

科技部補助專題研究計畫成果報告 期末報告

智慧型手機品牌忠誠模式：具吸引力替代方案可得性之調節角色

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中文摘要：依據顧客價值理論及顧客品牌認同方法為兩個主要的參考架構，探討顧客留在原有品牌的原因並解釋其理由，並探討年齡及性別是否會有調節之影響。為了對年齡及性別在品牌忠誠度當中的角色有更進一步的了解，此研究模式將品牌忠誠度當成功能性價值、情緒性價值、社會價值及品牌認同感的彙整，並探討年齡及性別的調節效果。以台灣智慧型手機使用者為調查對象，研究結果可作為日後學術及實務應用之參考。

中文關鍵詞：顧客價值、顧客品牌認同、品牌忠誠度、智慧型手機、年齡、性別

英文摘要：Given consumer value theory and consumer-brand identification approach are two focal grounds explaining the reason for which consumers stay with a brand, whether their explainabilities sustain across age and gender remains unknown. To better understand the role of age and gender difference in brand loyalty and leverage the varied managerial guidance derived from the two grounds, this study models brand loyalty as a function of functional value, emotional value, social value, and brand identification, and specifies age and gender as moderators. Based on an investigation in Taiwanese smartphone consumption, this study verifies that all the four determinants significantly influence consumers' loyalty towards a brand. Of the two moderating effects, only age biases the emotional value-loyalty and social value-loyalty linkages positively and the relationship of brand identification and loyalty negatively. For senior consumers, greater emotional value and social value will induce higher brand loyalty whilst the effect of brand identification on brand loyalty is mitigated. Noteworthy, gender does not play any moderating role predominantly. Our results may provide theoretical insights for researchers and feasible strategic directions for managers in smartphone business.

英文關鍵詞：consumer value；consumer-brand identification, brand loyalty, smartphone, age, gender

Age and gender difference in the effect of consumer value and consumer-brand identification on brand loyalty: a smartphone case in Taiwan

ABSTRACT

Given consumer value theory and consumer-brand identification approach are two focal grounds explaining the reason for which consumers stay with a brand, whether their explainabilities sustain across age and gender remains unknown. To better understand the role of age and gender difference in brand loyalty and leverage the varied managerial guidance derived from the two grounds, this study models brand loyalty as a function of functional value, emotional value, social value, and brand identification, and specifies age and gender as moderators. Based on an investigation in Taiwanese smartphone consumption, this study verifies that all the four determinants significantly influence consumers' loyalty towards a brand. Of the two moderating effects, only age biases the emotional value-loyalty and social value-loyalty linkages positively and the relationship of brand identification and loyalty negatively. For senior consumers, greater emotional value and social value will induce higher brand loyalty whilst the effect of brand identification on brand loyalty is mitigated. Noteworthily, gender does not play any moderating role predominantly. Our results may provide theoretical insights for researchers and feasible strategic directions for managers in smartphone business.

Keywords: consumer value; consumer-brand identification, brand loyalty, smartphone, age, gender

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1. Introduction

With the proliferation of the competing brands in the marketplace, how to keep consumers stay loyal has been the imperative for which marketing managers strive (Jones & Sasser, 1995). A host of researchers have devoted many efforts to this issue. They advocate that the notion of brand loyalty should extend from patronage behavior to psychological commitment (Oliver, 1999), and both attitudinal loyalty and behavioral loyalty are able to contribute to pro-brand consequences. Attitudinal loyalty may be positively associated with patronage intention, word-of-mouth, acceptance of premium price, and resistance to counter-persuasion, whilst behavioral loyalty may lead to large market share and profitability (Chaudhuri & Holbrook, 2001; Shankar, Smith, & Rangaswamy, 2003).

In addition, researchers engage in knowing the reason for which brand loyalty occurs by standing on various theoretical grounds. Among these, there may be two acknowledged viewpoints which receive greater academic concern. The first one is consumer value theory, suggesting that value perception is the pivotal predictor of brand loyalty (Kim, Gupta, & Koh, 2011; Sweeney & Soutar, 2001). Consumers will be loyal if he perceives a superior value from a given brand (Hansen, Beitelspacher, & Deitz, 2013). The other one is identification approach which points out that consumer-brand identification (hereafter brand identification) is the antecedent of brand loyalty (Bhattacharya & Sen, 2003; Tuškej, Golob, & Podnar, 2013). Consumers will stick to a given brand once they share similar self-definitional attributes (Stokburger-Sauer, Ratneshwar, & Sen, 2012). Some studies further contend that both viewpoints may positively result in brand trust and then brand loyalty (He, Li, & Harris, 2012), verifying that they are the foundations of brand loyalty

Despite of researchers generally recognize the predictability of consumer value and brand identification on brand loyalty, some empirical studies obtain conflicting

results and some argue that moderating bias may intensify or mitigate the magnitude of these causality effects. For example, So, King, Sparks, and Wang, (2013) evidences that brand identification does not predict consumers' hotel loyalty as expected while Jones, Mothersbaugh, and Beatty (2000) find that consumers with positive value evaluation may switch to a different brand due to low switching cost. Thus, the exploration of brand loyalty needs to take situational factors into consideration (Pan, Sheng, & Xie, 2012). Furthermore, the two viewpoints offer varied strategic guidance which brand managers may have difficulties in business practice. Strategies derived from consumer value theory may encourage managers to emphasize product development and to communicate the advantages of product attributes to consumers (Karjaluoto, Jayawardhena, Leppäniemi, & Pihlström, 2012), whereas strategies derived from identification approach may drive managers to create an attractive identity and to organize a community for intimate consumer-brand and consumer-consumer interaction (Stokburger-Sauer et al., 2012). These advices may easily plunge managers into a dilemma of resource allocation.

To enrich the arguments of both theoretical viewpoints and to clarify efficient marketing strategies for resource leverage, this study aims to concurrently examine the effect of consumer value and brand identification on brand loyalty and to incorporate consumer characteristics (i.e., age and gender) as moderators depending on the principle of consumer heterogeneity (Valette-Florence, Guizani, & Merunka, 2011). To this end, this study chooses Taiwanese's consumption of smartphone as the research context. In Taiwan, smartphone has overwhelmed feature phone and shares 71% mobile phone market in terms of supply in the third quarter in 2012 (IDC, 2012). A recent survey of Google (2012) also reports that the penetration rate of smartphone is 32% in the first quarter of 2012 and increases 6% compared with that in 2011. Smartphone have become a spotlighted product with a tremendous potential growth.

Given brand is a crucial factor of smartphone marketing (Arruda-Filho, Cabusas, & Dholakia, 2010; Arruda-Filho & Lennon, 2011), the research context of this study is appropriate.

The rest of this study proceeds as follows. In the beginning, the authors review the two popular theoretical viewpoints and illuminate their underlying notions. Then, section 3 portrays the research model and proposes hypotheses regarding direct and moderating effect in the context of smartphone consumption. The research method is in section 4, including sampling, measure development, and the examination of common variance method. Section 5 details the empirical results. And finally, this research concludes with a discussion of results, theoretical and managerial implications, limitations, and directions for further research.

2. Literature review

2.1. Consumer value theory

Consumer value is the fundamental basis for a successful transaction, and motivates consumers to purchase repeatedly as well (Holbrook, 1994). The goal and action identity theory illustrates that value is a superordinate goal and positively regulates loyal behavior which is at subordinate level (Yang & Peterson, 2004). A review of prior studies yields that the nature of consumer value is diversified. Initially, marketing studies put an emphasis on the product attributes, and assume that better product performance/function will be able to satisfy consumers' needs and necessarily result in value delivery (Babakus & Yavas, 2008; Zeithaml, 1988). In this regard, product quality which is the overall assessment of product performance (i.e., benefit) is the foci of loyalty studies (Pan et al., 2012). Importantly, consumers' subjective perception of quality, instead of objective quality, is decisive for repurchase behavior. Treating perceived quality as consumer value, however, receives criticism of

narrowness and a broader scope of consumer value which contains benefit and sacrifice (e.g., mental, physical, and financial) will be more realistic (Zeithaml, 1988). Perceived benefit contributes to perceived value in a positive route while perceived sacrifice is in an opposite way. If perceived benefit outperforms perceived sacrifice, consumers will evaluate a transaction to be valuable (Yang & Peterson, 2004). Based on equity theory, the positive trade-off of benefit and sacrifice makes consumers feel equitable and be willing to repurchase. Thus, high perceived value will accompany with loyal behaviors (Cronin, Brady, & Hult, 2000; Lin, Sher, & Shih, 2005).

Not satisfying with that perceived value merely comprises functional or economic nature, many researchers have explored the multiplicity of consumer value. The most well-known may be the study of Hirschman and Holbrook (1982). They delineate that consumers may experience symbolic, hedonic, or esthetic value from shopping process and/or product usage. This narrative illustration expands consumer value beyond the functional benefit and inspires a research stream. Next, Sheth, Newman, and Gross (1991) suggest a detailed typology including functional, emotional, social, conditional, and epistemic value by synthesizing theories of economy, sociology, psychology, and marketing. For simplification, Babin, Darden, and Griffin (1994) develop a succinct value structure with two dimensions, consisting of utilitarian and hedonic component. Similarly, Sweeney and Soutar (2001) decompose consumer value into functional, emotional, and social value in retailing context. Extending Sheth et al. (1991)'s work, Pihlström and Brush (2008) divide consumer value into two stages and conditional and epistemic value are the antecedents of monetary, convenience, emotional, and social value.

Following Sweeney and Soutar (2001)'s finding, this study argues functional, emotional, and social value are the three major types of consumer value. Functional value, which is analogous to utilitarian value by definition, denotes the overall benefit

gained from the product/brand based on functional performance and value for money. Specifically, the definitional scope of functional value covers the get-give trade-off idea of perceived value. Emotional value, which is equivalent to hedonic value, indicates the feelings or affective status aroused by the product/brand (Kim et al., 2011). In general, emotional value derives from product usage/exploration and product appearance. Finally, social value refers to the extent to which the product/brand enhances consumers' social well-being and interpersonal relationship, and roots in the symbolic meanings of the product/brand (Rintamäki, Kanto, Kuusela, & Spence, 2006). All the three value types are unique and interrelated (Sweeney & Soutar, 2001). With empirical evidence in telecommunications services, functional value, emotional value, and social value significantly constitute of consumer value, and then impact brand loyalty (Karjaluoto et al., 2012). Similarly, Pihlström and Brush (2008) reveal that functional (i.e., monetary and convenience), emotional, and social value determine consumers' repurchase intention of mobile content services.

2.2. Brand identification approach

Brand identification approach conceptually sources from consumer-company identification approach (Bhattacharya & Sen, 2003), positing that the extent to which consumers identify with a brand will markedly relate to consumers' extra-role behaviors (e.g., recommendation or new consumer recruitment) and in-role behaviors (e.g., product utilization or repurchase) (Ahearne, Bhattacharya, & Gruen, 2005). According to Lam, Ahearne, Hu, and Schillewaert (2010:129), brand identification indicates that "consumers share the same self-definitional attributes with a brand." This definition connotes that brand possesses distinct identity/personality (Donovan, Janda, & Suh, 2006; Stokburger-Sauer et al., 2012). Not only brand is an extrinsic cue which consumers can infer the quality of a product, but also brand projects an

intrinsic identity manipulated by brand managers to differentiate from competitors (Sung & Choi, 2010; van Rekom, Jacobs, & Verlegh, 2006). For example, Heineken, a famous beer brand, may have a representation of “sober, serious, successful, and a little aloof (Kotler, Ang, Leong, & Tan, 2003:421).” The humanization makes consumers be able to interact with brand as with people spiritually, and be willing to establish a relationship with it (Fournier, 1998).

Prior studies have expounded that two mechanisms motivate consumers to identify with a brand. The first is the need for consistency (Kressmann, Sirgy, Herrmann, Huber, Huber, & Lee, 2006), and consumers may search for a brand with salient identity which match his actual self (He et al., 2012). High similarity/congruity in identity between consumers and brand will facilitate strong consumer belongingness and then generate brand identification (Lam, Ahearne, Mullins, Hayati, & Schillewaert, 2013). The second is the need for self-esteem. Consumers pursuit an ideal identity/self-image by means of purchasing an idiosyncratic brand (He et al., 2012). The more a consumer approaches his ideal self, the more he feels himself lifted and acquires self-esteem (Kressmann et al., 2006). Thus, a brand whose identity meets a consumer’s ideal self can earn his identification.

