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LAUNCH STRATEGY AND NEW PRODUCT INNOVATION: AN EMPIRICAL EXAMINATION IN TAIWAN

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Abstract

To enhance product advantages, the design attributes of a new product, such as its shape, function, and material, must be innovative to attract the attention of consumers, although such features also increase manufacturing costs. Examination and statistical analyses of a sample of consumer electronics products produced the following results: New product type and product launch strategy affect replacement and purchase (RP) decisions through two mediators, namely difference in expected future enjoyment (DEFE) and mental book value (MBV). When faced with multiple new product choices, consumers make different RP decisions. Consumers are more likely to choose products with general enhancements than products with focused enhancements when provided with both options. However, when consumers decide whether to purchase products with alignable enhancements or those with nonalignable enhancements, their choice depends on the product type.

Keywords: Marketing, New product type, product design & development, product launch strategy, replacement and purchase, design strategy

Introduction

When developing new products, firms often enhance existing products and then introduce them as new products to the market (Crawford and

Benedetto, 2014; Ulrich and Eppinger, 2012). For example, after Apple Inc. released the first-generation iPhone in 2007, it subsequently introduced a series of new products in the same line (e.g., iPhone 3G, iPhone 3GS, iPhone 4, iPhone 4S, iPhone 5, iPhone 5S, iPhone 5C, iPhone 6, and iPhone 6 plus). Before release, every new product of Apple Inc. raises consumer speculation regarding the product function and shape, thereby generating a word-of-mouth marketing effect. Although some consumers may have been disappointed about certain new products after they were released, the iPhone has become one of the world's most marketable mobile phones. Another similar example is the ThinkPad notebook jointly created by IBM and Lenovo. After its release, the companies introduced premium options for this line of notebooks, including the Edge series, T series, X series, and various extended models that were anticipated by the market.

Previous studies investigating product coexistence and product exit strategies have mostly focused on exploring the strategies firms employ when launching a new product, as well as the purchase decisions of consumers. For example, Bhat et al. (1998) argued that when making RP decisions, consumers undergo a thinking process differing from when they purchase a new product or repurchase a product; specifically, they focus on comparing the benefits of new and existing products when deciding whether to replace a product. During this process, consumers must also consider the mental book value (MBV) of existing products (Okada, 2006; Claybaugh et al., 2015). Higher MBV indicates that consumers obtain less value from the product and thus consider it to be overpriced. Okada (2001) also determined that the likelihood of consumers replacing a product depends on the additional anticipated utility of a new product compared with an existing product, the cost of purchasing the new product, and the MBV of the existing product (Ku et al., 2010). However, few of these studies have explored the difference in innovation between new and old products or the difference in expected future enjoyment (DEFE; higher DEFE indicates a higher level of discontent) among consumers. Firms should consider these factors when developing products and formulating PLSs.

Accordingly, this study analyzed how different new product types (NPTs) and PLSs affect consumer RP decisions. From the perspective of psychological cost, this study adopted DEFE and MBV as mediating variables to individually explore the effects that NPTs as well as product coexistence and product exit strategies have on consumer RP decisions in order to offer practical suggestions on new-product development, design, and marketing strategies.

Literature Review

The distinction between new and existing products depends on their commonalities and differences. New and existing products are more similar when they share more commonalities and fewer differences (Tversky, 1977). New products can be divided into two types according to whether their enhancements are nonalignable or alignable (i.e., whether new attributes are added; Okada, 2006): (a) Nonalignable product enhancement: New products that undergo this type of enhancement differ completely from the existing ones in functions and benefits, and the structure of their product attributes also differ completely. For example, the Microsoft Xbox 360 game console launched in 2009 differed from the previous generation Xbox in how users can control games. Specifically, the Xbox 360 extended the conventional joystick-based operating mode by incorporating the new Kinect system, a motion-sensing input device that emphasizes the use of body motions and gestures for interactive game control, marking an unprecedented new attribute and a nonalignable product enhancement. (b) Alignable product enhancement: New products are enhanced on the basis of their existing attributes without modifying the structure of these products. For example, Apple Inc. released the first and second generation of the iPad Air in 2013 and 2014, respectively. Both products were enhanced in terms of weight, computing speed, and capacity, although these enhancements were only upgrades to the original attributes. Alignable product enhancement can be divided into two types (Okada, 2006): general enhancement (GE), in which case a new product has all of its major attributes enhanced to the same extent, and focused enhancement (FE), in which case only

part of the attributes are substantially enhanced.

