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## Diagnosticity of Product Names and Product Evaluations in M-Shopping

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### Abstract

*With the limited product information available in the m-shopping context, product-naming strategies affect consumer choices by expressing the key product features or the brand's images. Given the increasing dominance of the mobile commerce in consumption across various product categories, few studies have examined the role of product naming in consumer choices in the m-shopping. In filling the research gap, this study empirically analyzes the influence of the perceived diagnosticity of product names in m-shopping on consumer attitude towards the product. Moreover, the study tests the moderating influences of the individual characteristics of consumers (i.e., age, gender, and m-shopping experience) in the dynamics of the perceived diagnosticity impacting the product evaluations. The results of the study using an online survey reveal that the perceived diagnosticity of the product names significantly increases consumer attitude towards the product. Additionally, the moderating effects of gender, age, and m-shopping experience are all found significant: (1) The positive influence of the perceived diagnosticity of the product names is greater for males than for females. (2) The older the respondent, the more statistically significant the positive influence on diagnosticity. (3) The more respondents having m-shopping experience, the more positive the impact of the diagnosticity. Implications and limitations of the study are discussed.*

**Keywords:** *diagnosticity of product names, m-shopping, age, gender, shopping experience*

### 1. INTRODUCTION

The penetration rate of smartphones to domestic adults has expanded to greater than 90%, and mobile shopping (hereafter m-shopping), which allows users to enjoy shopping without spatial restrictions, continues to grow. The m-shopping environment presents very limited information to consumers, compared with the traditional offline (in-store) shopping environment or even with the online shopping environment. In particular, one of the most distinctive elements of the m-shopping environment is the absence of in-store elements that can stimulate the five senses, because the entire shopping experience occurs within the small-sized screen of the smartphones [1, 2]. On mobile applications, consumers judge product information from small photos and descriptions presented on a limited-size mobile screen [3, 4]. Thus, the importance of information provided in this limited shopping environment becomes inevitably greater [2, 5, 6]. With the limited product information available in the m-shopping context, product-naming strategies effectively affect consumer choices by expressing the key product features or the brand's images. Given the increasing dominance of the mobile commerce in consumption across various product categories, few studies have examined the role of product naming in consumer choices in the m-shopping [1, 3, 7].

In filling the research gap, the current study empirically analyzes the influence of the product-naming

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strategies in m-shopping on consumption. More specifically, this research tests the role of the diagnosticity of the product names on consumer attitude towards the product [8, 9]. Moreover, the influence of various marketing cues on online store environments can vary greatly, depending on the individual psychological and social characteristics of consumers [10, 11]. Therefore, this study explores the effects of consumer age [12, 14], gender [15], and m-shopping experience [16] with respect to their moderating effects on the influence of the diagnosticity of product names on consumer attitudes. The results of the study will provide meaningful information to businesses and sales representatives about the practical approach to formulating fashion product naming strategies in m-shopping.

## **2. LITERATURE REVIEW**

### **(1) Product-Naming Strategies**

The product name is an important touching point between companies and consumers [17]. Since the 1980s, when awareness of the importance of brands spread most widely, the scope of product-naming strategies also expanded [18]. In the industry, brand and product names are critical corporate assets [19], and they differentiate their products from others' [19]. Product names provide immediate clues about product quality and metaphorical attributes [17], and they further shape product credibility [20]. Names build brand image and brand equity [19, 21]. Product names can be effectively used as means of communication [18]. Brands and product names make it easier for consumers to comprehend product properties and form favorable metaphorical images that influence their purchasing decisions [20]. As such, product-naming strategies are critical to marketing and have been leveraged for new product launches and brand strategies.

Good product names should describe the value and characteristics of a product. It should be easily recognized, memorized, and recalled, and it should remain consistent with the product and the corporate image. A product name is legally protectable, and, as mentioned, it facilitates the functions of communication and identity [22, 23]. According to Mahaeswaren [23], a product name provides extrinsic cues associated with the product's qualities and affect consumer decision-making processes. This occurs when consumers assess the quality of the product based on the name, even when they lack commiserate information about the product's intrinsic properties. Product names serve as standards for decision making. Ahn and Yu [24] offered a powerful perspective about product names and provided specific information about measuring the relationship between levels of brand awareness and naming.