Viewing brand identification as “a psychological state of perceiving, feeling, and valuing his or her belongingness with a brand,” Lam et al. (2010:130) operationalize it as a second-order formative construct with three reflective sub-dimensions. Owing to that affective brand identification may blend with other constructs such as brand attachment and brand love, and that evaluative brand identification is similar to brand attitude and is likely to be the result of identification, this study agrees with the opinion of Stokburger-Sauer et al. (2012) and considers brand identification as the consumers’ perception of both entities’ identities at cognitive level. In this vein, consumers’ brand identification is a psychological state rather than a process, and

positively determines brand loyalty (Rocereto & Mosca, 2012; Stokburger-Sauer et al., 2012).

3. Hypotheses

3.1. The effect of functional value, emotional value, social value on brand loyalty in smartphone consumption context

The research model of this study is in Figure 1. Studies on technology marketing have recognized that a technology product is a combination of tangible and intangible attributes. By grouping all the attributes into performance attribute, appearance attribute, and communication attribute, Lee, Ha, and Widdows (2011) elaborate that technology products may deliver value to consumers via these three attribute types. Consumers may gain functional value if the performance attributes of a technology product are useful, easy to use, and innovative. Additionally, a technology product with attractive appearance, novel material, and atypical design will positively elicit consumers' feeling, and offer consumers with emotional value. Third, a technology product may be a symbol itself and/or carry symbolic meanings, enabling consumers to communicate others with what his lifestyle is and what he believes and then acquire social value. Exploring the attributes of mobile phones, Horváth and Sajtos (2002) identify utility/usefulness, experience/enjoyment of use, and communicative power/expression are the three main attribute types. The three types are much similar to those of Lee et al. (2011) by nature.

Figure 1 here.

Smartphone is a state-of-the-art technology product. By integrating components such as a fast core processor, a high-pixel camera, a high-resolution display panel, and

a great memory/storage capacity into a handheld device, a smartphone provides not only the telecommunication service but also the computer-like applications such as entertainment (e.g., listen music or play games), business (e.g., document editing), education (e.g., language learning), and so on (Liao & Hsieh, 2013; Park & Han, 2013). Specifically, a smartphone is able to access to Internet, and performs innovative services like location-based information (Okazaki & Mendez, 2013a) and electronic payment (Au & Kauffman, 2008). Thus, a smartphone which equips with a high-end product specification will give consumers functional value and then gain consumers' loyalty.

H1. Functional value positively contributes to brand loyalty in smartphone context.

In additional to functional value, consumers may experience emotional value such as playfulness and pleasure from smartphone usage and exploration (Alba & Williams, 2013; Arruda-Filho et al., 2010). Liao and Hsieh (2013) also point out that the fashionable and aesthetic product appearance of smartphone contributes to consumers' emotional value. Thus,

H2. Emotional value positively contributes to brand loyalty in smartphone context.

Recruiting iPhone users as interviewees, Arruda-Filho et al. (2010) conduct a netnographic analysis and find that consumers may have social value from the possession and usage of smartphone. As their results claim, consumers may view the holding of an iPhone is a symbolization of luxury and have their social status raised (Liao & Hsieh, 2013). In addition, the excellent product performance such as convenient, reliability, and all-in-one design also aid in interpersonal interaction by

sharing product experience with their companions. Therefore,

H3. Social value positively contributes to brand loyalty in smartphone context.

3.2. The effect of brand identification on brand loyalty in smartphone consumption context

Some studies have illuminated that a mobile phone is a surrogate of self-identity expression (Mannetti, Pierro, & Livi, 2002; Walsh & White, 2007; Walsh, White, & Young, 2010). By using a personalized ring-tones and decoration, consumers are able to extend himself to the mobile phone. From a brand management standpoint, Lam et al. (2010) have a similar observation that the brand of smartphone holds unique identity and may accord with or enhance consumer identity based on the evidence from iPhone users. Also, the Stokburger-Sauer et al. (2012)'s results which depend on the survey of four product categories (cell phones, athletic shoes, soft drinks, and grocery stores) confirm that high brand identification is able to turn consumers into loyalty and stop consumers from switching. In this vein, the present study hypothesizes that

H4. Brand identification positively contributes to brand loyalty in smartphone context.

3.3. The moderating effect of age

The effect of three value types and brand identification on brand loyalty may vary for different aged consumers (Park, Eisingerich, & Park, 2013). In the context of smartphone consumption, younger consumers are inclined to fling into the usage of smartphone compared with elder consumers. As Coates (2001) details, younger

consumers are involved in more functions such as text, satellite navigation, and photo-editing, whereas elder consumers tend to use mobile phone for communication in emergent conditions. The complicated functions, non aging-friendly menu, and unclear instruction of usage may impede elder consumers to explore the variety of smartphone applications and make elder consumers perceive less functional and emotional value (Kurniawan, 2008). On the contrary, younger consumers may “engage in high level mobile phone use (Walsh et al., 2010:194)” and favor its fashion-designed appearance (Park et al., 2013; Srivastava, 2005). Thus, for younger consumers, the relationships of functional value and emotional value and brand loyalty may be larger.

Additionally, studies have addressed that younger consumers face greater social influence from peer and friends than elder consumers (Smetana, Campione-Barr, & Metzger, 2006), and the shared norm or standard will guide the younger’s consumption behavior. Walsh and White (2006) state that displaying a mobile phone in public will improve younger consumers’ status among peers. In this vein, the effect of social value on brand loyalty may be greater for the youth than for the elders. Finally, according to Erikson’s (1959) theory of psychosocial development, consumers at young age (especially at adolescence stage) have stronger need for identity. They tend to express themselves by material possession, and identify with a brand which represents their value and beliefs (Syed & Nurullah, 2011; Walsh et al., 2010). In a similar manner, Sheldon and Kasser (2001) address that age negatively associates with the identity demand. Thus, the effect of brand identification on loyalty will be stronger for younger consumers than elder ones.

H5. In smartphone context, the effect of functional value (H5a), emotional value

(H5b), social value (H5c), and brand identification (H5d) on brand loyalty is greater for younger consumers than for elder consumers.

3.4. The moderating effect of gender

Based on gender socialization theory and self-construal theory (Okazaki & Mendez, 2013a), consumers with varied gender may have different value preference and need of identification. Dittmar, Beattie, and Friese (1995), for example, shed light on that men are activity-focused and may place a higher emphasis on functional value, while women are relationship-oriented and center on more emotional and social value. Dittmar (2005) also declares that emotional value and identity-related factors are more important for women than for men while shopping.

Inquiring technology adoption and usage, Venkatesh and Morris (2000) claim that men and women process information in different socially-constructed cognitive structures, and demonstrate that gender difference results in varied behavioral patterns. They find that the effect of perceived usefulness on behavioral intention is greater for men than for women due to men is task-oriented. Oppositely, women are likely to suffer from IT anxiety and conform to reference groups, and the effect of perceived ease of use and subjective norm are stronger for women than for men. By reviewing studies on computing such as website usage and online shopping, Hasan (2010) recognizes the importance of sex role as well and men and women display diverse perception and attitude.

In mobile phone consumption, Syed and Nurullah (2011) report that men tend to view mobile phone as a toy and explore its functions whereas women are prone to use mobile phone for reasons of communication and relationship maintenance. They also outline that the design and color of mobile phone may contribute to women's usage.

Moreover, Walsh and White (2007) evidence that social influence and normative pressure may be the main driver of women's mobile phone use. Taken as a whole, the effect of functional value on brand loyalty may be stronger for men, while the relationship of social value and brand loyalty is greater for women. More noteworthy is that men and women seek for emotional value via product exploration and appearance respectively, and the gender difference may not significant in between the linkage of emotional value and brand loyalty. Finally, though Dittmar (2005) contends that the effect of identity-related factors on shopping behaviors is stronger for women than for men, Walsh, White, Cox, and Young (2011) prove that gender is not significantly correlated with self-esteem and need to belong in the context of mobile phone use. Therefore,

H6. In smartphone context, the effect of functional value (H6a) on brand loyalty is greater for men than for women, while social value (H6c) are in opposite cases. No significant gender difference exists in emotional value (H6b) and brand identification (H6d).

4. Methods

4.1. Measures

There are five sets of measures developed for the major constructs in this study. The measurement of the three value types originates from the comprehensive work of Kim et al. (2011), and each value has four items after contextual adaption. Next, the measurement of brand identification contains three items and comes from Stokburger-Sauer et al. (2012). This measure set provides richer operationalization of

cognitive brand identification than that of Lam et al. (2010) which directly assesses identity similarity with a Venn diagram and a verbal item. Finally, the measurement of brand loyalty refers to the studies of Anderson and Srinivasan (2003) and Zeithaml, Berry, and Parasuraman (1996), and the chosen four items take both commitment element and comparison element into consideration (Dick & Basu, 1994; Oliver, 1999). Table 1 lists all the measured items. To ensure a better measurement quality and reduce the negative effect of response fatigue, this study interlaces the items and makes 2 of them in a reverse form. This study also conceals the construct terms on the questionnaire to decrease social desirability bias. After a pre-test with a handful of smartphone users, the item wording gets modified and becomes more precise. All items are reflective and scale in a 7-point Likert format (Viswanathan, Sudman, & Johnson, 2004). Respondents answer these items in terms of their experience of the most-used smartphone (X brand). Table 1 presents the psychometric properties of measures.

Table 1 here.

4.2. Control variable

Similar to the effect of length of patronage on store loyalty in service and retailing context (Jones et al., 2000), there may be a positive relationship between length of brand relationship and brand loyalty in product context (Kressmann et al., 2006). Hence, this study measures length of brand relationship with *how long have you been using the most-used smartphone (X brand)* (Jones et al., 2000), and includes it in the analytic model as a control variable for effect purification.

4.3. Data collection and consumer profile

The authors conduct an online survey to collect data and recruit voluntary participants from the biggest bulletin board system in Taiwan (telnet://ptt.cc). The surfers who are smartphone users are qualified to join in this study and access to the online questionnaire via the link embedded in the post. The website (<http://www.mysurvey.tw/>) which hosts the questionnaire restricts every computer to send “one” response for a given questionnaire. To encourage participation, a respondent who provides a useable response is able to join a lottery game, and has a chance with 33% probability to win a gift voucher as a reward (Hsu & Tsou, 2011). The survey continues one month and obtains 179 responses. Of these responses, 22 fail due to the logic inconsistency of the 2 reverse items and the others. The valid responses are 157 in total and satisfies the rule of thumb of partial least squares (PLS) method (Gefen et al. 2000; Haenlein & Kaplan, 2004; Urbach & Ahlemann, 2010), which suggests that sample size should be at least ten times the numbers of independent variables or should be larger than 150.

The demographics of respondents are in Table 2. There are 55% male respondents, and the gender balance is acceptable. The age ranges from 17 to 58 and the average age of the whole sample is 27 years old. Nearly 54% respondents are non-student, and the monthly disposable income is US\$664. In addition, this study inquires respondents’ consumption of mobile phone. As shown in Table 2, respondents buy a new mobile phone in an average of 2.48 years, and have 1.20 smartphone and 0.68 feature phone at the same time. The possession of smartphone is twice as much as that of feature phone, and is similar to the market share in the IDC report mentioned earlier. In the case of buying behavior, respondents show greater brand patronage in the last two shopping in smartphone ($39.06\% = 25/64$) than in the last shopping in feature phone and in smartphone ($18.59\% = 29/156$).

Table 2 here.

4.4. Common method variance

Considering the questionnaire is self-reported, this study adopts Harmon's single-factor test to examine whether common method variance occurs (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The result of explanatory factor analysis reveals that all the measured items do not converge into a single factor. This study further performs confirmatory factor analysis (Wu, Chen, Chen, & Cheng, in press), and finds that the one-factor model have a worse goodness of fit ($\chi^2(152)=884.49$, GFI=0.58, AGFI=0.47, CFI=0.90, IFI=0.90, RMSEA=0.20, RMR=0.098, NFI=0.88, NNFI=0.88) than the five-factor model ($\chi^2(142)=485.52$, GFI=0.76, AGFI=0.68, CFI=0.95, IFI=0.95, RMSEA=0.12, RMR=0.074, NFI=0.93, NNFI=0.94). The problem of common method variance which results in spurious relationships of variables may not be serious in this study.