Compared with alignable product enhancements, nonalignable product enhancements involve upgrades that are more obvious (Markman and Gentner, 1993, 1997; Markman and Medin, 1995). Additionally, alignable FEs (i.e., EF1, EF2) differ considerably more than alignable GEs (i.e., EG; Markman and Medin, 1995; Okada, 2006).

Corporate performance is closely related to ongoing success in releasing of new products (Urban and Hauser, 1993). Consumer electronics products have a short life cycle, specifically because of the high competition and rapid technological advancements in this market; moreover, the decreasing demand for consumer electronics due to the development of new technologies further prompts firms to innovate and upgrade products to maintain sales volumes and generate stable profits (Damodaran and Wilhelm, 2005). This topic involves new-product development and design as well as multiple generations of products that are mutually substitutable; accordingly, firms should be cautious when formulating PLSs (Morrthy and Png, 1992; Padmanabhan et al., 1997; Agrawal et al., 2013).

PLSs for existing markets can be divided into product coexistence and product exit scenarios: (a) Product coexistence refers to the presence of multiple generations of the same product existing in the market (Kim et al., 2001). When old and new products coexist, consumer purchase decisions are influenced by product price (Bayus, 1992). Additionally, the pricing strategies for competing products are also affected by the price of coexisting products (Fudenberg and Tirole, 1998). In addition, consumers may tolerate current inconvenience and delay purchasing in anticipation of the value of new products that will be released in the future (Kim et al., 2001). (b) Product exit refers to the withdrawal of an old-generation product from the market coinciding with the release of a new-generation product (Boonea et al., 2001). Firms adopt a product exit strategy mainly to prevent their old and new products from competing with each other (Moorthy and Png, 1992) or to reduce the complexity in currently

available products to enhance marketing effectiveness (Damodaran and Wilhelm, 2005; Quelch and Kenny, 1994).

Consumers typically attribute a product exit to the products themselves (Avlonitis et al., 2000). In other words, when a new product is released, consumers assume that the old products are withdrawn because they fail to correspond with market trends or they are no longer competitive (Harness et al., 1998). Consequently, adopting a product coexistence strategy after releasing a new product indicates that the old products continue to meet a market demand (Moorthy and Png, 1992; Agrawal et al., 2013).

Research Hypotheses

When presented with a new product and needing to make a replacement decision, consumers consider whether to continue using an existing product, purchase a new- generation product, or even replace the old-generation product before its end of service life (Bhat et al., 1998). Subsequently, consumers consider not only the difference in the benefits between new- and old-generation products (e.g., innovation types and advantages of new-generation products), but also the DEFE between existing and new products as well as the psychological costs and MBV of those products (Okada, 2001). When a new generation product's functional attributes are more outstanding, consumers tend to enjoy the new product more than they enjoy their current product, and they are thus more inclined to make a replacement purchase. MBV represents the difference between the original purchase price of an existing product and the cumulative enjoyment derived from the product. If the cumulative enjoyment is low due to limited use frequency or inferior perceived quality, then MBV may fail to reach breakeven, thus impeding the decision of whether to purchase a replacement (Ku et al., 2010). Accordingly, the following hypotheses are posited:

H1: Compared with the innovation level of an existing product, the perceived value of a new- generation product correlates more positively with consumer perceived DEFE between the existing and new-generation products.'

H2: Compared with the innovation level of an existing product, the perceived value of a new- generation product correlates more positively with the MBV of existing products as perceived by consumers.

Product exit refers to the withdrawal of old-generation products from the market along with the release of new-generation products (Boonea et al., 2001). Firms adopt a product exit strategy mainly to prevent competition between old and new products (Moorthy and Png, 1992) or to reduce the complexity in currently available products to enhance marketing effectiveness (Damodaran and Wilhelm, 2005; Quelch and Kenny, 1994). When a product exit strategy is implemented, consumers may regard old-generation products as having been eliminated from the market or being incompatible with market demands because they offer less utility than new products do. In this situation, when consumers compare the functions and initial prices of the existing products, they would find the enjoyment provided by the products difficult to facilitate a sense of breakeven (Ku et al., 2010). Accordingly, this study proposes the following hypotheses:

H3: When new-generation products are released, the type of PLS (i.e., product coexistence vs. product exit) is positively correlated with consumer perceived DEFE between the existing and new-generation products.

H4: When new-generation products are released, the type of PLS (i.e., product coexistence vs. product exit) is positively correlated with the MBV consumers perceived in their old-generation products.