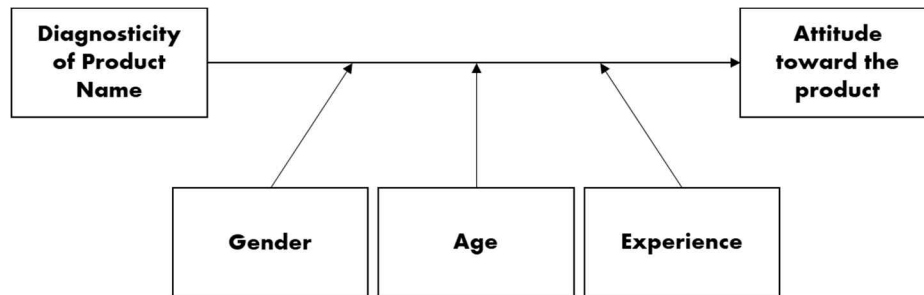
### **(2) Diagnosticity of Product Names**

Product-naming strategies for m-shopping venues have evolved, providing more clues about detailed product functions and emotional information. Product-name diagnosticity refers to the degree to which the name provides information that helps consumers envision product attributes (9). Diagnosticity plays a role in providing specific information about the quality of a product [25, 26]. It further provides useful information for inferring the quality and characteristics of a product without specifically or extensively describing it [8]. UNIQLO, a fashion company, used a product-naming strategy that clearly and intuitively characterized the product's characteristics. Their warm and sophisticated functional innerwear, "HeatTec," is an example. Another company, Style Nanda, applied informational naming strategies for their fashion products, including "Soft Slim Touch Fever Span Leggings" and "Charles Photochromic Charm Fit Wide Pants." Thus, lay consumers do not need to reference detailed information to make purchase decisions. This strategy is not only applicable to the fashion industry, it is also effectively applied to the full range of m-shopping environments.

This study postulates that the perceived diagnosticity of fashion product names in the m-shopping environment influences consumer product evaluation. With m-shopping, the diagnosticity of the product name is important [9]. Mobile consumers have a stronger efficiency orientation because of the limited available sensory experience [6,11,27]. Therefore, diagnosticity is expected to have a positive effect in these

environments. Prior studies have shown that such diagnosticity had a significant impact on consumer product evaluation [6,9]. Yoh [6] noted that there was a significant difference in expected price and product evaluation according to the characteristics of the product name and the color name in the m-shopping environment. Accordingly, the following hypothesis is established:

H1. Perceived diagnosticity of a product name in m-shopping increases consumer attitude towards the product.



**Figure 1. Conceptual model**

### (3) Gender

The impact of the diagnosticity of fashion product names on consumer attitudes, as it relates to m-shopping, will vary depending on gender. Gender includes biological, psychological or social characteristics and implies different gender-role perceptions across cultures [28]. Although gender equality has been long-discussed in society, and the gap between social roles between women and men has diminished recently, gender still serves as an important marketing demographic [15]. Gender differences have been widely discussed in terms of information processing [15] and emotional expressiveness [29]. More specifically, research has shown that male shoppers are more goal-oriented than female shoppers. At the time of shopping, males tend to be more active in searching for prices and relevant information. Women, on the other hand, think of shopping as an opportunity to relax and spend time with friends, whereas men increasingly perceive shopping as a chore. Gender schema theory argues that male schemas are associated with higher levels of success and performance than those of female genders [28, 30]. The positive impact of a diagnostic product name is expected to be stronger with male consumers. Wu, Wu, and Chan [(31) found that females tended to build credibility from the environmental factors present in retail stores. According to Borges, Babin, and Spielmann [32], females tended to value peripheral cues more than the central cue of consumption. On the basis of the literature, it is expected that the effect of diagnosticity of product names on consumption will vary by gender. More specifically, the effect of perceived diagnosticity will become greater for females than for males. In sum, the following hypothesis is set:

H2. Gender moderates the impact of perceived diagnosticity of a product name on consumer attitude towards the product in m-shopping.

