

# *Impact of Consumer Innovation on New Products Adoption Based on Scenario Experiments*

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**Abstract**— Strategies of innovation and brand are critical to the market success of new products. It is important to clarify how they jointly have impact on consumers' adoption for new products. The new product innovation is divided into two types "radical innovation" and "incremental innovation" which are combined with the brand strategies of "new brand" and "brand extension" to construct four scenarios. Through the scenario experiment method, it is found that the relationships between two dimensions of consumer innovation that are sensory innovation and cognitive innovation and consumer willingness to adopt new products are moderated by the four scenarios. The paper has reference meaning for researches on new product development strategies and innovative consumer behavior.

**Keywords**—consumer innovation; innovation strategy; brand strategy; new product adoption

## I. INTRODUCTION

Brand strategy is an important factor driving the success of new products. In order to name new products, companies need to choose between creating a new brand and brand extension strategy. Consumer innovation theory suggests new brand strategy can cater to the psychological, impulsive and risky consumer needs [1], while brand extension theory suggests existing brands can reduce the perceived risk of new product purchase. Contrasting to new brands, consumers are more welcoming to established brands, which can reduce the uncertainty of buying new products [2]. However, not all consumers have the same purchasing preferences because consumer innovation will affect the adopting decision for brands. While a lot of ordinary consumers tend to existing brands, but innovative consumers are fond of new brand products [3].

Methods of new product innovation include incremental innovation and radical innovation, in which radical innovation will greatly change original attributes of products, resulting in more uncertainty in terms of function, quality, and usability. Therefore consumer perceived risk is high. For example, for AMOLED-made mobile phone folding screen, consumers are not sure the mobile phone screen's durability, operability and visual effect, so it is subject to high psychological risk when making purchasing decisions. If the perceived risk exceeds the acceptable level of the individual consumer, then the consumer's brand choices will meet difficulties.

Based on the above analysis, this paper combines two different brand strategies (new brand and brand extension) and innovative methods (radical and incremental) to construct four scenarios, and examines consumer innovation how to influence new products adoption under different scenarios. The thesis will provide a theoretical reference for new product development and brand strategies for firms.

## II. THEORETICAL BASIS AND HYPOTHESIS

It has been studied that consumer innovation is a personality trait, which is the innate inherent tendency of consumers to experience new different stimuli [4]. The intrinsic innovation of consumers helps identify innovators, but research conclusions on the relationship between it and innovative behavior of products adoption are not consistent [5]. Some scholars believe that it should be combined with a specific product domain, that is, consumers tend to collect related information about product innovation in specific product category areas. This tendency stems from interaction between intrinsic consumer innovation and the product categories they are interested in [6]. Domain innovation is the most effective indicator for measuring the consumer innovation in a specific product category. Although consumer innovation is often measured as one dimension construct in research, in recent years some scholars have considered it to be multidimensional. Subin argued that consumer innovation includes two dimensions: sensory innovation and cognitive innovation [7]. Sensory innovation refers to the tendency of consumers pursuing new experiences in order to stimulate their senses or feelings. Cognitive innovation refers to tendency of consumers stimulating their minds and seeking new experiences. Liu also confirmed that consumers' innovation has two dimensions including sensory innovation and cognitive innovation through the data of domestic consumers [8]. The two-dimensional construct is conducive to distinguishing between different types of consumer innovation, and it is also helpful to explain why consumers with similar levels of innovation have different behaviors for adopting new products in the same situation. Therefore, this paper takes in their research to regard consumer innovation as a two-dimensional structure containing sensory innovation and cognitive innovation. Sensory innovators tend to recommend new products to their social network, enjoying new products' freshness, a sense of temptation to take risks. Cognitive innovators who are more rational in the adoption of new products collect relevant detailed information about new

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products and make judgments on their own product knowledge. For highly innovative products, new brands may not be attractive to consumers, but even reduce consumers' willingness to adopt them. Even early adopters may reduce their perceived risk by purchasing similar products with well-known brands. According to the different combinations of B&I (brand - innovation), the paper sets four scenarios. And in different scenarios, the impact of sensory and cognitive consumer innovation on the willingness to adopt new products is analyzed in turn, and accordingly the hypotheses are put forward.