According to mental accounting theory, consumer RP decisions are concerned with psychological cost (Thaler, 2006; Okada, 2001). In other words, when consumers make replacement decisions, their main concerns are related to the difference in the benefits between the new and existing products (Bhat et al., 1998) as well as the psychological cost of owning the older product (Okada, 2006). When a new-generation product has

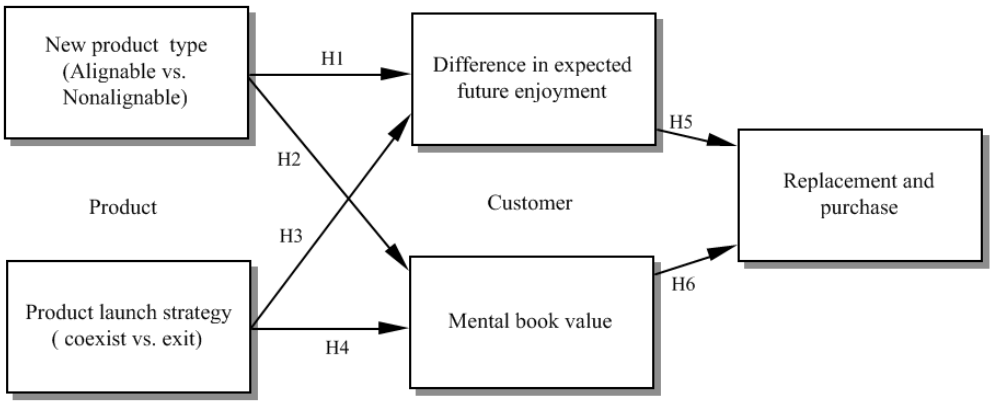

Figure 1: Conceptual framework of this study

superior functionality, consumers can obtain greater enjoyment from that product, and they are thus more inclined to make a replacement purchase. MBV represents the difference between the original purchase price of an existing product and the cumulative enjoyment derived from the product. If the cumulative enjoyment is low due to limited use frequency or inferior perceived quality, then MBV may fail to reach breakeven, thus impeding the decision of whether to purchase a replacement (Ku et al., 2010). Conversely, consumer replacement purchase intentions may increase if they perceive that they have received sufficient enjoyment from the existing product (i.e., the cost is justified). Therefore, this study infers that consumers are more willing to purchase a product replacement when they perceive higher DEFE between old- and new-generation products or perceive low MBV in the old-generation products they currently own. Accordingly, the following hypotheses are posited:

H5: Consumers are more willing to purchase a product replacement when they perceive high DEFE between the old- and new-generation products.

H6: Consumers are less willing to purchase a product replacement when they perceive high MBV in the old-generation products they currently own.

Based on this discussion, this study established a research framework depicting Hypotheses 1–6 (Figure 1):

Research Methods

The outcome variable of the formal experiment was the participants' RP decisions. The independent variables were the NPTs and PLSs. A three-factor between-subjects design was adopted to manipulate the three variables—NPT structures (i.e., alignable vs. nonalignable), types of new product enhancements (i.e., GE or FE), and PLSs (i.e., product coexistence vs. product exit)—to generate eight experimental scenarios. Consumer MBV and enjoyment were adopted as mediators to analyze their paths of influence on consumer RP intention.

The experiment was performed at various consumer electronics retailers. Convenience sampling was adopted to recruit customers visiting and purchasing items from the stores. Upon recruitment, the details of the experiment were explained to the participants. The age of the participants ranged from 19 to 40 years. A between subjects design was adopted for the survey, whereas a within-subjects design was adopted for the two target products.

A total of 400 questionnaires were distributed in the formal experiment (8 experimental scenarios × 50 participants). During the survey, assistants explained the purpose, process, and rules for answering the questions to the participants. After granting consent, various experimental scenarios were presented to the participants for them to answer the questionnaires.

Before the experiment, the participants were required to read the textual and graphic descriptions of the NPTs and then descriptions of the product coexistence and product exit strategies. The assistants answered any questions raised by the participants. Finally, the participants answered the questionnaires about product DEFE, MBV, and RP decisions.

The experiment was conducted through scenario-based simulations. The participants answered the items for each variable after each scenario was described.

Verifying Research Hypotheses

To verify the research hypotheses, this study employed the partial least-squares method, which is an analytical

technique for identifying or establishing predictive models that has particularly higher performance in analyzing causal models between latent variables than in analyzing ordinary linear structural relation models. The partial least-squares method was adopted because it can handle multiple dependent and independent variables, solve problems with multicollinearity, remains robust when handling noisy or missing data, effectively predict latent variables through response variables, handle reflective and formative indicators concurrently, be applied to small sample sizes, and is unrestricted by the type of data distribution (Pirouz, 2006). To estimate and infer the parameters, the questionnaire data were resampled 1,000 times through the bootstrap resampling method.