5. Results

This study analyzes data with PLS which is a variance-based approach of structural equation model and is a distribution-free technique (Hair, Sarstedt, Ringle, & Mena, 2012). The results of measurement model and structural model derives from SmartPLS 2.0 M3 (Ringle, Wende, & Will, 2005).

5.1. Measurement model

As Table 1 presents, the value of Cronbach's α and composite reliability (CR) of each construct ranges from 0.82 to 0.94, indicating the five sets of measures have strong internal consistency (Henseler, Ringle, & Sinkovics, 2009). The factor loadings are all above 0.69, suggesting that more than half of the variance of each item

attributes to its corresponding construct (Chin, 1998). The indicator reliability is adequate. This study evaluates convergent validity with average variance extracted (AVE), and all the AVE value are higher than the threshold (i.e., 0.5) with the minimum of 0.65 (Urbach & Ahlemann, 2010). The items of a given construct share a high variance in common, and convergent validity is evident.

The authors in turn assess discriminant validity with Fornell-Larcker criterion and cross-loadings (Urbach & Ahlemann, 2010). As shown in Table 3, the AVE value of each construct is superior to its corresponding squared correlation, demonstrating that constructs are significantly discriminable. The results of cross-loadings also prove that each item loads on its designated construct with highest loadings and no mis-loading exists. The discriminant validity is satisfactory.

Table 3 here.

5.2. *Structural model*

Table 4 proffers the results of structural model. The estimation of standardized path coefficients is based on the path weighting scheme, and the significance is the result of 1,000 bootstrapped samples with construct level changes (Tenenhaus, Vinzi, Chatelin, & Lauro, 2005). Depending on a hierarchical regression procedure, this study firstly checks the effect of control variable (Farah & Newman, 2010). Model 1 states that consumer's length of brand relationship has a significant positive impact on brand loyalty ($\beta=0.24, p<0.001$). Next, Model 2 examines the effect of the four main variables and finds that functional value ($\beta=0.26, p<0.0001$), emotional value ($\beta=0.32, p<0.0001$), social value ($\beta=0.14, p<0.05$), and brand identification ($\beta=0.28, p<0.0001$) predict brand loyalty with statistical significance and explain 73.17% variance. The derived results support H1, H2, H3, and H4. Model 3 and 4 further proceed

moderating analyses with product-item indicators approach (Chin, Marcolin, & Newsted, 2003), and find that only age biases the emotional value-loyalty and social value-loyalty linkages positively and the relationship of brand identification and loyalty negatively. H5d is supportive, and H5a-H5c are against hypotheses. Surprisingly, gender difference does not result in any moderating effect across the four relationships, and H6a and H6c are not supported. In addition to the coefficient of determination and path coefficient, this study adopts effect size to evaluate the structure model with moderators (Urbach & Ahlemann, 2010). The calculation results of effect size prove that age has a medium effect size (0.23), while gender (0.05) is in small effect size. Figure 1-3 show how the moderating role of age function.

Table 4 here.

Figure 2 here.

Figure 3 here.

Figure 4 here.

6. Discussion

While consumer value and brand identification may dominate the formation of brand loyalty, there is little understanding regarding the role of age and gender difference in these relationships. In practice, marketing managers need more exquisite and feasible strategic directions to dispose their resource as well. As such, this study takes age and gender into account and expects to leverage the both theories by consumer segmentation. An overview of our empirical results firstly validates that

consumer value (i.e., functional value, emotional value, and social value) and brand identification positively predict brand loyalty. With regard to the moderating effect of age, our results demonstrate that age weakens the relationship of brand identification and loyalty as expected and indicate that younger consumers may have a greater brand patronage for the identification reason. Against our expectation, age does not moderate the linkage of functional value and loyalty, but significantly strengthens the effects of emotional/social value on brand loyalty. A possible reason for the insignificance may be that only one respondent is aged above 55 and the rest are in the young and middle age (Kohijoki & Marjanen, 2013). In this vein, most respondents may have a higher acceptance of smartphone and use it for multiple purposes (e.g., work or entertainment) instead of merely conversation. The perceived functional value may then contribute to brand loyalty without age difference. Specifically, for middle-aged consumers, the smartphone may tremendously improve the way which they usually work and live, and the effect of emotional value which derives from usage on loyalty is thus greater than younger consumers. As for the positive moderating influence of age on the relationship of social value and loyalty, our results may be in line with Churchill and Moschis (1979)'s arguments that the motivation of social consumption increases with age and maturity in human development. The symbolic representations of brand are more important for middle-aged consumers to earn social status and to foster interpersonal relationships. Our results may also echo the findings of Heckhausen (1997) that middle-aged consumers and older consumers are, compared with younger consumers, in pursuit of community goals, and thus social value is more crucial. By and large, the effect of emotional value, social value, and brand identification on brand loyalty change as age increases though older respondents (i.e., above 55) in our sample is relatively less.

Interestingly, the moderating effect of gender is absent in all the four relationships

and violates our expectation of gender difference regarding functional value, social value, and brand identification. Our results are parallel with Leong, Ooi, Chong, and Lin (2013)'s study which agrees there is no significant difference between men and women in the adoption of mobile entertainment services, and with Albert, Merunka, and Valette-Florence (2013)'s findings which document that brand identification positively determines brand commitment with no gender effect. The most possible reason may be the research context in which smartphone brand is under evaluation. Though Venkatesh and Morris (2000) find the reason to use computer in workplace may vary for men and women, the gender difference may not be significantly exist in smartphone usage which is not mandatory. As with that gender effect may not always exist or function in the same direction across product types (Dittmar, 2005), contextual factor may influence the occurrence of gender difference. Specifically, many researchers announce men and women show different pattern in mobile phone usage, but most of their arguments are based on observations or qualitative proof (Lemish & Cohen, 2005; Srivastava, 2005; Syed & Nurullah, 2011; Walsh & White, 2007). Our results provide a solid evidence with surveyed samples and verify the gender indifference in the relationships of four antecedents and brand loyalty of smartphone.

6.1. Theoretical implications

The empirical findings of this study entail five theoretical implications. First, this study proves the importance of consumer value for brand loyalty with a succinct taxonomy of three value types, and the fertility of consumer value appears not only in retailing context (Sweeney & Soutar, 2001) but in technology product context as well. The significance of functional value, emotional value, and social value indicates that consumers stay with a certain smartphone brand based on a variety of evaluations

aside from the functional/economic perspective. With empirical proof, our findings may, to some extent, extend Horváth and Sajtos (2002)'s research and connate that the three product attributes of mobile phones deliver corresponding value to consumers and prompt them to purchase repeatedly.

In addition, prior studies on self-brand relationship suggest narrowing the distance between consumers and brand identity to achieve congruity by figuring out the consumer identity and brand identity respectively. However, this suggestion emerges one major criticism of the identity instability of consumers for a given brand, and hinders the generalizability of empirical results and practical applicability (Geuens, Weijters, & De Wulf, 2009). Given brand identification is a consumer's subjective evaluation of self-brand congruity, this construct may mitigate the complexity of consumer identity and be more crucial for loyalty prediction. In accordance with He et al. (2012)'s findings, our results verify that brand will successfully earn consumers' loyalty via their perceived identification while purchasing smartphones.

Third, an integrative inspection of the effect of three value types and brand identification on loyalty points out that functional value, emotional value, and brand identification have greater influence on loyalty than social value with nearly twice in estimate magnitude (see Model 2-4 in Table 4). The brand loyalty of smartphone may primarily depend on individual-related factors more than peer pressure. 個人化的

Fourth, given that younger consumers are the majority of smartphone users, this study hypothesizes the effect of age difference primarily on product experience (Achenreiner & John, 2003). However, three of the four relationships function in an unexpected way. Though these unexpectedness may partially attribute to the sample age which is not really "old", other theories on human development regulation (Heckhausen, 1997) such as socioemotional selectivity theory which address that

older consumers are in a search for enriching-the-self asset and emotion-related goals because of salient mortality may provide excellent explanation as well (Carstensen, 1995). The effect of age difference in consumers' smartphone loyalty should reconcile product experience and development regulation (Part et al., 2013).

Finally, this study does not corroborate the existence of gender difference by considering product experience and gender socialization. Our results echo Dittmar (2005)'s illustration that gender difference is product-specific, and the impacts of the three value types and brand identification on loyalty are indifferent between men and women in smartphone context.

6.2. *Managerial implications*

Given consumer value and brand identification contribute to brand loyalty, smartphone marketers should not only deliver functional, emotional, and social value to consumers, but also establish brand identity in terms of attractiveness, distinctiveness, and salience to earn consumers' identification (Kim, Han & Park, 2001). Considering the relative importance of the four loyalty drivers, managers have to endeavor to put more emphasis on the individual-related factors as functional value, emotional value, and brand identification. Additionally, our results find that senior consumers may be greater value-driven and younger consumers tend to be greater identity-driven. To further leverage marketing resource efficiently, smartphone managers should not only deliver functional value to consumers across age, but communicate identity attractiveness with younger consumer and emotional and social value with senior ones.

6.3. *Limitations and future revenue*

The generalization of our results needs careful concern in that there are five

major limitations exist in the present study. The first is that this study recruits sample from Internet with a non-probabilistic method. Even though there is a high overlap between users of Internet and smartphone in Taiwan and 73.6 Internet users hold smartphones (Phycos, 2013), the collected sample may not fully match the population frame of smartphone users and a more representative sample is necessary in future studies. Second, the empirical evidence of this study derives from Taiwanese response. Given that consumers' cultural difference may influence their value preference and need for identification across age and gender (Park & Rabolt, 2009), future studies should examine this issue with respondents with various culture/country background. Third, this study measures age in a chronological manner. While studies on advertising persuasion have proved that cognitive age is more influential than chronological age to impact brand evaluation and self-referencing effect upon the "for-me" perception (Chang, 2008), future studies need to investigate the effect of age difference in terms of cognitive age. Fourth, this study tests proposed hypotheses in smartphone consumption context. Owing to smartphone is a high-involvement product (Walsh et al., 2011), the generalization of our finding may be restricted. More studies have to analyze this issue with products across involvement levels for robustness as Stokburger-Sauer et al. (2012) suggest. Lastly, the competition of smartphone is not only between brands but between platforms as well (Bellman, Potter, Treleaven-Hassard, Robinson, & Varan, 2011), and platform effect may bias consumers' brand choice of smartphone. In this regard, future studies should control the platform effect to have a better model validity.

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Table 1

Measures and reliability tests.