- Scenario 1: New brand – radical innovation.
  - H1a: Sensory innovation has no significant impact on the willingness to adopt new products.
  - H1b: Cognitive innovation is positively related to the willingness to adopt new products.
- Scenario 2: New brand – incremental innovation.
  - H2a: Sensory innovation is positively related to the willingness to adopt new products.
  - H2b: Cognitive innovation is positively related to the willingness to adopt new products.
- Scenario3: Brand Extension - Incremental Innovation
  - H3a: Sensory innovation is negatively correlated with the willingness to adopt new products.
  - H3b: Cognitive innovation is negatively correlated with the willingness to adopt new products.
- Scenario 4: Brand Extension - Radical Innovation
  - H4a: Sensory innovation is positively related to the willingness to adopt new products.
  - H4b: Cognitive innovation is positively related to the willingness to adopt new products.

### III. RESEARCH DESIGN

#### A. Research Samples and Variable Measurement

In this paper, college students were selected as research subjects and smart phones as new product samples through the preliminary investigation. The number of mobile phones using "Huawei", "Samsung", "Xiaomi" and "OPPO" among college students is relatively large. Therefore, this article pointed "Huawei" as a well-known brand and fictionalizes a meaningless word "HICO" as the name of the new brand. By collecting data on relevant smartphone forums, the paper set some technical indicators to distinguish between incremental and radical innovation, for example, CPU frequency, camera pixels, display resolution, flash memory capacity and other indicators to characterize incremental innovation; CPU chip, display material, mobile phone unlocking method, mobile phone battery material, software system and other technology indicators to characterize radical innovation.

The measurement of consumer innovation draws on the scale of Subin [7] and Liu [8], and the questionnaire statements are adjusted according to this research including two dimensions and six items. The sensory innovation measurement topics are like such statements: I like to try new brand smartphones; I like to browse new smartphone ads; I like to share the feeling of using new smartphones with friends. The cognitive innovation measurement topics are including: I like to know the technical information of smart phones; I like to learn and master the changes and characteristics of new smart

phones; I like to compare new smart phones among different brands. The willingness to adopt new products learns from the consumer adoption vector table of Chaniotakis [9]. There are two measurement items: I am willing to buy this new type of smart phone; I would like to recommend my relatives and friends to try this new type of smart phone. All variables were tackled with the Likert 7-point scale, indicating "very disagree" to "very agree".

#### B. Data Collection

This article took total of 492 students from sixteen classes as consumer samples, and four classes were randomly assigned to a scenario. A total of 485 questionnaires were collected through questionnaires on site in which 472 were valid questionnaires. The effective ratio of samples was 97.3%. There were 115 questionnaires in scenario 1, 121 questionnaires in scenario 2, 118 questionnaires in scenario 3, and 118 questionnaires in scenario 4. The age of the investigators ranged from 19 to 24, with males accounting for 36.3% and females accounting for 63.7%.

### IV. DATA ANALYSIS AND RESULTS

#### A. Reliability and Validity Analysis

The scales used in this paper are based on mature questionnaires developed by domestic and foreign scholars to assure its high quality. SPSS17.0 was used to analyze the data statistically. Cronbach's  $\alpha$  value was employed to test the reliability of variables. Cronbach's  $\alpha$  values of consumer sensory and cognitive innovation are 0.712 and 0.784 respectively. The overall value of innovation of consumers is 0.743 and the value of new product adoption is 0.825, both greater than 0.7, indicating that the variables have good reliability. Bartlett and KMO tests were carried out on the variables. The results showed that the correlation probability by Bartlett test was less than the significance level of 0.05, and the KMO values were all greater than 0.5, indicating that the scales had good validity.