### (4) Age

Age will moderate the effect of perceived diagnosticity of product names on m-shopping. The effect of product-naming strategies on consumption is influenced by age [12]. Additionally, age has been widely used as a moderating variable in both differential analysis of variables and in analyzing moderating effects of relationships in consumption [13]. Past literature documented that consumer attitudes and purchasing

behaviors in m-shopping as well as the technology adoption patterns significantly vary with age [12, 13, 33]. According to San-Martín et al. [33], young people tend to integrate mobile phones into their daily lives while older people generally use them for basic functions. Natarajan et al. [12] found that consumer age has a significant moderation role in the intention to use m-shopping applications and the effect of perceived ease of use was strong on usage in the case of the young respondents. San-Martín et al. [33] reported that entertainment had a higher importance for young adults while subjective norms are crucial for adults in m-shopping contexts. The prior research documenting that young consumers tend to have higher usage of new technology when compared to older consumers. Based on the literature, it can be expected that the effect of perceived diagnosticity of a product name on consumer attitude towards the product in m-shopping will become greater for younger consumers than for elder consumers. Therefore, the following is suggested:

H3. Age moderates the impact of perceived diagnosticity of a product name on consumer attitude towards the product in m-shopping

#### (5) Consumer Experience

Consumer experience with m-shopping moderates the influence of diagnosticity of product names on consumption. Maheswaran [34] argued that consumer experience may influence the effectiveness of product-naming strategies. The higher the interest, involvement, and expertise of consumers in the purchase and selection of specific products, the greater their ability to process information and the greater their understanding of preferences [34]. Similarly, consumers having high cognitive preferences prefer products with unique names, whereas those with lower cognitive desires preferred products with plain naming. Furthermore, consumers having high unique desires preferred products with unique naming, whereas those with lower unique desires preferred plain names. Kim [35] showed that a diagnostic product name had more influence on consumers having low product involvement. Satisfaction, therefore, increases because diagnostic product naming lowers perceived risks and increases perceived benefits [35]. According to a previous study by Kim [35], consumers having less knowledge and lower interests displayed a low level of information search, making it clear that product naming could become a diagnostic variable. Credibility could, therefore, be built with respect to increasing the positive attitudes about a product. Consumers having a great deal of shopping experience are expected to better understand risks, thus facilitating the favorable use of the available information. Therefore, when shopping for the same fashion product, the emotional responses to the product will vary according to the consumer's emotional perception of the name and the metaphors inspired by it. Specifically, if the product name is highly diagnostic, consumers will project a higher value and make more positive evaluations than if the product had a mundane moniker. Thus, the following hypothesis is established.

H4. M-shopping experience moderates the impact of perceived diagnosticity of a product name on consumer attitude towards the product in m-shopping.

### 3. METHODS

#### (1) Pretests

The purpose of this study is to contribute to how much the color of fashion products reveals to consumers' evaluation of products and to examine the effects of moderating effects of gender, age, and shopping experience. In marketing, it is necessary to produce stimulating product information that reflects various levels of metaphor related to the product name. This concept is a major variable of this study. To do this, I created a stimulus for a virtual product. Several preliminary studies have been conducted to determine the levels of consumer stimulus perception. The main purpose of the preliminary survey was to set up two suitable fashion product stimulants with significantly different levels (low and high) of diagnostics based on product names.

First, women's suit shirts were selected as products that could be purchased via m-shopping and added to the preliminary survey. Next, product names actually used in existing m-shopping venues were examined. Based on these, we developed several suitable product name cases for the selected shirt design. Then, the perceived diagnostics of each product name were measured using an online survey of 30 participants. Diagnoses of perceived product names were measured on a total of three items using a 5-point Likert scale based on relevant statistics: "The name of this product is factual," "The name of this product contains a clear description of the product," "The name of this product describes the actual product information." Preliminary surveys showed a statistically significant difference in perceived metaphor for low-metaphor stimulants ( $M_{low} = 2.21$ ,  $M_{high} = 3.45$ ,  $F = 19.923$ ,  $p < .05$ ).

Based on the results of the preliminary survey, virtual fashion product information of two online shopping venues was created. Except for the product name, all information about the product was the same. The questionnaire was built by distinguishing between the color product name and the color product name, evaluating the absence of the color name of the fashion product.

## (2) Main study

The survey was conducted online, and the study sample included the men and women with at least one mobile app shopping experience in the past year. For the question of fashion involvement in the questionnaire, 5 items were extracted from previous studies. In the survey, 3 items were used to measure the attitude toward the product. All items, except for the demographics, used a Likert 5-point scale. For this study, the sample included survey information from people aged 20–30 with plenty of m-shopping experience. Data were analyzed using SPSS v.23.0. First, frequency analysis was conducted to determine the demographic characteristics of the study subjects. Second, the reliability and validity of cognitive desire and attitude towards the product were measured. Third, hierarchical regression analysis was conducted to determine whether gender and cognitive desire had a moderating effect on attitude towards products.