Construcuts and items		Loading	α	CR
<i>Functional value (Kim et al., 2011)</i>			0.91	0.94
FV1	X mobile phones have an acceptable standard of quality.	0.93		
FV2	X mobile phones are reliable in their performance.	0.92		
FV3	X mobile phones possess a degree of quality which is satisfactory.	0.95		
FV4	X mobile phones offer value for money.	0.75		
<i>Emotional value (Kim et al., 2011)</i>			0.86	0.90
EV1	I like the way X mobile phones look.	0.84		
EV2	X mobile phones are not catching. (R)	0.81		
EV3	Using X mobile phones is interesting to me.	0.83		
EV4	Using X mobile phones gives fun to me.	0.86		
<i>Social value (Kim et al., 2011)</i>			0.82	0.88
SV1	Using X mobile phones enhances my self image to others.	0.88		
SV2	Using X mobile phones improves the way I am perceived.	0.84		
SV3	Using X mobile phones does not help me maintain my social relationships with others. (R)	0.69		
SV4	Using X mobile phones enhances my social relationships with others.	0.81		
<i>Consumer-brand identification (Stokburger-Sauer et al., 2012)</i>			0.83	0.90
CB1	I feel a strong sense of belonging to X mobile phones.	0.87		
CB2	X mobile phones are like a part of me.	0.88		
CB3	X mobile phones have a great deal of personal meaning for me.	0.85		

<i>Brand loyalty (Anderson and Srinivasan, 2003; Zeithaml, Berry, and Parasuraman, 1996)</i>		0.91	0.94
BL1	I believe that X mobile phones are my favorite.	0.88	
BL2	I say positive things about X mobile phones to other people.	0.86	
BL3	I recommend X mobile phones to someone who seeks my advice.	0.89	
BL4	When I need to make a purchase, X mobile phones are my first choice.	0.92	

Note:

1. Mark "R" indicates that the given item is in a reverse form.
2. The loadings derive from the direct effect model.

Table 2

Demographics of respondents (n=157)

Variable	Frequency (%)
<i>Gender</i>	
Male	86 (54.78)
Female	71 (45.22)
<i>Age</i>	<i>M: 26.98; SD: 6.60</i>
<i>Education level</i>	
High school	8 (5.10)
Junior college	4 (2.55)
College	109 (69.43)
Graduate	36 (22.93)
<i>Industry</i>	
Public employee	12 (7.64)
Manufacturing	21 (13.38)
Service	33 (21.02)
Students	72 (45.86)
Others	19 (12.10)
<i>Disposable income</i>	<i>M: 664.01; SD: 569.15</i>
<i>How long do you buy a new mobile phone</i>	<i>M: 2.48; SD: 0.77</i>
<i>How many smartphones do you have</i>	<i>M: 1.20; SD: 0.45</i>
<i>How many feature phones do you have</i>	<i>M: 0.68; SD: 0.82</i>
<i>Are the latest feature phone and smart phone you bought the same brand</i>	
Yes, they are the same brand	29 (18.47)
No, they are not the same brand	127 (80.89)
I never bought a feature phone	1 (0.64)
I never bought a smartphone	0 (0.00)
<i>Are the latest two smartphones you bought the same brand</i>	
Yes, they are the same brand	25 (15.92)
No, they are not the same brand	39 (24.84)
I just bought a smartphone once	93 (59.24)
<i>How long have you been using the most-used</i>	<i>M: 1.47; SD: 0.95</i>

smartphone (X brand)

Note: 1 USD $\doteq$ 30 NTD (exchange rate of July 15, 2013)

Table 3

Descriptive statistics and discriminant validity.

	<i>M</i>	<i>SD</i>	UV	HV	SV	BI	BL
UV	5.07	1.03	0.79				
HV	5.24	0.94	0.55	0.70			
SV	4.27	1.07	0.27	0.30	0.65		
BI	4.50	1.27	0.31	0.34	0.56	0.75	
BL	4.77	1.27	0.53	0.58	0.45	0.52	0.79

Note: Diagonals are the value of average variance extracted and off-diagonals are the squared correlation.

Table 4

PLS results of structural model.

Variable	Expected sign	Model 1	Model 2: Direct effect	Model 3: Age	Model 4: Gender
Length of brand relationship	C.V. (+)	0.24** (3.19)	0.02 (0.54)	0.01 (0.35)	0.03 (0.58)
Age	M.V.	--	--	0.13* (2.45)	--
Gender	M.V.	--	--	--	-0.08 (1.81)
Functional value	H1 (+)	--	0.26*** (3.66)	0.25** (3.05)	0.25** (3.18)
Emotional value	H2 (+)	--	0.32*** (4.91)	0.30*** (4.15)	0.31*** (4.48)
Social value	H3 (+)	--	0.14* (2.08)	0.14* (2.29)	0.15* (1.99)
Brand identification	H4 (+)	--	0.28*** (4.09)	0.31*** (4.53)	0.29*** (4.05)
Functional value*Age	H5a (-)	--	--	-0.12 (1.35)	--
Emotional value*Age	H5b (-)	--	--	0.22* (2.29)	--
Social value*Age	H5c (-)	--	--	0.29* (2.54)	--
Brand identification*Age	H5d (-)	--	--	-0.22* (2.00)	--
Functional value*Gender	H6a (+)	--	--	--	0.09 (1.11)
Emotional value*Gender	H6b (n.s.)	--	--	--	-0.05 (0.67)
Social value*Gender	H6c (-)	--	--	--	-0.02 (0.27)
Brand identification*Gender	H6d (-)	--	--	--	0.01 (0.11)
$R^2_{\text{Brand loyalty}} =$		5.92%	73.17%	78.25%	74.52%
Effect size (f^2)				0.2336	0.0530

Note:

1. The number in parenthesis is t-value derived from 1000 bootstrapped samples.
2. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Two-tailed test.
3. n.s. refers to no significant difference.

4. The calculation of effect size is based on Cohen (1988) $f^2 = (R^2_{\text{model with moderator}} - R^2_{\text{model without moderator}}) \div (1 - R^2_{\text{model with moderator}})$

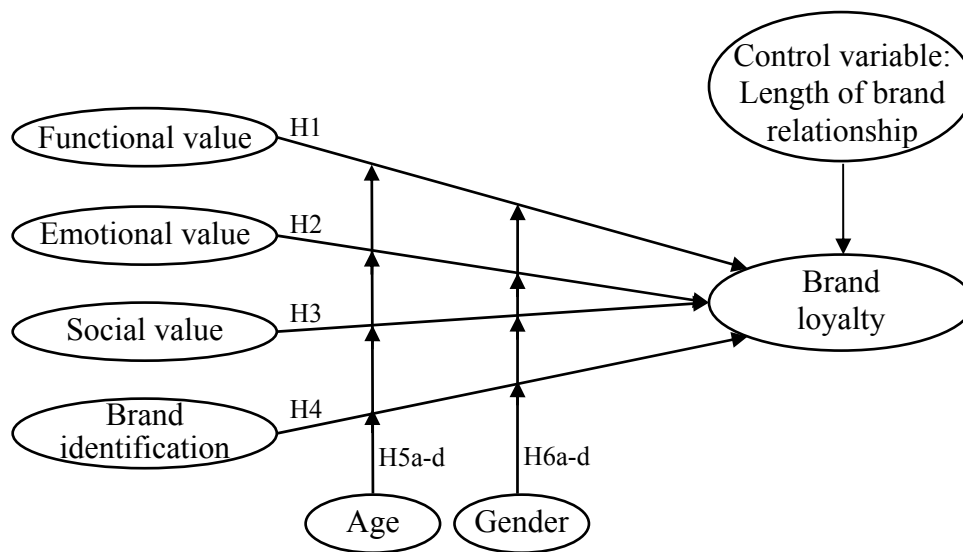
Fig. 1. Research model.

Fig. 2. The moderating effect of age on the relationship of emotional value and brand loyalty.

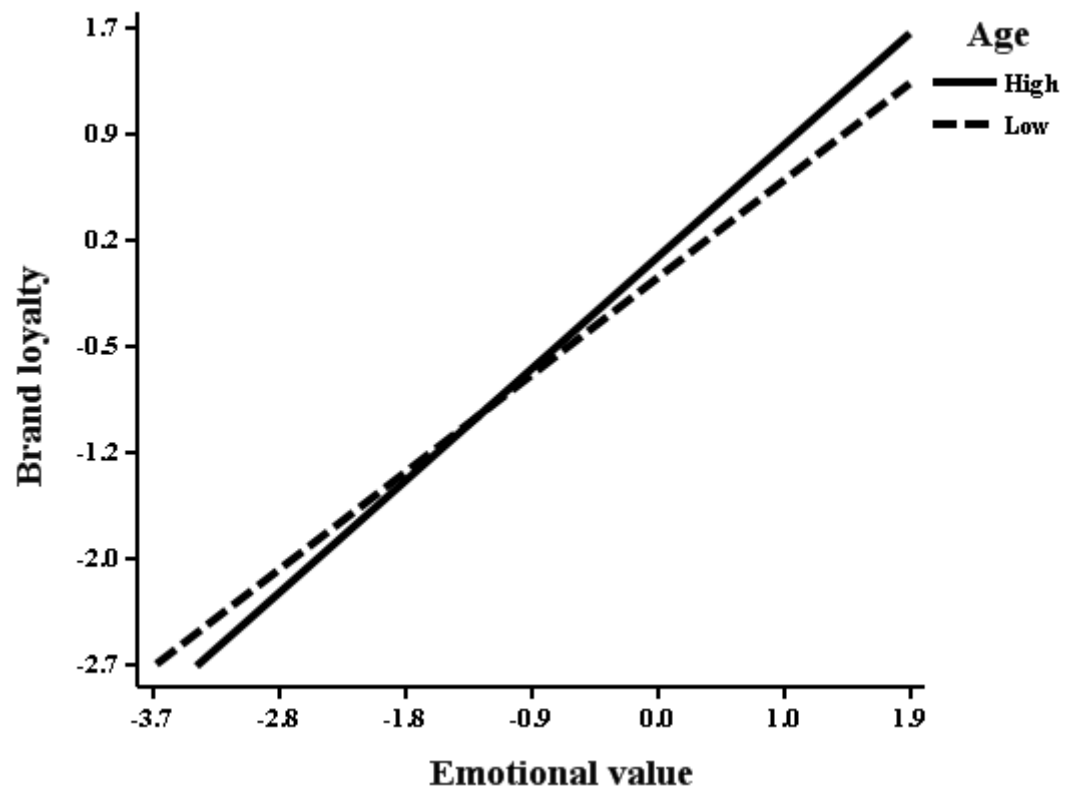


Fig. 3. The moderating effect of age on the relationship of social value and brand loyalty.

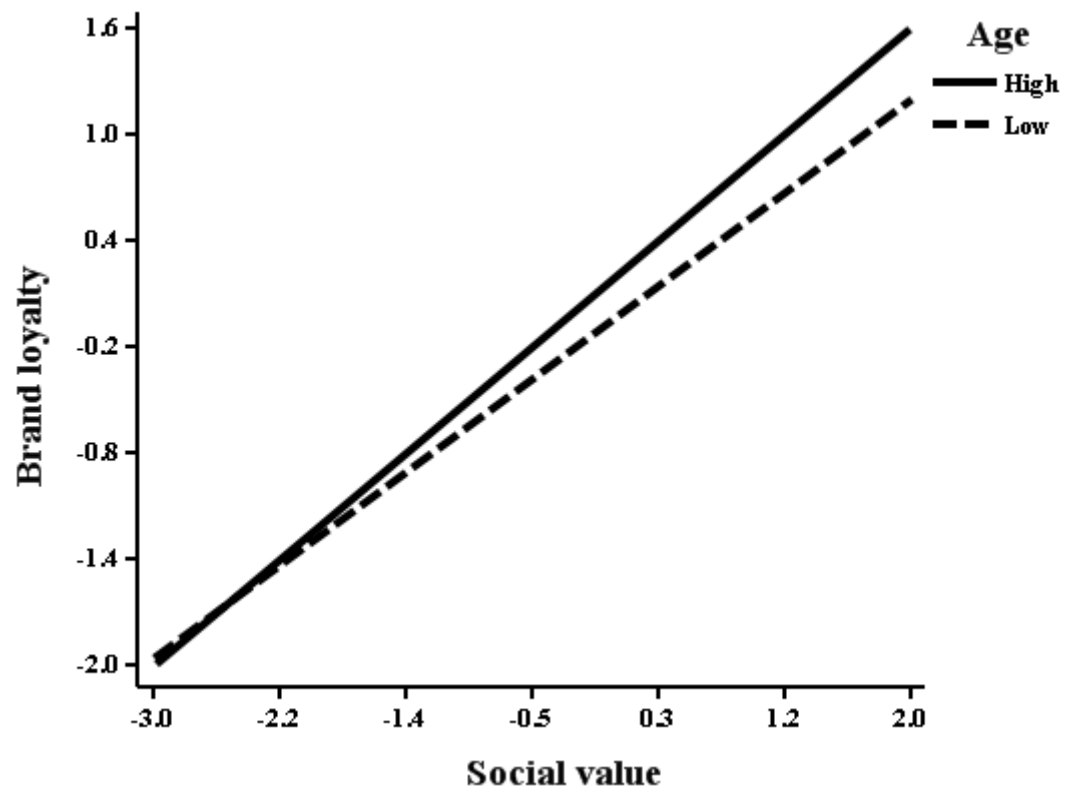
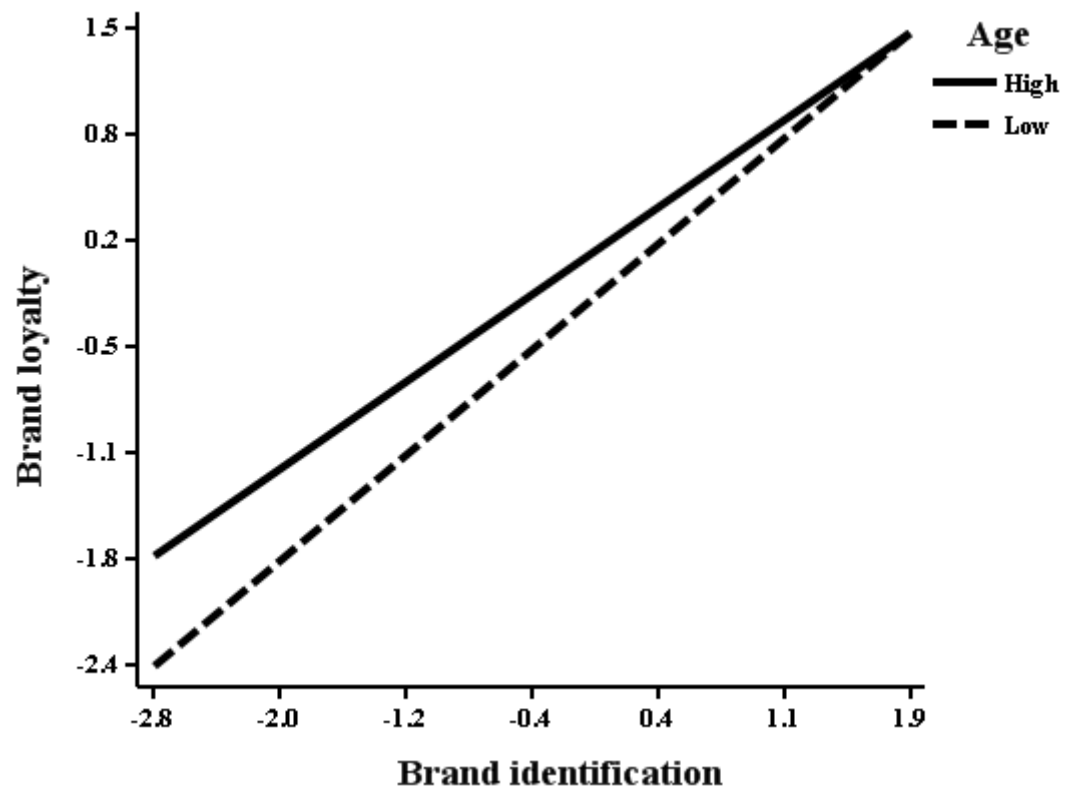