The paper tested the sensory innovation and cognitive innovation of consumer samples assigned to four different scenarios to see if there is significant deviation. The analysis results showed that there is no significant deviation in the sample data, and that the consumer innovative mean is close to the central value. The paper also verified the familiarity between the two brands and the degree of product innovation. Likert 7-point scale was also introduced, from 1 to 7 respectively, indicating "very unfamiliar" to "very familiar" and "very low degree of innovation" to "high degree of innovation",  $M_{Hua} = 6.52$ ,  $M_{HICO} = 1.58$ ,  $p < 0.01$ ;  $M_{incremental} = 2.66$ ,  $M_{radical} = 6.29$ ,  $p < 0.01$ , indicating that the four scenarios identified in this paper are significantly different.

#### B. Data Processing and Results Discussion

To validate the hypothesis of this study, regression analysis was performed with spss17.0 software. The results are shown in TABLE I.

**TABLE I. REGRESSION RESULT**

Variable	Willingness to Adopt			
	s1	s2	s3	s4
Age	0.102	0.092	0.121	0.096
gender	0.115	0.243*	0.272**	0.351**
Sensory innovation	0.221	0.457***	-0.362**	0.351**
Cognitive innovation	0.461***	0.165	-0.505***	0.385**
Adjusted R2	0.280	0.422	0.450	0.355

P<0.05, \*\*P<0.01, \*\*\*P<0.001

As data shown in TABLE I, in scenario 1, there is no significant relationship between consumer sensory innovation and the willingness to adopt new products ( $\beta=0.221$ ,  $p>0.1$ ), and a significant positive relationship between cognitive innovation and adoption intention ( $\beta=0.461$ ,  $p<0.001$ ). Explain that for radical innovative products, if adopting a new brand strategy, sensory innovation consumers feel more risky, so it is difficult to arouse their desire to buy, even for more innovative consumers, while the willingness of cognitive innovation consumers can be successfully evoked. H1 is proved. In scenario 2, consumer sensory innovation has a significant positive impact on the willingness to adopt new products ( $\beta=0.457$ ,  $p<0.001$ ), indicating that for incremental innovation products, if employing a new brand strategy, sensory innovative consumers tend to buy this product, H2a passed verification. Inconsistent with the expected assumptions, cognitive innovation has no significant effect on the willingness to adopt new products ( $\beta=0.165$ ,  $p>0.1$ ), H2b has not been verified. It indicates that cognitive innovators mainly emphasize technology and performance of new products and not very concern about the brand name. In scenario 3, the two dimensions of consumer innovation have a significant negative impact on the willingness ( $\beta_1=-0.362$ ,  $p<0.01$ ;  $\beta_2=-0.505$ ,  $p<0.001$ ), indicating that for incremental innovation products, brand extension strategy impeded the purchasing desire of innovative consumers, so H3 is proved. In scenario 4, the two dimensions of consumer innovation have a significant positive impact on the willingness ( $\beta_1 =0.351$ ,  $p<0.01$ ;  $\beta_2=0.385$ ,  $p<0.01$ ), indicating that for radical innovative products, brand extension strategies will promote the willingness of innovative consumers to adopt, so H4 is proved. Therefore, most of the hypotheses proposed in the paper have been verified, which confirms that the combination of brand strategy and innovation methods constitutes an important situational factor for consumers to choose new products.

## V. CONCLUSION

This paper mainly verifies the influence two dimensions of consumer innovation on the intention of adopting new products in different brand-innovation strategy combinations. For more innovative consumers, a combination of brand extension-radical innovation strategy will help them prompting their intentions for new products, while a combination of brand extension-incremental innovation strategy will weaken their intention to adopt new products. The combination of new brand-radical innovation strategy can increase the willingness of cognitive innovation consumers to adopt new products, while the new brand-incremental innovation strategy portfolio can increase the sensory ones' intent for new products.

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