Table 1 presents the mean, standard deviation (SD), average variance extracted (AVE; in parentheses), and a correlation matrix of the core constructs (i.e., NPT, PLS, DEFE, MBV, and RP) investigated in this study. Table 2 presents these constructs' standardized loading (SL), composite reliability (CR), and AVE. In Table 2, the CR of the core constructs as well as the overall CR are larger than the standard value 0.7 recommended by Hulland (1999), indicating satisfactory internal consistency in the model. In addition, the AVE of the core constructs as well as the overall AVE are larger than the standard value 0.5 recommended by Fornell and Larcker (1981).

All SLs in the model reached the level of statistical significance, each individual loading was greater than other factor loadings, and all the standardized path coefficients were statistically significant (Table 2). Thus, the model demonstrated an acceptable reliability and its R^2 can be used to determine the explained variance of the model.

Finally, the figure also shows that DEFE directly affected RP, with a significant effect size of 0.558 ($p < .05$) and R^2 of 90.7%, supporting H5. However, although PLS directly affected RP, it had a nonsignificant effect size of 0.417 on RP; thus, H6 is not supported. In summary, H1–H5 are supported, H6 are unsupported (Table 3).

Table 1. Correlation matrix and $(AVE)^2$ of all items

	Mean	SD	NPT	PLS	DEFE	MBV	RP
NPT	6.152	1.072	(.805)				
PLS	5.284	1.101	.852	(.795)			
DEFE	6.383	.906	.792	.823	(.813)		
MBV	5.814	.997	.901	.871	.843	(.817)	
RP	5.737	1.023	.873	.809	.897	.836	(.752)

Note: NPT: new product type; PLS: product launch strategy; DEFE: difference in expected future enjoyment; MBV: mental book value; RP: replacement and purchase; AVE^2: Squared average variance extracted (shown in parentheses)

Table 2. Accuracy analysis statistics

Core	Item	*CL*NPT	*CL*PLS	*CL*DEFE	*CL*MBV	*CL*RP	Alpha	SL	CR	AVE
NPT	*NPT1*	*.905*	.883	.874	.837	.851	.897	.909	.949	.869
	NPT2	*.851*	.865	.851	.823	.845				
PLS	*LS1*	.837	*.977*	.841	.823	.856	.891	.875	.868	.857
	LS2	.821	*.861*	.804	.826	.917				
DEFE	*EFE1*	.918	.948	*.967*	.915	.931	.886	.950	.986	.899
	EFE2	.904	.916	*.841*	.907	.941				
MBV	*MBC1*	.803	.835	.849	*.916*	.787	.871	.857	.874	.867
	MBC2	.785	.817	.793	*.923*	.823				
RP	*RP1*	.926	.953	.941	.943	*.983*	.876	.932	.963	.885
	RP2	.914	.948	.931	.870	*.972*				

Notes: *CL*: Cross loading; SL: Standardized loading; CR: Composite reliability; AVE: Average variance extracted.

Table 3. Hypothesis verification results

Hypothesis	Effect	Verification status
H1	PET → DEFE	Supported
H2	PET → MBV	Supported
H3	PLS → DEFE	Supported
H4	PLS → MBV	Supported
H5	DEFE → RP	Supported
H6	MBC → RP	Unsupported

Notes: PET: Product enhancement type; DEFEL Difference in expected future enjoyment; MBV: mental book value; PLS: Product launch strategy.

Discussion and Conclusion

Regarding the PLSs, this study found that consumers perceive a higher DEFE between existing and new products in a product exit scenario than in a product coexistence scenario, and this result applies to both new products

with different alignable PETs (i.e., GE vs. FE) and to new products with different enhancement structures (i.e., alignable vs. nonalignable). These results show that existing products provide less value and exhibit a lower level of price worthiness compared with new products. Moreover, the overall average DEFE was higher than the overall average MBV, indicating that in terms of PLS, customer- perceived DEFE has a stronger effect on consumer RP decisions than MBV does. This result accords with the verification results for H6. In other words, firms can apply suitable PLSs to highlight the expected advantages of a new product to justify consumer RP decisions. When consumers accept the appeal for the necessity of an upgrade, they are less likely to feel doubtful because of MBV and proceed with making a purchase. These results can modify and strengthen the arguments about consumer product replacement decisions proposed by Okada (2006) and Ku et al. (2010).

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