Fig. 4. The moderating effect of age on the relationship of brand identification and brand loyalty.



科技部專題研究計畫成果報告撰寫格式

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科技部基於學術公開之立場，鼓勵一般專題研究計畫主持人發表其研究成果，但主持人對於研究成果之內容應負完全責任。計畫內容及研究成果如涉及專利或其他智慧財產權、違異現行醫藥衛生規範、影響公序良俗或政治社會安定等顧慮者，應事先通知科技部不宜將所繳交之成果報告蒐錄於學門成果報告彙編或公開查詢，以免造成無謂之困擾。另外，各學門在製作成果報告彙編時，將直接使用主持人提供的成果報告，因此主持人在繳交報告之前，應對內容詳細校對，以確定其正確性。

成果報告繳交之期限及種類（期中進度報告及期末報告），應依本部補助專題研究計畫作業要點及專題研究計畫經費核定清單之規定辦理。至報告內容之篇幅，期中進度報告以4至10頁為原則，並應忠實呈現截至繳交時之研究成果，期末報告不得少於10頁。

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(二)中、英文摘要及關鍵詞 (keywords)。

(三)報告內容：包括前言、研究目的、文獻探討、研究方法、結果與討論（含結論與建議）等。

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(六)附表及附圖可列在文中或參考文獻之後，各表、圖請說明內容。

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2.每項研發成果填寫一份。

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(九)該計畫若列屬國際合作研究，應將雙方互訪及合作研究情況、共同研究成果及是否持續雙方合作等，於報告中重點式敘明。

三、計畫中獲補助國外差旅費，出國進行國際合作與移地研究、出席國際學術會議者，每次均須依規定分別撰寫出國心得報告（其中，出席國際學術會議者須另附發表之論文全文或摘要，但受邀專題演講或擔任會議主持人者不在此限），並至本部網站線上繳交電子檔，出國心得報告格式如附件四、五。

四、計畫中獲補助國外學者來臺費用，每次均須分別撰寫國外學者來臺訪問成果報告，並至本部網站線上繳交電子檔，報告格式如附件六。

五、報告編排注意事項

(一)版面設定：A4 紙，即長 29.7 公分，寬 21 公分。

(二)格式：中文打字規格為每行繕打（行間不另留間距），英文打字規格為 Single Space。

(三)字體：以中英文撰寫均可。英文使用 Times New Roman Font，中文使用標楷體，字體大小以 12 號為主。

科技部補助專題研究計畫成果報告

(☐期中進度報告/☐期末報告)

智慧型手機品牌忠誠模式：具吸引力替代方案可得性之調節角色

計畫類別：☒個別型計畫 ☐整合型計畫

計畫編號：MOST 102-2410-H-041 -003 -

執行期間：2013 年 08 月 01 日至 2014 年 07 月 31 日

執行機構及系所：嘉南藥理大學資訊管理系

計畫主持人：廖奕雯

共同主持人：王怡舜

計畫參與人員：葉敬軒

本計畫除繳交成果報告外，另含下列出國報告，共 1 份：

☐執行國際合作與移地研究心得報告

☒出席國際學術會議心得報告

期末報告處理方式：

1. 公開方式：

☐非列管計畫亦不具下列情形，立即公開查詢

☒涉及專利或其他智慧財產權，☐一年☐二年後可公開查詢

2. 「本研究」是否已有嚴重損及公共利益之發現：☒否 ☐是

3. 「本報告」是否建議提供政府單位施政參考 ☒否 ☐是， （請列舉提供之單位；本部不經審議，依勾選逕予轉送）

中 華 民 國 103 年 08 月 06 日

科技部補助專題研究計畫成果報告自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現（簡要敘述成果是否有嚴重損及公共利益之發現）或其他有關價值等，作一綜合評估。

1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估

☒ 達成目標

☐ 未達成目標（請說明，以 100 字為限）

☐ 實驗失敗

☐ 因故實驗中斷

☐ 其他原因

說明：

2. 研究成果在學術期刊發表或申請專利等情形：

論文：☒ 已發表 ☐ 未發表之文稿 ☐ 撰寫中 ☐ 無

專利：☐ 已獲得 ☐ 申請中 ☒ 無

技轉：☐ 已技轉 ☐ 洽談中 ☒ 無

其他：（以 100 字為限）

3. 請依學術成就、技術創新、社會影響等方面，評估研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性），如已有嚴重損及公共利益之發現，請簡述可能損及之相關程度（以 500 字為限）

智慧型手機在台灣的發展相當迅速，且台灣對智慧型手機的持有率及汰換率也相當高，因此，本研究欲探討智慧型手機品牌之顧客忠誠度的影響因素，並以年齡及性別為影響之調節變數作探討。

本研究提出一個研究模式，探討顧客知覺價值對手機品牌忠誠度的影響，顧客知覺價值分成四個構面，分別為功能性價值、情感性價值、社會性價值及品牌認同感等。探討這四個構面對手機品牌忠誠度的影響。研究結果發現四個因素皆會影響手機品牌忠誠度，另外，年齡對於知覺價值對品牌忠誠度的影響，有調節的效果。

本研究結果可提供給智慧型手機開發廠商做為手機開發之參考，也可以提供給相關行銷部門做為行銷推廣策略制定之參考。另外，也讓民眾了解顧客在選擇智慧型手機品牌時所重視的因素，並進一步探討性別及年齡對智慧型手機品牌選擇的調節性影響。

科技部補助計畫衍生研發成果推廣資料表

日期：__年__月__日

科技部補助計畫	計畫名稱： 計畫主持人： 計畫編號： 領域：		
研發成果名稱	(中文)		
	(英文)		
成果歸屬機構		發明人 (創作人)	
技術說明	(中文) (200-500 字)		
	(英文)		
產業別			
技術/產品應用範圍			
技術移轉可行性及預期效益			

註：本項研發成果若尚未申請專利，請勿揭露可申請專利之主要內容。

科技部補助專題研究計畫執行國際合作與移地研究心得報告

日期：__年__月__日

計畫編號	MOST		
計畫名稱			
出國人員 姓名		服務機構 及職稱	
出國時間	年 月 日至 年 月 日	出國地點	
出國研究 目的	☐ 實驗 ☐ 田野調查 ☐ 採集樣本 ☐ 國際合作研究 ☐ 使用國外研究設施		

一、執行國際合作與移地研究過程

二、研究成果

三、建議

四、本次出國若屬國際合作研究，雙方合作性質係屬：(可複選)

- ☐分工收集研究資料
☐交換分析實驗或調查結果
☐共同執行理論建立模式並驗證
☐共同執行歸納與比較分析
☐元件或產品分工研發
☐其他 (請填寫) _____

五、其他

科技部補助專題研究計畫出席國際學術會議心得報告

日期：103 年 08 月 05 日

計畫編號	MOST 102-2410-H-041 -003 -		
計畫名稱	智慧型手機品牌忠誠模式： 具吸引力替代方案可得性之調節角色		
出國人員 姓名	廖奕雯	服務機構 及職稱	嘉南藥理大學/助理教授
會議時間	103 年 7 月 3 日至 103 年 7 月 5 日	會議地點	Osaka, Japan
會議名稱	(中文) 2014 國際商管與資訊研討會 (BAI2014) (英文) 2014 International Conference on Business and Information		
發表題目	(中文) 探討年齡及性別在顧客價值及顧客品牌認同對品牌 忠誠度影響的差異：以台灣智慧型手機為例 (英文) Age and gender difference in the effect of consumer value and consumer-brand identification on brand loyalty: a smartphone case in Taiwan		

一、 參加會議經過

由於論文研究多屬於資訊管理領域的相關論文，因此論文多次投稿至 BAI 相關研討會，在過去也曾經獲得最佳論文獎之殊榮。在 BAI 研討會當中，除了可以認識全球各地在資訊管理、商學領域的學者外，也可以看到與會學者從許多不同方向探討資訊管理及商管相關領域的研究。在論文發表過程中，與會來賓相當肯定台灣智慧型手機的發展，也覺得許多行動商務或是 APP 應用在台灣的环境有許多發展的潛力及前瞻性。我會繼續研究研討會及延伸相關的論文方向，探討台灣這個獨特環境中，行動應用程式及行動商務其他相關議題，相信經由這次參與研討會的過程，與相關學者交換許多不同的意見，對於本身研究有相當大的助益。

二、 與會心得

2014 國際商管與資訊研討會 (BAI2014)明年將於日本大阪 i 舉行，會議時間 2014 年 7 月 3 日至 7 月 5 日。BAI2014 研討會涵蓋領域包括所有商學、管理、資訊相關領域，含實務導向、理論發展、實證研究、個案等方面的商學、管理、資訊相關論文，均屬研討會邀稿之範圍。此次參與研討會的過程，與在場許多先進及學者討論資訊管理相關研究議題，也開啟自己研究的眼界及思考範圍，透過與許多學者交談經驗，對於相關議題有延伸的想法及見解，相信對於日後研究能力及想法有一定程度的助益。

經由此次研討會發表論文，與相關學術界或實務界之與會者共同討論，在許多人身上學習到許多研究方法、研究議題及創新研究議題及想法，對於日後研究思考邏輯及方向，有相當大的幫助。

三、發表論文全文或摘要

Age and gender difference in the effect of consumer value and consumer-brand identification on brand loyalty: a smartphone case in Taiwan

ABSTRACT

Given consumer value theory and consumer-brand identification approach are two focal grounds explaining the reason for which consumers stay with a brand, whether their explainabilities sustain across age and gender remains unknown. To better understand the role of age and gender difference in brand loyalty and leverage the varied managerial guidance derived from the two grounds, this study models brand loyalty as a function of functional value, emotional value, social value, and brand identification, and specifies age and gender as moderators. Based on an investigation in Taiwanese smartphone consumption, this study verifies that all the four determinants significantly influence consumers' loyalty towards a brand. Of the two moderating effects, only age biases the emotional value-loyalty and social value-loyalty linkages positively and the relationship of brand identification and loyalty negatively. For senior consumers, greater emotional value and social value will induce higher brand loyalty whilst the effect of brand identification on brand loyalty is mitigated. Noteworthy, gender does not play any moderating role predominantly. Our results may provide theoretical insights for researchers and feasible strategic directions for managers in smartphone business.

