Moderating Effect of Country of Origin to the Evaluation of Cellphones

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Abstract. Smartphone technology gives customers many choices. Some extrinsic and intrinsic cues of the product, as well as internal factors from the consumers, affect these choices. This study investigated country of origin (COO), an extrinsic cue that affects consumer product evaluation (PE) on smartphones in Taiwan. This study proposed a model named Product-Evaluation Model (PEM) extending the scopes from literature to evaluate the relationship of COO, consumer ethnocentrism (CE), product knowledge (PK), and PE through analyzing 600 smartphone users surveyed in Taiwan. Analytical results display that country of origin and product knowledge have impacts on consumer evaluation whereas consumer ethnocentrism does not have. Additionally, PK has the moderating effect on the relationship between PE and COO, and COO has the moderating effect on the relationship between PK and PE.

Keywords: Country of origin · Consumer ethnocentrism · Product knowledge · Product evaluation

1 Introduction

Smartphones have gradually become popular in the global market (Jiménez and San Martín 2010). In America, smartphone users in 2018 are 230 million (Statista 2019). Smartphones enable the use of various applications other than making calls and sending messages. Nowadays, many brands of smartphones are in the market at different prices. Consumers have difficulty determining which smartphone is the most suitable for personal use because they have too much information regarding smartphones. One important information having a significant influence on product evaluation (PE) is a country of origin (COO) (Hsieh 2004). Roth and Romeo (1992) defined COO as the stereotypes of the country that manufacturers a product. Such a perception can make the consumer a good or bad evaluation of the product based on customer perceptions to the manufacturing country. For example, consumers perceive that medicine from Japan is of high quality. People trust in a good because it is made by the country expertizing on producing the goods (Creusen et al. 2013). Through COO, people can judge the product is good or not through the manufacturing country subjectively.

However, it is different from the literature that subjective perceptions of a product are affected not only by COO, but also by psychological factors. For example, consumer ethnocentrism (CE) can be defined as a belief held by consumers on the

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appropriateness with the domestic products and indeed morality purchasing the domestic products (Maehle and Supphellen 2011; Keillor et al. 2001; Shimp and Sharma 1987). This definition also shows clearly that ethnocentric consumers are more likely to use domestic products because they think that using the foreign product is harmful to the domestic economy (Maehle and Supphellen 2011; Keillor et al. 2001). Thus, they exhibit CE when their country can manufacture the same products. Many corporations in Taiwan produce smartphones. This study investigated whether Taiwan consumers are ethnocentric and whether their ethnocentrism differs by age, gender, and education level.

This study also investigated the effects of product knowledge (PK) on consumer evaluation (Healy et al. 2007; Cordell 1997). Hong and Wyer (1989) find the factors affected product evaluation. The analytical results showed that country of origin is a heuristic basis for judgment on a product. A consumer potentially finds their intention through recalling the product knowledge. PK will be defined as the information stored in memory, such as information about brands, products, attributes, evaluations, decision heuristics and usage situations (Aichner 2014; Aichner et al. 2017; Marks and Olson 1981). Thus, consumers use their knowledge to evaluate the quality of a product before buying the product. If the consumers have more knowledge, they will be more proactive in their option and can find the best product. Especially, with many functions of a smartphone, we cannot know how to use it if we have not used before. Therefore, choosing the most appropriate smartphone can be very difficult for consumers. Therefore, this study examined whether consumer PK affects consumer PE.

In conclusion, we hypothesized that COO, CE, and PK affect consumer PE. However, each factor has a different effect on customer selection because COO and PK have the positive relationship on consumer PE, but CE generates the negative relationship on consumer PE on a foreign product while getting the positive relationship with the domestic product. Restated, COO generates a negative relationship on CE and PK. Additionally, this study fills a gap in the literature on the moderating effect of COO and provides practical rules of thumb to find the moderating effect. The moderating effects of COO on the relationship between PK and PE were identified by partial least squares structural equation modeling (PLS) (Henseler and Fassott 2010; Henseler et al. 2016).

