. This result means that the conditional indirect effect is meaningful only for RNPs. Therefore, market uncertainty does function as mediator variable for the interaction effect of new product type and entry of large competitor for the sake of evaluating SME products: *H2b* was accepted.

It should be noted from the results of the analysis that the mediation effect of technological uncertainty was not significant, whereas the main effect of technological uncertainty toward the purchase intention of SME new products ($\beta = -0.304$, $t = -3.869$, $p < 0.001$) was indeed significant. That is, the interaction effect of new product type and entry of large competitor, with regard to the purchase intention for SME products, did reduce market uncertainty and had a positive effect on the evaluation. This interaction did not, however, make any impact on technological uncertainty. Generally, if a large competitor enters the market where there were previously only SMEs, it was easily assumed that SMEs would be victimized and receive large damages, emphasizing mostly negative aspects against large firms. However, as evidenced by the results of this study, entry of the large competitors into the RNP market could have positive impacts upon the evaluation of the SME new products. Hence, entry of large firms into the RNP market will normally reduce the market uncertainty surrounding the particular new product, the benefits of which will positively affect SMEs as well.

4. Conclusion and discussion

4.1 Summary of research results and implications

This study examined the impacts of a new product type and a large competitor's entry upon the purchase intentions for new products of SMEs. The results show that entry of the large competitor will reduce the uncertainty of RNPs and positively affect SME new products; the same entry had negative effects on INPs. Also, the interaction effect of new product type and entry of large competitor with regard to the purchase intention of SME new products were mediated by market uncertainty but not by technological uncertainty.

These findings offer the following academic implications; first, it presented the entry of a large competitor as a new variable that can reduce uncertainties of new products. This study verified that entry of a large competitor is a moderator variable for uncertainties along with the new product types. However, it could also function as a precedent factor for uncertainties. As for mediation effects, the entry of large competitors reduced the market uncertainty for RNPs, which allows us to predict that the same effects can be expected to appear for similar products in particular circumstances. Second, this study made a contribution for expanding the scope of research on product adoption by verifying the mediation effects of market uncertainty for the new product evaluation. This study showed that the mediation effect of technological uncertainty is not significant but that the mediation effect of market

uncertainty is indeed significant. Previous research considered that technological uncertainty was an essential factor affecting the evaluation of new products; yet, our results confirm that market uncertainty can, depending on the market circumstances, play a much more important role for evaluating new products. Therefore, our findings convey important implications from which further research on new products and product innovation may greatly benefit when considering new variables for further research. Finally, this study shows that SME competition against large firms does not always affect negatively for the SMEs because it could also affect positively depending on the new product types. More specifically speaking for the case of RNPs, information that a SME is manufacturing RNPs along with larger competitors could reduce consumers' sense of uncertainty for the RNP, hence making positive impacts on the evaluation of RNPs manufactured by the SME. Our finding that competition between SMEs and large corporations could be deemed necessary at times for industrial growth and mutual coexistence, depending on the market environments, certainly shows new directions for SME research.

This research results can provide practical implications as follows; first, those marketers who are preparing for a new product launch must pay attention to this finding to reduce not only the technological uncertainty perceived by consumers but also the market uncertainty. For instance, one shall strive to reduce market uncertainties by citing reports that convey positive prospects on new product sales and adoption rates and by introducing positive evaluations by other countries and regions where new products are already launched and gaining popularity. Next, those SME marketers who are attempting to sell RNPs shall consider the brand awareness of competitors before setting up the marketing strategy. In case of the RNP market where there are only SMEs, the uncertainties perceived by consumers are so high that they might likely delay the adoption of RNPs altogether. Therefore, it would be much more effective to position the large firms with the potential for market entry as competitors.

4.2 Limitation of the study and future research directions

This study has the following limitations, and further research is deemed necessary to supplement these shortcomings. First, as we examined the new product type and entry of large competitors with regard to the purchase intention of SME new products, we measured purchase intention as a dependent variable. Therefore, impacts of the entry by a large competitor affecting satisfaction over the final choice or upon brand switching behaviors were not properly contemplated at all. Considering this, future research shall look into how these impacts will affect consumers' post-choice satisfaction and how entry of the large competitor will exert comprehensive effects. Next, since innovative new products will create new product categories, we shall consider the sales of innovative new products by large firms with high brand awareness as a brand extension. Even though this study included the factor of a large competitor's entry by using the actual brand of a large corporation, due deliberation upon participants' attitudes towards each brand or upon the fit between brand and product was not given. It will be necessary to pursue further research by controlling such factors, including brand attitude, loyalty and fit that are considered to be important variables for the study of brand extension.

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