## 4. RESULTS & ANALYSIS

### (1) Preliminary analysis

Of the total 404 respondents, 181 were males (44.8%) and 223 females (55.2%). 75.5% of the total respondents, or 305, were in their 20s and 72 respondents, or 23.2%, were in their 30s. 223 unmarried people (91.6%) were overwhelming, and a total of 87 respondents (21.5%) said that their average monthly household income was over 8-million won. 234 (57.9%) were college graduates and 193 students (47.8%). Consumers received their fashion product information from mobile (41.6%), online (38.9%), and in stores (9.0%). Apparel shops were mobile (20.2%), online (38.2%), and direct store visits (40.4%). Respondents averaged two monthly apparel purchases and average monthly fashion product spending was 100,000 won. According to the frequency analysis on m-shopping, consumers in their 20s and 30s had an average number of clothing purchases per month (27.8%) and 2 (23.3%). 30% of the respondents answered that their frequency of m-shopping was more than usual, and yes (29.2%) had the highest frequency (Table 1).

**Table 1. Demographics of survey participants (n=404)**

		n	%
<b>Age</b>	20-24	107	26.5
	25-29	198	49.0
	30-34	70	17.3

	35-39	2	5.9
	40 or over	54	1.2
<b>Gender</b>	Male	181	44.8
	Female	223	55.2
<b>Marital Status</b>	Married	34	8.4
	Unmarried	370	91.6
<b>Household income</b>	1,000,000 won or lower	20	5.0
	~1,999,999 won	88	21.8
	~2,999,999 won	49	12.1
	~3,999,999 won	59	14.6
	~4,999,999 won	34	8.4
	~5,999,999 won	28	6.9
	~6,999,999 won	11	2.7
	~7,999,999 won	28	6.9
	8,000,000 won or higher	87	21.5
<b>Education</b>	Middle school graduate or lower	0	0
	High school graduate	128	31.7
	Community college/university graduate	234	57.9
	Graduate school or higher	42	10.4
<b>Occupation</b>	Professionals	80	19.8
	Self-employed	27	6.7
	Office worker	45	11.1
	Student	193	47.8
	Services	35	8.7
	Others	24	5.9

(2) Validity and Reliability

In order to verify the validity and reliability of the question, exploratory factor analysis and Cronbaha’s alpha analysis were conducted. Corporate transparency, credibility, purchase intention, and corporate ethics were all categorized as independent factors. All scores for Average Variance Extracted (AVE) are higher than the squared correlation between the constructs, showing a reasonable discriminant validity [36]. Similarly, the mean variance (AVE) extracted from the constructs met the requirement levels .7 to .5 that met the requirements level [36]. The Cronbach’s alpha value calculated for the reliability of the question was 0.72 for diagnosticity and 0.80 for the attitude towards the product. The Cronbacha alpha values calculated for the reliability of the questions were all over .7, and the reliability was found to be appropriate.

(2) Hypothesis Testing

**Effect of diagnosticity on consumer attitudes (H1).** The results of the diagnostic product names (Table 2) showed a statistically significant positive effect on attitude towards the product ( $\beta = .144, t = 2.872, p < .001$ ). Therefore, hypothesis 1 is supported. In other words, if the product information in the m-shopping environment provided to survey participants used a highly diagnostic product name, the participants adopted a more favorable attitude towards the product than if they had used a low diagnostic product name.

**Moderation of gender (H2).** Hypothesis 2 suggested that the moderating effect of respondents’ gender would affect the product-name diagnosticity on consumer's attitude towards products. To verify this, hierarchical regression analysis (Table 2), in which diagnosticity was an independent variable, attitude towards products were dependent variables, and age and diagnosticity were interactive variables, showed that gender had a significant moderating effect ( $\beta = -.392, t = -2.287, p < .05$ ). Because the data was coded as 1 for male respondents and 2 for female respondents, the negative value of  $\beta$  indicates that the positive

influence of product name diagnosticity on male respondents was greater than that on female respondents. This supports the Hypothesis 2, stating that male gender would have a stronger regulatory effect on product evaluation of product name diagnosticity.