The remainder of this paper is organized as follows. Section 2 reviews the literature. Section 3 outlines the research method. Section 4 summarizes the analytical results. Finally, Sect. 5 draws conclusions and makes recommendations regarding future research.

2 Literature Review

2.1 Country of Origin (COO)

Product evaluation (*PE*) is the consumer beliefs about the product, which can be affected in consumer perception (Durvasula et al. 1997; Ozer 1999). It can be imaged that is the belief in the specific product. Based on their beliefs, consumers decide which product is the best choice (Mukherjee and Hoyer 2001).

Country of Origin (*COO*) of the product is the area where the product is designed and assembled. Not all consumers consider *COO* when they purchase a product. Some studies define *COO* as an element of a brand that leads consumers to associate the firm with its original domicile, even when the product under evaluation is manufactured in a different country (Aichner 2014; Aichner et al. 2017; Ahmed and d'Astous 1996). *Country of Origin* is a complex dimension, it is the combination of many factors. *COO* of the product is the area where the product is designed and assembled. *Country of Origin* has three dimensions: cognitive, affective and co-native dimensions. Many researchers also define *COO* as a country manufactures of assembly. For example, Sony is a Japanese brand, but it has some products assembled outside Japan, such as Singapore, hence, there is a sentence outside the box which is "assembled in Singapore", If they are *Sony products* assembled in Japan, the sentence is "made in Japan" (MohdYasin et al. 2007).

If the manufacturers in a country have a good image, *COO* is an advantage when exporting their products to other countries. However, in some countries, which have worse images, *COO* is a barrier to exporting their products (Ma et al. 2014). According to Wang and Lam (1983), *COO* is an intangible barrier to entry into new markets if consumers have negative perceptions about the importing country. Based on this, we have the hypothesis 1 regarding the effect of *COO* on consumer evaluation (MohdYasin et al. 2007).

Hypothesis H1: COO positively affects the selection of a smartphone by a consumer.

Especial, *COO* positively affects consumer *PE*.

Hypothesis H1.1: COO positively affects consumer PE on a smartphone.

One of the oldest and most persistent concerns in international marketing is how *COO* affects consumer preferences for a product (Koschate-Fischer et al. 2012). The *COO* is associated with diverse marketing factors that affect consumer's behavior, including trust and familiarity (Michaelis et al. 2008). This means the more customers have a positive relationship with one country, the more they are satisfied with this country and affected to choose the product of this country. The origin of a product has an effect on the consumers' opinion of this product, thus *COO* may be seen as one of a good proxy to evaluate the product (Jiménez and San Martín 2010).

The *COO* affects consumer *PE,* which then affects *PK*. Lee and Lee (2009) point out that the effect of *COO* on consumer *PE* is affected by *PK*. That is, consumers with high *PK* are unlikely to consider *COO* cues in their *PE*, and consumers with low *PK* are likely to consider *COO* cues in their *PE*. Thus, knowledgeable consumers are unlikely to use the *COO* information for the *PE*. *COO* has the effects on consumer *PE* if they have low subjective knowledge; if they have high subjective knowledge, the consumer will make a decision based on massage strength (Moon 2004). Therefore, COO should affect subjective product knowledge. In sum, COO should have the moderating effect on the relationship between PK and PE.

We have the hypothesis 1.2 regarding the influence of *COO* on PK as following.

Hypothesis H1.2: COO is negatively associated with consumer PK.
Hypothesis H2: COO has the moderating effect on the relationship between PK and PE.

2.2 Consumer Ethnocentrism (*CE*)

This study of consumer behavior not only focused on external factors that have an influence on consumer *PE*, but also on internal factors that have an influence on consumer *PE,* especially in psychology and sociology. In some cases, before buying any merchandise, consumers usually notice the *COO* of the product and they will have some emotion with these products. Their emotions may be good or bad, and sometimes they just think that buying foreign products is harmful to the domestic economy. In this way, several marketers concentrate on *CE* concept. Thus, we can see that *COO* has a positive effect on *CE* with a cellphone (Hsieh 2004; Maehle and Supphellen 2011).