Keywords: consumer value; consumer-brand identification, brand loyalty, smartphone, age, gender

Targeted journal: Journal of Business Research

1. Introduction

With the proliferation of the competing brands in the marketplace, how to keep consumers stay loyal has been the imperative for which marketing managers strive (Jones & Sasser, 1995). A host of researchers have devoted many efforts to this issue. They advocate that the notion of brand loyalty should extend from patronage behavior to psychological commitment (Oliver, 1999), and both attitudinal loyalty and behavioral loyalty are able to contribute to pro-brand consequences. Attitudinal loyalty may be positively associated with patronage intention, word-of-mouth, acceptance of premium price, and resistance to counter-persuasion, whilst behavioral loyalty may lead to large market share and profitability (Chaudhuri & Holbrook, 2001; Shankar, Smith, & Rangaswamy, 2003).

In addition, researchers engage in knowing the reason for which brand loyalty occurs by standing on various theoretical grounds. Among these, there may be two acknowledged viewpoints which receive greater academic concern. The first one is consumer value theory, suggesting that value perception is the pivotal predictor of brand loyalty (Kim, Gupta, & Koh, 2011; Sweeney & Soutar, 2001). Consumers will be loyal if he perceives a superior value from a given brand (Hansen, Beitelspacher, & Deitz, 2013). The other one is identification approach which points out that consumer-brand identification (hereafter brand identification) is the antecedent of brand loyalty (Bhattacharya & Sen, 2003; Tuškej, Golob, & Podnar, 2013). Consumers will stick to a given brand once they share similar self-definitional attributes (Stokburger-Sauer, Ratneshwar, & Sen, 2012). Some studies further contend that both viewpoints may positively result in brand trust and then brand loyalty (He, Li, & Harris, 2012), verifying that they are the foundations of brand loyalty

Despite of researchers generally recognize the predictability of consumer value and brand identification on brand loyalty, some empirical studies obtain conflicting

results and some argue that moderating bias may intensify or mitigate the magnitude of these causality effects. For example, So, King, Sparks, and Wang, (2013) evidences that brand identification does not predict consumers' hotel loyalty as expected while Jones, Mothersbaugh, and Beatty (2000) find that consumers with positive value evaluation may switch to a different brand due to low switching cost. Thus, the exploration of brand loyalty needs to take situational factors into consideration (Pan, Sheng, & Xie, 2012). Furthermore, the two viewpoints offer varied strategic guidance which brand managers may have difficulties in business practice. Strategies derived from consumer value theory may encourage managers to emphasize product development and to communicate the advantages of product attributes to consumers (Karjaluoto, Jayawardhena, Leppäniemi, & Pihlström, 2012), whereas strategies derived from identification approach may drive managers to create an attractive identity and to organize a community for intimate consumer-brand and consumer-consumer interaction (Stokburger-Sauer et al., 2012). These advices may easily plunge managers into a dilemma of resource allocation.

To enrich the arguments of both theoretical viewpoints and to clarify efficient marketing strategies for resource leverage, this study aims to concurrently examine the effect of consumer value and brand identification on brand loyalty and to incorporate consumer characteristics (i.e., age and gender) as moderators depending on the principle of consumer heterogeneity (Valette-Florence, Guizani, & Merunka, 2011). To this end, this study chooses Taiwanese's consumption of smartphone as the research context. In Taiwan, smartphone has overwhelmed feature phone and shares 71% mobile phone market in terms of supply in the third quarter in 2012 (IDC, 2012). A recent survey of Google (2012) also reports that the penetration rate of smartphone is 32% in the first quarter of 2012 and increases 6% compared with that in 2011. Smartphone have become a spotlighted product with a tremendous potential growth.

Given brand is a crucial factor of smartphone marketing (Arruda-Filho, Cabusas, & Dholakia, 2010; Arruda-Filho & Lennon, 2011), the research context of this study is appropriate.

The rest of this study proceeds as follows. In the beginning, the authors review the two popular theoretical viewpoints and illuminate their underlying notions. Then, section 3 portrays the research model and proposes hypotheses regarding direct and moderating effect in the context of smartphone consumption. The research method is in section 4, including sampling, measure development, and the examination of common variance method. Section 5 details the empirical results. And finally, this research concludes with a discussion of results, theoretical and managerial implications, limitations, and directions for further research.

2. Literature review

2.1. Consumer value theory

Consumer value is the fundamental basis for a successful transaction, and motivates consumers to purchase repeatedly as well (Holbrook, 1994). The goal and action identity theory illustrates that value is a superordinate goal and positively regulates loyal behavior which is at subordinate level (Yang & Peterson, 2004). A review of prior studies yields that the nature of consumer value is diversified. Initially, marketing studies put an emphasis on the product attributes, and assume that better product performance/function will be able to satisfy consumers' needs and necessarily result in value delivery (Babakus & Yavas, 2008; Zeithaml, 1988). In this regard, product quality which is the overall assessment of product performance (i.e., benefit) is the foci of loyalty studies (Pan et al., 2012). Importantly, consumers' subjective perception of quality, instead of objective quality, is decisive for repurchase behavior. Treating perceived quality as consumer value, however, receives criticism of

narrowness and a broader scope of consumer value which contains benefit and sacrifice (e.g., mental, physical, and financial) will be more realistic (Zeithaml, 1988). Perceived benefit contributes to perceived value in a positive route while perceived sacrifice is in an opposite way. If perceived benefit outperforms perceived sacrifice, consumers will evaluate a transaction to be valuable (Yang & Peterson, 2004). Based on equity theory, the positive trade-off of benefit and sacrifice makes consumers feel equitable and be willing to repurchase. Thus, high perceived value will accompany with loyal behaviors (Cronin, Brady, & Hult, 2000; Lin, Sher, & Shih, 2005).

Not satisfying with that perceived value merely comprises functional or economic nature, many researchers have explored the multiplicity of consumer value. The most well-known may be the study of Hirschman and Holbrook (1982). They delineate that consumers may experience symbolic, hedonic, or esthetic value from shopping process and/or product usage. This narrative illustration expands consumer value beyond the functional benefit and inspires a research stream. Next, Sheth, Newman, and Gross (1991) suggest a detailed typology including functional, emotional, social, conditional, and epistemic value by synthesizing theories of economy, sociology, psychology, and marketing. For simplification, Babin, Darden, and Griffin (1994) develop a succinct value structure with two dimensions, consisting of utilitarian and hedonic component. Similarly, Sweeney and Soutar (2001) decompose consumer value into functional, emotional, and social value in retailing context. Extending Sheth et al. (1991)'s work, Pihlström and Brush (2008) divide consumer value into two stages and conditional and epistemic value are the antecedents of monetary, convenience, emotional, and social value.

Following Sweeney and Soutar (2001)'s finding, this study argues functional, emotional, and social value are the three major types of consumer value. Functional value, which is analogous to utilitarian value by definition, denotes the overall benefit

gained from the product/brand based on functional performance and value for money. Specifically, the definitional scope of functional value covers the get-give trade-off idea of perceived value. Emotional value, which is equivalent to hedonic value, indicates the feelings or affective status aroused by the product/brand (Kim et al., 2011). In general, emotional value derives from product usage/exploration and product appearance. Finally, social value refers to the extent to which the product/brand enhances consumers' social well-being and interpersonal relationship, and roots in the symbolic meanings of the product/brand (Rintamäki, Kanto, Kuusela, & Spence, 2006). All the three value types are unique and interrelated (Sweeney & Soutar, 2001). With empirical evidence in telecommunications services, functional value, emotional value, and social value significantly constitute of consumer value, and then impact brand loyalty (Karjaluoto et al., 2012). Similarly, Pihlström and Brush (2008) reveal that functional (i.e., monetary and convenience), emotional, and social value determine consumers' repurchase intention of mobile content services.

2.2. Brand identification approach

Brand identification approach conceptually sources from consumer-company identification approach (Bhattacharya & Sen, 2003), positing that the extent to which consumers identify with a brand will markedly relate to consumers' extra-role behaviors (e.g., recommendation or new consumer recruitment) and in-role behaviors (e.g., product utilization or repurchase) (Ahearne, Bhattacharya, & Gruen, 2005). According to Lam, Ahearne, Hu, and Schillewaert (2010:129), brand identification indicates that "consumers share the same self-definitional attributes with a brand." This definition connotes that brand possesses distinct identity/personality (Donovan, Janda, & Suh, 2006; Stokburger-Sauer et al., 2012). Not only brand is an extrinsic cue which consumers can infer the quality of a product, but also brand projects an

intrinsic identity manipulated by brand managers to differentiate from competitors (Sung & Choi, 2010; van Rekom, Jacobs, & Verlegh, 2006). For example, Heineken, a famous beer brand, may have a representation of “sober, serious, successful, and a little aloof (Kotler, Ang, Leong, & Tan, 2003:421).” The humanization makes consumers be able to interact with brand as with people spiritually, and be willing to establish a relationship with it (Fournier, 1998).

Prior studies have expounded that two mechanisms motivate consumers to identify with a brand. The first is the need for consistency (Kressmann, Sirgy, Herrmann, Huber, Huber, & Lee, 2006), and consumers may search for a brand with salient identity which match his actual self (He et al., 2012). High similarity/congruity in identity between consumers and brand will facilitate strong consumer belongingness and then generate brand identification (Lam, Ahearne, Mullins, Hayati, & Schillewaert, 2013). The second is the need for self-esteem. Consumers pursue an ideal identity/self-image by means of purchasing an idiosyncratic brand (He et al., 2012). The more a consumer approaches his ideal self, the more he feels himself lifted and acquires self-esteem (Kressmann et al., 2006). Thus, a brand whose identity meets a consumer’s ideal self can earn his identification.

Viewing brand identification as “a psychological state of perceiving, feeling, and valuing his or her belongingness with a brand,” Lam et al. (2010:130) operationalize it as a second-order formative construct with three reflective sub-dimensions. Owing to that affective brand identification may blend with other constructs such as brand attachment and brand love, and that evaluative brand identification is similar to brand attitude and is likely to be the result of identification, this study agrees with the opinion of Stokburger-Sauer et al. (2012) and considers brand identification as the consumers’ perception of both entities’ identities at cognitive level. In this vein, consumers’ brand identification is a psychological state rather than a process, and

positively determines brand loyalty (Rocereto & Mosca, 2012; Stokburger-Sauer et al., 2012).

3. Hypotheses

3.1. The effect of functional value, emotional value, social value on brand loyalty in smartphone consumption context

The research model of this study is in Figure 1. Studies on technology marketing have recognized that a technology product is a combination of tangible and intangible attributes. By grouping all the attributes into performance attribute, appearance attribute, and communication attribute, Lee, Ha, and Widdows (2011) elaborate that technology products may deliver value to consumers via these three attribute types. Consumers may gain functional value if the performance attributes of a technology product are useful, easy to use, and innovative. Additionally, a technology product with attractive appearance, novel material, and atypical design will positively elicit consumers' feeling, and offer consumers with emotional value. Third, a technology product may be a symbol itself and/or carry symbolic meanings, enabling consumers to communicate others with what his lifestyle is and what he believes and then acquire social value. Exploring the attributes of mobile phones, Horváth and Sajtos (2002) identify utility/usefulness, experience/enjoyment of use, and communicative power/expression are the three main attribute types. The three types are much similar to those of Lee et al. (2011) by nature.

Figure 1 here.