**Moderation of age (H3).** Hypothesis 3 suggested a moderating effect of age between product name diagnosticity and product attitudes. To verify this, hierarchical regression analysis (Table 2), with diagnosticity as an independent variable, attitude towards product as a dependent variable, and age and diagnosticity as an interactive variable (Table 3), showed that the effects of the respondents' age was significantly static. Effect ( $\beta = 1.035$ ,  $t = 2.936$ ,  $p < .01$ ). Thus, Hypothesis 3 was supported.

**Moderation of m-shopping experience (H4).** Hypothesis 4 predicted the moderating effect of respondents' m-shopping experience on the effect of product name diagnosticity on attitude towards products. The result of hierarchical regression analysis (Table 2), where diagnosticity was an independent variable, attitude towards product was a dependent variable, and m-shopping purchase experience was an interactive variable, showed a significant static control effect ( $\beta = .404$ ,  $t = 2.367$ ,  $p < .05$ ). Thus, Hypothesis 4 was supported.

**Table 2. Regression analysis (dependent variable: attitudes toward the product)**

Step		$\beta$	t	F	R <sup>2</sup> (Adj. R <sup>2</sup> )
1	Education	.192***	3.881	6.867***	.064 (.055)
	Occupation	.081***	1.659		
	Income	.162	3.323		
	Marriage	.009**	.192		
2	Education	.186***	3.749	5.883***	.069 (.057)
	Occupation	.069***	1.381		
	Income	.162	3.322		
	Marriage	.023**	.454		
	Diagnosticity	.069	1.374		
3	Education	.266***	4.979	6.286***	.113 (.095)
	Occupation	.129***	2.549		
	Income	.093*	1.850		
	Marriage	-.077	-1.288		
	Diagnosticity	.022	.428		
	Gender <sup>a</sup>	.063	1.247		
	Age	-.196**	-2.873		
M-shopping Experience	.144***	2.872			
4	Education	.255	4.688	6.611****	.156 (.133)
	Occupation	.104	2.069		
	Income	.100	2.008		
	Marriage	-.024	-.394		
	Diagnosticity	-.964	-2.501		
	Gender <sup>a</sup>	.189	2.658		
	Age	-.394	-4.016		
	M-shopping Experience	.042	.578		
	Diagnosticity × Gender	-.382*	-2.287		
	Diagnosticity × Age	1.035**	2.936		
	Diagnosticity × M-shopping Experience	.404*	2.367		

Note. <sup>a</sup>Gender is coded as 'male=1' and 'female=2'

\* $p < .05$ , \*\* $p < .01$  \*\*\* $p < .001$

## 5. DISCUSSION AND CONCLUSION

Among the various marketing strategies that are specialized and used in mobile store environments, the product-naming strategy is intended to deliver product information to consumers by expressing the brand image, product design, and material characteristics implicitly in the product name. This study empirically analyzed the influence of perceived diagnosticity on consumer attitude towards a product and the influence of age, gender, and shopping experience. As a result, the diagnosticity of the product name had a positive effect on attitude towards the product. In other words, if the product information in the m-shopping environment provided to the survey participants used a highly diagnostic product name, the participants adopted a more favorable attitude towards the product than if they had seen a low diagnostic product name.

On the other hand, the moderating effect of gender on the relationship between product name diagnosticity and consumer attitudes showed a significant negative effect, meaning that the positive influence of product name diagnosticity on male respondents was greater than that on female respondents. Respondent's age also had a significant static control effect. This means that the older the age, the stronger the control effect on the product evaluation of product-name diagnosticity. Finally, the analysis results showed that the moderating effect of respondents' m-shopping experience on the effect of product-name diagnosticity on attitude towards the product was also significant. Thus, the more respondents having more m-shopping experience, the more positively the positive impact of the diagnosticity of the product name presented in the virtual environment.

Academically, the results of this study suggest the effects of product naming and related consumer personal characteristics through empirical research, which is rare in the literature [11], which has been theoretically approached from the linguistic and semiotic perspectives [8, 26). Additionally, research on product naming in the m-shopping environment led to previous studies on the effects of age, gender, and experience and the influence of m-shopping retail environments and information provided [1, 7]. First, the positive effect of the diagnostic name of the product name identified in this study was consistent with previous studies by Ahn and Yu [24]. However, male respondents showed stronger diagnostic positive effects of product naming than did female respondents, which is consistent with previous studies that discussed the differences in shopping patterns by gender [31, 32].