Hypothesis 1.3: Country of origin positively affects CE with a cellphone.

Consumer ethnocentrism is defined as "the beliefs held by consumers about the appropriateness, indeed morality of purchasing a foreign-made product and the loyalty of consumers to the products manufactured in their home country" (Keillor et al. 2001; Shimp and Sharma 1987). According to this definition, ethnocentric consumers have positive emotions about domestic products and have negative emotions about foreign products. Because in their mind, buying foreign products that are not loyalty and harmful for the domestic economy, they will have the negative perception when they have the judgment about this product (Hsieh 2004; Shimp and Sharma 1987). Consumer ethnocentrism also causes negative emotions about foreign products. It leads to the consumers really care about the place where the products were produced, and the higher ethnocentrism consumers will care more about the *COO* of this product than less ethnocentrism (Zafer et al. 2010). Therefore, CE should the moderating effect on the relationship between COO and PE. Thus, we have hypothesis 3 talk about the influence of *consumer ethnocentrism* on the consumer evaluation.

Hypothesis H3: CE positively affects consumer PE with a cellphone.
Hypothesis H4: CE has the moderating effect on the relationship between COO and PE.

2.3 Product Knowledge (*PK*)

Another internal factor that affects consumer *PE* as *CE*, is *PK*. However, it is different. Consumer ethnocentrism results from feelings about foreign countries, but *PK* based on an understanding of consumer about this product. *PK* has defined that is all of everything which the consumer knows about this product or based on their memories about this product (Rubio and Yagüe 2009), it can be called the consumers' awareness about this product (Creusen et al. 2013; Lin and Chen 2006; Johnson et al. 2016).

Based on the definition of *product knowledge*, Buck (1985) divides it into three categories:

- Subjective knowledge is what and how much consumers know about a product.
- Objective knowledge is the accurate information stored in the long-term memory of consumers.
- Experience-based knowledge is an individual previous product usage or experience of an indicator of objective knowledge.

Through the definition and classification of *product knowledge*; in this study, the author would like to research the influences of subjective *product knowledge* on the information search behavior, consumers' *product evaluation*, processing of advertising messages.

Based on that, hypothesis 5 concerning the effect of *PK* on *CE* is proposed:

Hypothesis H5: PK has a positive impact on consumer PE.

3 Research Method

Based on the above literature, this study focused on people using smartphones. One objective was to identify factors that affect consumer *PE,* especial with *COO, CE,* and *PK* and the relationship between *COO, CE,* and *PK*. This study proposed a Product-Evaluation Model (PEM) based on the models proposed by Hong and Wyer (1989) and added consumer ethnocentrism to help the understand of evaluating the product before purchase. Causal relationships among the factors were also analyzed by using SmartPLS version 3. The component-based PLS (partial least squares structural equation modeling) (PLS-SEM) method is non-parametric. That is, PLS-SEM makes no restrictive assumptions about the data distributions (Dijkstra and Henseler 2015). Additionally, PLS-SEM is feasible to verify a new model. In this study, the new proposed model can be evaluated through PLS-SEM (Liang and Shiau 2018). In summary, the discussion about the effect of *COO, CE*, and *PK* on consumer *PE* and some suggestion for the smartphone will be shown. Figure 1 shows the model of possible causal relationships.

Because almost everyone has a cell phone, the authors want to survey qualified volume of users. The authors select participants from phone book through fair dicing. The authors choice the page of a phonebook through the random function of Microsoft Excel ranging from 1 to 682. The authors will select the sequence number on the page randomly using Microsoft Excel ranging from 1 to 150. All 4000 samples were selected, but only 631 is accessible as the participants. The questionnaire was dispatched to the participants through email or social media (i.e. Facebook Messenger). All of the 631 smartphone users who answered the questionnaire were Taiwanese. All of the participants are using smartphones. After being checked and classified, 600 samples met the criteria for inclusion in the analysis.