Smartphone is a state-of-the-art technology product. By integrating components such as a fast core processor, a high-pixel camera, a high-resolution display panel, and

a great memory/storage capacity into a handheld device, a smartphone provides not only the telecommunication service but also the computer-like applications such as entertainment (e.g., listen music or play games), business (e.g., document editing), education (e.g., language learning), and so on (Liao & Hsieh, 2013; Park & Han, 2013). Specifically, a smartphone is able to access to Internet, and performs innovative services like location-based information (Okazaki & Mendez, 2013a) and electronic payment (Au & Kauffman, 2008). Thus, a smartphone which equips with a high-end product specification will give consumers functional value and then gain consumers' loyalty.

H1. Functional value positively contributes to brand loyalty in smartphone context.

In addition to functional value, consumers may experience emotional value such as playfulness and pleasure from smartphone usage and exploration (Alba & Williams, 2013; Arruda-Filho et al., 2010). Liao and Hsieh (2013) also point out that the fashionable and aesthetic product appearance of smartphone contributes to consumers' emotional value. Thus,

H2. Emotional value positively contributes to brand loyalty in smartphone context.

Recruiting iPhone users as interviewees, Arruda-Filho et al. (2010) conduct a netnographic analysis and find that consumers may have social value from the possession and usage of smartphone. As their results claim, consumers may view the holding of an iPhone is a symbolization of luxury and have their social status raised (Liao & Hsieh, 2013). In addition, the excellent product performance such as convenient, reliability, and all-in-one design also aid in interpersonal interaction by

sharing product experience with their companions. Therefore,

H3. Social value positively contributes to brand loyalty in smartphone context.

3.2. The effect of brand identification on brand loyalty in smartphone consumption context

Some studies have illuminated that a mobile phone is a surrogate of self-identity expression (Mannetti, Pierro, & Livi, 2002; Walsh & White, 2007; Walsh, White, & Young, 2010). By using a personalized ring-tones and decoration, consumers are able to extend himself to the mobile phone. From a brand management standpoint, Lam et al. (2010) have a similar observation that the brand of smartphone holds unique identity and may accord with or enhance consumer identity based on the evidence from iPhone users. Also, the Stokburger-Sauer et al. (2012)'s results which depend on the survey of four product categories (cell phones, athletic shoes, soft drinks, and grocery stores) confirm that high brand identification is able to turn consumers into loyalty and stop consumers from switching. In this vein, the present study hypothesizes that

H4. Brand identification positively contributes to brand loyalty in smartphone context.

3.3. The moderating effect of age

The effect of three value types and brand identification on brand loyalty may vary for different aged consumers (Park, Eisingerich, & Park, 2013). In the context of smartphone consumption, younger consumers are inclined to fling into the usage of smartphone compared with elder consumers. As Coates (2001) details, younger

consumers are involved in more functions such as text, satellite navigation, and photo-editing, whereas elder consumers tend to use mobile phone for communication in emergent conditions. The complicated functions, non aging-friendly menu, and unclear instruction of usage may impede elder consumers to explore the variety of smartphone applications and make elder consumers perceive less functional and emotional value (Kurniawan, 2008). On the contrary, younger consumers may “engage in high level mobile phone use (Walsh et al., 2010:194)” and favor its fashion-designed appearance (Park et al., 2013; Srivastava, 2005). Thus, for younger consumers, the relationships of functional value and emotional value and brand loyalty may be larger.

Additionally, studies have addressed that younger consumers face greater social influence from peer and friends than elder consumers (Smetana, Campione-Barr, & Metzger, 2006), and the shared norm or standard will guide the younger’s consumption behavior. Walsh and White (2006) state that displaying a mobile phone in public will improve younger consumers’ status among peers. In this vein, the effect of social value on brand loyalty may be greater for the youth than for the elders. Finally, according to Erikson’s (1959) theory of psychosocial development, consumers at young age (especially at adolescence stage) have stronger need for identity. They tend to express themselves by material possession, and identify with a brand which represents their value and beliefs (Syed & Nurullah, 2011; Walsh et al., 2010). In a similar manner, Sheldon and Kasser (2001) address that age negatively associates with the identity demand. Thus, the effect of brand identification on loyalty will be stronger for younger consumers than elder ones.

H5. In smartphone context, the effect of functional value (H5a), emotional value

(H5b), social value (H5c), and brand identification (H5d) on brand loyalty is greater for younger consumers than for elder consumers.

3.4. *The moderating effect of gender*

Based on gender socialization theory and self-construal theory (Okazaki & Mendez, 2013a), consumers with varied gender may have different value preference and need of identification. Dittmar, Beattie, and Friese (1995), for example, shed light on that men are activity-focused and may place a higher emphasis on functional value, while women are relationship-oriented and center on more emotional and social value. Dittmar (2005) also declares that emotional value and identity-related factors are more important for women than for men while shopping.

Inquiring technology adoption and usage, Venkatesh and Morris (2000) claim that men and women process information in different socially-constructed cognitive structures, and demonstrate that gender difference results in varied behavioral patterns. They find that the effect of perceived usefulness on behavioral intention is greater for men than for women due to men is task-oriented. Oppositely, women are likely to suffer from IT anxiety and conform to reference groups, and the effect of perceived ease of use and subjective norm are stronger for women than for men. By reviewing studies on computing such as website usage and online shopping, Hasan (2010) recognizes the importance of sex role as well and men and women display diverse perception and attitude.

In mobile phone consumption, Syed and Nurullah (2011) report that men tend to view mobile phone as a toy and explore its functions whereas women are prone to use mobile phone for reasons of communication and relationship maintenance. They also outline that the design and color of mobile phone may contribute to women's usage.

Moreover, Walsh and White (2007) evidence that social influence and normative pressure may be the main driver of women's mobile phone use. Taken as a whole, the effect of functional value on brand loyalty may be stronger for men, while the relationship of social value and brand loyalty is greater for women. More noteworthy is that men and women seek for emotional value via product exploration and appearance respectively, and the gender difference may not significant in between the linkage of emotional value and brand loyalty. Finally, though Dittmar (2005) contends that the effect of identity-related factors on shopping behaviors is stronger for women than for men, Walsh, White, Cox, and Young (2011) prove that gender is not significantly correlated with self-esteem and need to belong in the context of mobile phone use. Therefore,

H6. In smartphone context, the effect of functional value (H6a) on brand loyalty is greater for men than for women, while social value (H6c) are in opposite cases. No significant gender difference exists in emotional value (H6b) and brand identification (H6d).

4. Methods

4.1. Measures

There are five sets of measures developed for the major constructs in this study. The measurement of the three value types originates from the comprehensive work of Kim et al. (2011), and each value has four items after contextual adaption. Next, the measurement of brand identification contains three items and comes from Stokburger-Sauer et al. (2012). This measure set provides richer operationalization of

cognitive brand identification than that of Lam et al. (2010) which directly assesses identity similarity with a Venn diagram and a verbal item. Finally, the measurement of brand loyalty refers to the studies of Anderson and Srinivasan (2003) and Zeithaml, Berry, and Parasuraman (1996), and the chosen four items take both commitment element and comparison element into consideration (Dick & Basu, 1994; Oliver, 1999). Table 1 lists all the measured items. To ensure a better measurement quality and reduce the negative effect of response fatigue, this study interlaces the items and makes 2 of them in a reverse form. This study also conceals the construct terms on the questionnaire to decrease social desirability bias. After a pre-test with a handful of smartphone users, the item wording gets modified and becomes more precise. All items are reflective and scale in a 7-point Likert format (Viswanathan, Sudman, & Johnson, 2004). Respondents answer these items in terms of their experience of the most-used smartphone (X brand). Table 1 presents the psychometric properties of measures.

Table 1 here.

4.2. Control variable

Similar to the effect of length of patronage on store loyalty in service and retailing context (Jones et al., 2000), there may be a positive relationship between length of brand relationship and brand loyalty in product context (Kressmann et al., 2006). Hence, this study measures length of brand relationship with *how long have you been using the most-used smartphone (X brand)* (Jones et al., 2000), and includes it in the analytic model as a control variable for effect purification.

4.3. Data collection and consumer profile

The authors conduct an online survey to collect data and recruit voluntary participants from the biggest bulletin board system in Taiwan (telnet://ptt.cc). The surfers who are smartphone users are qualified to join in this study and access to the online questionnaire via the link embedded in the post. The website (<http://www.mysurvey.tw/>) which hosts the questionnaire restricts every computer to send “one” response for a given questionnaire. To encourage participation, a respondent who provides a useable response is able to join a lottery game, and has a chance with 33% probability to win a gift voucher as a reward (Hsu & Tsou, 2011). The survey continues one month and obtains 179 responses. Of these responses, 22 fail due to the logic inconsistency of the 2 reverse items and the others. The valid responses are 157 in total and satisfies the rule of thumb of partial least squares (PLS) method (Gefen et al. 2000; Haenlein & Kaplan, 2004; Urbach & Ahlemann, 2010), which suggests that sample size should be at least ten times the numbers of independent variables or should be larger than 150.

The demographics of respondents are in Table 2. There are 55% male respondents, and the gender balance is acceptable. The age ranges from 17 to 58 and the average age of the whole sample is 27 years old. Nearly 54% respondents are non-student, and the monthly disposable income is US\$664. In addition, this study inquires respondents’ consumption of mobile phone. As shown in Table 2, respondents buy a new mobile phone in an average of 2.48 years, and have 1.20 smartphone and 0.68 feature phone at the same time. The possession of smartphone is twice as much as that of feature phone, and is similar to the market share in the IDC report mentioned earlier. In the case of buying behavior, respondents show greater brand patronage in the last two shopping in smartphone ($39.06\% = 25/64$) than in the last shopping in feature phone and in smartphone ($18.59\% = 29/156$).

Table 2 here.

4.4. Common method variance

Considering the questionnaire is self-reported, this study adopts Harmon's single-factor test to examine whether common method variance occurs (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The result of explanatory factor analysis reveals that all the measured items do not converge into a single factor. This study further performs confirmatory factor analysis (Wu, Chen, Chen, & Cheng, in press), and finds that the one-factor model have a worse goodness of fit ($\chi^2(152)=884.49$, GFI=0.58, AGFI=0.47, CFI=0.90, IFI=0.90, RMSEA=0.20, RMR=0.098, NFI=0.88, NNFI=0.88) than the five-factor model ($\chi^2(142)=485.52$, GFI=0.76, AGFI=0.68, CFI=0.95, IFI=0.95, RMSEA=0.12, RMR=0.074, NFI=0.93, NNFI=0.94). The problem of common method variance which results in spurious relationships of variables may not be serious in this study.

5. Results

This study analyzes data with PLS which is a variance-based approach of structural equation model and is a distribution-free technique (Hair, Sarstedt, Ringle, & Mena, 2012). The results of measurement model and structural model derives from SmartPLS 2.0 M3 (Ringle, Wende, & Will, 2005).

5.1. Measurement model

As Table 1 presents, the value of Cronbach's α and composite reliability (CR) of each construct ranges from 0.82 to 0.94, indicating the five sets of measures have strong internal consistency (Henseler, Ringle, & Sinkovics, 2009). The factor loadings are all above 0.69, suggesting that more than half of the variance of each item

attributes to its corresponding construct (Chin, 1998). The indicator reliability is adequate. This study evaluates convergent validity with average variance extracted (AVE), and all the AVE value are higher than the threshold (i.e., 0.5) with the minimum of 0.65 (Urbach & Ahlemann, 2010). The items of a given construct share a high variance in common, and convergent validity is evident.

The authors in turn assess discriminant validity with Fornell-Larcker criterion and cross-loadings (Urbach & Ahlemann, 2010). As shown in Table 3, the AVE value of each construct is superior to its corresponding squared correlation, demonstrating that constructs are significantly discriminable. The results of cross-loadings also prove that each item loads on its designated construct with highest loadings and no mis-loading exists. The discriminant validity is satisfactory.

Table 3 here.