The significant influence of age in this study is consistent with previous studies [13, 14]. The diagnostic product name had a different attitudinal effect toward the product according to respondent age. The greater the consumer's age, the lower the experience level and familiarity with mobile-app shopping. It can be inferred that the diagnostic product name relies on providing specific product information to determine the quality and thus consumer attitude towards the product [25]. Additionally, the lower the consumer's age, the higher the level of experience and familiarity with mobile-app shopping. Thus, the perceived risk was lower with age. The purchase of products in the mobile-app shopping environment was a metaphor for the abstract information. It can be interpreted that the preference for the higher. On the other hand, the more experienced the consumer, the stronger the positive impact of the diagnosticity of the product name within the same context as related previous study results. According to a previous study by Kim [35], low-involved consumers had a low level of information exploration on products. Therefore, using the information of a certain fashion product as a diagnostic product name clearly and conveniently displayed the advertising effect and reliability of the product. It created positive attitude towards the product.

As practical suggestions, significant strategies for product names identified in this study are available. As the number of smartphone users increases, consumers can more easily and quickly consume certain products using mobile apps. However, because the mobile-app shopping environment has a limited interface for providing product information, when a consumer wants to purchase an unfamiliar product whose information is not diverse, the product name can be used as a good communicator of product information [8]. Companies should vary their product-naming strategies to account for the target consumer age. Older consumers need to see fashion information as a diagnostic product name in a less familiar mobile app shopping environment to



help them search for information and induce positive attitudes. It is also expected that targeted consumer brands for younger people will use a fashion product's information as a metaphorical product name to create a positive attitude towards a particular fashion product. In the m-shopping environment, text information can be applied to a new retail store that was not available in the offline shopping environments to supplement the service for the limited consumers.

The results of this study confirm that the diagnostic impact of product names varies significantly according to the characteristics of consumers. In the case of m-shopping malls targeting male consumers, or those with abundant m-shopping experience, consumers have a high desire for information for decision making. As a result, companies must adopt a careful product-naming strategy that corresponds to their customers' characteristics. Companies should vary their product-naming strategies to account for the target consumer age. Targeted consumers of higher ages should receive fashion information as a diagnostic product name in a less familiar mobile app shopping environment to help them search for information and induce positive attitudes.

This study used a limited number of samples, and the results are difficult to generalize. In the future, the evaluation of fashion product colors displayed on mobile apps and the frequency of purchase influence will increase accordingly, and further research will be needed. The suggestions for follow-up studies are as follows. First, in this study, because women's fashion products were used as stimulants, the study was limited in that gender was selected as the female. Therefore, in future studies, it is necessary to proceed to study by gender. Additionally, this study was conducted under the assumption that respondents were in the scenario of a new brand. In the future, this study should be in-depth considering the variables of brand awareness. It is expected that the difference in perception of fashion products by consumers is very large according to brand awareness. In future research, there is a need for more diverse and specific research in consideration of such limitations. Because visual factors differ according to various fashion products (e.g., design, color, and material), future research should be conducted on product-name interactions according to visual elements.

Since this study only targeted women, the diagnostic and metaphorical impact of product names and the moderating effects of age and fashion involvement require additional research to be generalized to men. In particular, it is questionable whether the positive effect of the metaphor of abstract product name appealing to emotion is suitable for male consumers. Because men are generally called for more destination-oriented and rational product strategies in the mobile environment, the results of this study can be understood as the characteristics of female consumers in mobile fashion shopping. Additionally, the influence of the metaphor of the product name in this study is expected to have an influence on various variables related to various products and companies such as brand image and trust.

Subsequent research requires expansion and verification of the research results through consideration of the influence of individual characteristics of consumers presented by previous studies in related fields. For example, Na [11] noted that naming effects were influenced by cognitive needs, moods, and unique needs. Such personal characteristics of consumers are expected to affect the diagnostic effect of product names. Finally, the acceptance of mobile-app shopping is improving daily. As a result, mobile-app shopping is likely to lead to familiarity, as the perceived risk gets lower for elderly consumers.

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