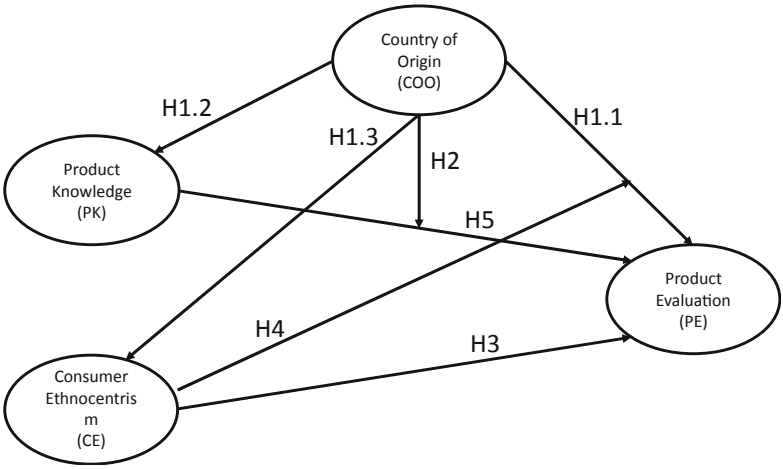

Fig. 1. Relationship model

4 Analytical Results

Most respondents in this survey were young who were interested in information technology products and who used smartphones heavily. Table 1 presents and discuss the results of the profile analysis. Valid questionnaires were received from 280 males and 320 females (46.6% and 53.33% of total participants, respectively). The largest age group was 18 to 25 years old, (73.5%), and the second largest age group was 26 to 35 years old (15.83%). The group aged 36 to 45 years old had 45 respondents (7.5%). Just 3.167% of people joining the survey who are in the age between 46 and 55 years old and there are not any over-56-years-old participants answering the questionnaire.

In tests of multicollinearity, the variance inflation factor (VIF) values calculated for all of the constructs were well below the acceptable threshold of 5.0 (Neter *et al.* 1990). In this study, the VIF values ranged from 1.18 to 2.65. Discrepancies between the empirical and the model-implied correlation matrix can be quantified with either the geodesic discrepancy d_G or the unweighted least squares discrepancy d_{ULS} (Dijkstra and Henseler 2015). Both measurement model misspecification and structural model misspecification can be detected by testing model fit (Chen 2008; Dijkstra and Henseler, 2015). The proposed path model and the model fit were evaluated by PLS bootstrapping algorithm. Cronbach ∝ value for each construct was well above the recommended threshold of 0.70 (Hair *et al.* 2006) and ranged from 0.70 (COO) to 0.86 (PE). Composite reliability ranged from 0.80 (CE) to 0.91 (PE). For each construct, the average variance extracted (AVE) exceeded 0.50 (Chin 1998; Fornell and Larcker 1981) and ranged from 0.57 (CE) to 0.78 (PE), which met the requirement for convergent validity. The fit of the estimated model was tested with SRMR, the unweighted least squares discrepancy d_{ULS}, and the geodesic discrepancy d_G. These values should be smaller than 95% bootstrap quantile for an acceptable model fit (HI95 of SRMR, HI95 of d_{ULS}, and HI95 of d_G) (Dijkstra and Henseler 2015). The SRMR was 0.07, which is smaller than 0.08 and smaller than HI95, which indicated an acceptable model

fit (Dijkstra and Henseler 2015). The value for d_{ULS} was 0.52, and the value for d_G was 0.21 which were smaller than HI95 (d_{ULS} is 0.56 and d_G is 0.34). Most paths had an acceptable effect size (f^2 is larger than 0.15) (Ringle et al. 2015). The exceptions were *PK* to *PE* (0.08). Although the impact was statistically significant, the effect size was small. The discriminant validity of the constructs was evaluated using the approaches recommended by Fornell-Larcker method (1981) and Heterotrait-monotrait (HTMT). The HTMT should be significantly smaller than 0.85 (Henseler et al. 2015).

PK and *PE* had a significant and direct positive relationship (0.236) ($p < 0.05$). Thus, hypothesis 5 is supported. Additionally, *COO* had a significant and direct positive relationship to consumer *PE* (0.132) ($p < 0.05$). Thus, hypothesis 1.1 is supported. That is, when consumers do not understand how to use a smartphone, they use the information regarding the *COO* to help them to get a better choice. The *COO* also has the direct and negative relationship between *COO* and *CE* are statistically significant (-0.544) ($p < 0.05$). Thus, hypothesis 1.2 is supported. This means that the consumer really cares about the *COO* information. If the smartphone is produced in their country, they tend to have a positive perception of the smartphone. If the smartphone is produced in a foreign country, they tend to have a negative perception of the smartphone. Besides, the *CE* has no impact on the consumer *PE*, but the *COO* has an impact on the consumer *PE*. Finally, the direct and positive relationship between *COO* and *PK* are statistics significant negatively (−0.555) ($p < 0.05$). Hence, hypothesis 1.3 is supported. The impact of *CE* and *PE* was investigated. The direct and positive relationship between *CE* and *PE* are statistically significant (0.511) ($p < 0.05$). Thus, hypothesis 3 is supported. Table 7 shows the summary of causal relationships. Hypothesis H2 was supported, which is consistent with Moon (2004). Figure 2 shows the simple slope analysis of COO. The analytical results show that COO have a significant moderating effect on the positive effect of PK on PE. That is, participants were most concerned about the country of the origin of a cell phone, which reduced the impact of the knowledge to evaluate the cellphone. Finally, Hypothesis H4 was supported, which is consistent with Zafer et al. (2010). Figure 3 shows the simple slope analysis of CE. The analytical results show that CE has a significant moderating effect on the positive effect of COO on PE. That is, participants, concerned more on consumer ethnocentrism, which positively affected their knowledge to their evaluation of the cellphone. However, participants who are not highly concerned about consumer ethnocentrism, the participants with low knowledge of phone will reduce their positive evaluation to a cellphone.

5 Conclusion

Scientific and technological developments have diversified IT products in appearance, color and so on. The consumers find it more difficult to decide or evaluate the quality of the products, especially for smartphones. Thus, finding the best smartphone is difficult for customers. Smartphone purchases are also affected by many factors, including country of origin (Hsieh 2004), product knowledge (Healy et al. 2007; Cordell 1997),

and even the consumer ethnocentrism (Maehle and Supphelen 2011; Keillor et al. 2001). Therefore, this study investigates factors that affect smartphone purchases by consumers.

The first factor is the extrinsic cues, which examine whether it effect on the consumer *PE* or not. When discussing the effects of extrinsic cues on consumer *PE*, we need to check *COO* whether *COO* has an influence on consumer *PE* or not. Previous studies indicate that *COO* is one of the extrinsic cues making the effect on the consumer *PE*. However, the *COO* may include more than one country; sometimes, this product is designed in one country, manufactured in another country and assembled in other country and after that made the brand in one country. Hence, consumers who do not understand a product may still buy it because of its famous brand or *COO*; and after the process of using, the quality was not as good as they expect. It makes the consumers disappointed with this product and would not buy from this brand in the future. Smartphones now have so many functions that few people clearly understand its functions, so most of them buy it. Due to the *COO*, it will make them trust it more or will be disappointed. Besides, the influence on consumer *PE*, *COO* also has a negative impact on consumer *CE* and consumer *PK*. Thus, we can conclude that if a company want to promote smartphone in Taiwan, the relationship between *COO, CE, and PK* must be handled carefully.

The second factor that affects consumer PE is CE. This study found that CE does not have an influence on consumer PE. It implies that CE should be ignored from the effect of customer PE in purchasing a smartphone. In Taiwan, the Taiwan brand, hTC, hurt consumers several times due to the cheating in manufacturing smartphone. The company sold a smartphone to Taiwanese at a more expensive price with low-quality equipment, but not for the exporting products to Korea, Japan, and the USA.

The last factor investigated in this study is *PK*. The *PK* is the knowledge which the consumers know and understand about a product. It reveals what the consumers know and keeps in mind of the product information. This study showed that consumer perception and memory of product information are positively associated with consumer *PE*.

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