5.2. *Structural model*

Table 4 proffers the results of structural model. The estimation of standardized path coefficients is based on the path weighting scheme, and the significance is the result of 1,000 bootstrapped samples with construct level changes (Tenenhaus, Vinzi, Chatelin, & Lauro, 2005). Depending on a hierarchical regression procedure, this study firstly checks the effect of control variable (Farah & Newman, 2010). Model 1 states that consumer's length of brand relationship has a significant positive impact on brand loyalty ($\beta=0.24$, $p<0.001$). Next, Model 2 examines the effect of the four main variables and finds that functional value ($\beta=0.26$, $p<0.0001$), emotional value ($\beta=0.32$, $p<0.0001$), social value ($\beta=0.14$, $p<0.05$), and brand identification ($\beta=0.28$, $p<0.0001$) predict brand loyalty with statistical significance and explain 73.17% variance. The derived results support H1, H2, H3, and H4. Model 3 and 4 further proceed

moderating analyses with product-item indicators approach (Chin, Marcolin, & Newsted, 2003), and find that only age biases the emotional value-loyalty and social value-loyalty linkages positively and the relationship of brand identification and loyalty negatively. H5d is supportive, and H5a-H5c are against hypotheses. Surprisingly, gender difference does not result in any moderating effect across the four relationships, and H6a and H6c are not supported. In addition to the coefficient of determination and path coefficient, this study adopts effect size to evaluate the structure model with moderators (Urbach & Ahlemann, 2010). The calculation results of effect size prove that age has a medium effect size (0.23), while gender (0.05) is in small effect size. Figure 1-3 show how the moderating role of age function.

Table 4 here.

Figure 2 here.

Figure 3 here.

Figure 4 here.

6. Discussion

While consumer value and brand identification may dominate the formation of brand loyalty, there is little understanding regarding the role of age and gender difference in these relationships. In practice, marketing managers need more exquisite and feasible strategic directions to dispose their resource as well. As such, this study takes age and gender into account and expects to leverage the both theories by consumer segmentation. An overview of our empirical results firstly validates that

consumer value (i.e., functional value, emotional value, and social value) and brand identification positively predict brand loyalty. With regard to the moderating effect of age, our results demonstrate that age weakens the relationship of brand identification and loyalty as expected and indicate that younger consumers may have a greater brand patronage for the identification reason. Against our expectation, age does not moderate the linkage of functional value and loyalty, but significantly strengthens the effects of emotional/social value on brand loyalty. A possible reason for the insignificance may be that only one respondent is aged above 55 and the rest are in the young and middle age (Kohijoki & Marjanen, 2013). In this vein, most respondents may have a higher acceptance of smartphone and use it for multiple purposes (e.g., work or entertainment) instead of merely conversation. The perceived functional value may then contribute to brand loyalty without age difference. Specifically, for middle-aged consumers, the smartphone may tremendously improve the way which they usually work and live, and the effect of emotional value which derives from usage on loyalty is thus greater than younger consumers. As for the positive moderating influence of age on the relationship of social value and loyalty, our results may be in line with Churchill and Moschis (1979)'s arguments that the motivation of social consumption increases with age and maturity in human development. The symbolic representations of brand are more important for middle-aged consumers to earn social status and to foster interpersonal relationships. Our results may also echo the findings of Heckhausen (1997) that middle-aged consumers and older consumers are, compared with younger consumers, in pursuit of community goals, and thus social value is more crucial. By and large, the effect of emotional value, social value, and brand identification on brand loyalty change as age increases though older respondents (i.e., above 55) in our sample is relatively less.

Interestingly, the moderating effect of gender is absent in all the four relationships

and violates our expectation of gender difference regarding functional value, social value, and brand identification. Our results are parallel with Leong, Ooi, Chong, and Lin (2013)'s study which agrees there is no significant difference between men and women in the adoption of mobile entertainment services, and with Albert, Merunka, and Valette-Florence (2013)'s findings which document that brand identification positively determines brand commitment with no gender effect. The most possible reason may be the research context in which smartphone brand is under evaluation. Though Venkatesh and Morris (2000) find the reason to use computer in workplace may vary for men and women, the gender difference may not be significantly exist in smartphone usage which is not mandatory. As with that gender effect may not always exist or function in the same direction across product types (Dittmar, 2005), contextual factor may influence the occurrence of gender difference. Specifically, many researchers announce men and women show different pattern in mobile phone usage, but most of their arguments are based on observations or qualitative proof (Lemish & Cohen, 2005; Srivastava, 2005; Syed & Nurullah, 2011; Walsh & White, 2007). Our results provide a solid evidence with surveyed samples and verify the gender indifference in the relationships of four antecedents and brand loyalty of smartphone.

6.1. Theoretical implications

The empirical findings of this study entail five theoretical implications. First, this study proves the importance of consumer value for brand loyalty with a succinct taxonomy of three value types, and the fertility of consumer value appears not only in retailing context (Sweeney & Soutar, 2001) but in technology product context as well. The significance of functional value, emotional value, and social value indicates that consumers stay with a certain smartphone brand based on a variety of evaluations

aside from the functional/economic perspective. With empirical proof, our findings may, to some extent, extend Horváth and Sajtos (2002)'s research and connate that the three product attributes of mobile phones deliver corresponding value to consumers and prompt them to purchase repeatedly.

In addition, prior studies on self-brand relationship suggest narrowing the distance between consumers and brand identity to achieve congruity by figuring out the consumer identity and brand identity respectively. However, this suggestion emerges one major criticism of the identity instability of consumers for a given brand, and hinders the generalizability of empirical results and practical applicability (Geuens, Weijters, & De Wulf, 2009). Given brand identification is a consumer's subjective evaluation of self-brand congruity, this construct may mitigate the complexity of consumer identity and be more crucial for loyalty prediction. In accordance with He et al. (2012)'s findings, our results verify that brand will successfully earn consumers' loyalty via their perceived identification while purchasing smartphones.

Third, an integrative inspection of the effect of three value types and brand identification on loyalty points out that functional value, emotional value, and brand identification have greater influence on loyalty than social value with nearly twice in estimate magnitude (see Model 2-4 in Table 4). The brand loyalty of smartphone may primarily depend on individual-related factors more than peer pressure. 個人化的

Fourth, given that younger consumers are the majority of smartphone users, this study hypothesizes the effect of age difference primarily on product experience (Achenreiner & John, 2003). However, three of the four relationships function in an unexpected way. Though these unexpectedness may partially attribute to the sample age which is not really "old", other theories on human development regulation (Heckhausen, 1997) such as socioemotional selectivity theory which address that

older consumers are in a search for enriching-the-self asset and emotion-related goals because of salient mortality may provide excellent explanation as well (Carstensen, 1995). The effect of age difference in consumers' smartphone loyalty should reconcile product experience and development regulation (Part et al., 2013).

Finally, this study does not corroborate the existence of gender difference by considering product experience and gender socialization. Our results echo Dittmar (2005)'s illustration that gender difference is product-specific, and the impacts of the three value types and brand identification on loyalty are indifferent between men and women in smartphone context.

6.2. *Managerial implications*

Given consumer value and brand identification contribute to brand loyalty, smartphone marketers should not only deliver functional, emotional, and social value to consumers, but also establish brand identity in terms of attractiveness, distinctiveness, and salience to earn consumers' identification (Kim, Han & Park, 2001). Considering the relative importance of the four loyalty drivers, managers have to endeavor to put more emphasis on the individual-related factors as functional value, emotional value, and brand identification. Additionally, our results find that senior consumers may be greater value-driven and younger consumers tend to be greater identity-driven. To further leverage marketing resource efficiently, smartphone managers should not only deliver functional value to consumers across age, but communicate identity attractiveness with younger consumer and emotional and social value with senior ones.

6.3. *Limitations and future revenue*

The generalization of our results needs careful concern in that there are five

major limitations exist in the present study. The first is that this study recruits sample from Internet with a non-probabilistic method. Even though there is a high overlap between users of Internet and smartphone in Taiwan and 73.6 Internet users hold smartphones (Phycos, 2013), the collected sample may not fully match the population frame of smartphone users and a more representative sample is necessary in future studies. Second, the empirical evidence of this study derives from Taiwanese response. Given that consumers' cultural difference may influence their value preference and need for identification across age and gender (Park & Rabolt, 2009), future studies should examine this issue with respondents with various culture/country background. Third, this study measures age in a chronological manner. While studies on advertising persuasion have proved that cognitive age is more influential than chronological age to impact brand evaluation and self-referencing effect upon the "for-me" perception (Chang, 2008), future studies need to investigate the effect of age difference in terms of cognitive age. Fourth, this study tests proposed hypotheses in smartphone consumption context. Owing to smartphone is a high-involvement product (Walsh et al., 2011), the generalization of our finding may be restricted. More studies have to analyze this issue with products across involvement levels for robustness as Stokburger-Sauer et al. (2012) suggest. Lastly, the competition of smartphone is not only between brands but between platforms as well (Bellman, Potter, Treleaven-Hassard, Robinson, & Varan, 2011), and platform effect may bias consumers' brand choice of smartphone. In this regard, future studies should control the platform effect to have a better model validity.

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Table 1

Measures and reliability tests.

Construcuts and items		Loading	α	CR
<i>Functional value (Kim et al., 2011)</i>			0.91	0.94
FV1	X mobile phones have an acceptable standard of quality.	0.93		
FV2	X mobile phones are reliable in their performance.	0.92		
FV3	X mobile phones possess a degree of quality which is satisfactory.	0.95		
FV4	X mobile phones offer value for money.	0.75		
<i>Emotional value (Kim et al., 2011)</i>			0.86	0.90
EV1	I like the way X mobile phones look.	0.84		
EV2	X mobile phones are not catching. (R)	0.81		
EV3	Using X mobile phones is interesting to me.	0.83		
EV4	Using X mobile phones gives fun to me.	0.86		
<i>Social value (Kim et al., 2011)</i>			0.82	0.88
SV1	Using X mobile phones enhances my self image to others.	0.88		
SV2	Using X mobile phones improves the way I am perceived.	0.84		
SV3	Using X mobile phones does not help me maintain my social relationships with others. (R)	0.69		
SV4	Using X mobile phones enhances my social relationships with others.	0.81		
<i>Consumer-brand identification (Stokburger-Sauer et al., 2012)</i>			0.83	0.90
CB1	I feel a strong sense of belonging to X mobile phones.	0.87		
CB2	X mobile phones are like a part of me.	0.88		
CB3	X mobile phones have a great deal of personal meaning for me.	0.85		

<i>Brand loyalty (Anderson and Srinivasan, 2003; Zeithaml, Berry, and Parasuraman, 1996)</i>		0.91	0.94
BL1	I believe that X mobile phones are my favorite.	0.88	
BL2	I say positive things about X mobile phones to other people.	0.86	
BL3	I recommend X mobile phones to someone who seeks my advice.	0.89	
BL4	When I need to make a purchase, X mobile phones are my first choice.	0.92	

Note:

1. Mark "R" indicates that the given item is in a reverse form.
2. The loadings derive from the direct effect model.

Table 2

Demographics of respondents (n=157)

Variable	Frequency (%)
<i>Gender</i>	
Male	86 (54.78)
Female	71 (45.22)
<i>Age</i>	<i>M: 26.98; SD: 6.60</i>
<i>Education level</i>	
High school	8 (5.10)
Junior college	4 (2.55)
College	109 (69.43)
Graduate	36 (22.93)
<i>Industry</i>	
Public employee	12 (7.64)
Manufacturing	21 (13.38)
Service	33 (21.02)
Students	72 (45.86)
Others	19 (12.10)
<i>Disposable income</i>	<i>M: 664.01; SD: 569.15</i>
<i>How long do you buy a new mobile phone</i>	<i>M: 2.48; SD: 0.77</i>
<i>How many smartphones do you have</i>	<i>M: 1.20; SD: 0.45</i>
<i>How many feature phones do you have</i>	<i>M: 0.68; SD: 0.82</i>
<i>Are the latest feature phone and smart phone you bought the same brand</i>	
Yes, they are the same brand	29 (18.47)
No, they are not the same brand	127 (80.89)
I never bought a feature phone	1 (0.64)
I never bought a smartphone	0 (0.00)
<i>Are the latest two smartphones you bought the same brand</i>	
Yes, they are the same brand	25 (15.92)
No, they are not the same brand	39 (24.84)
I just bought a smartphone once	93 (59.24)
<i>How long have you been using the most-used</i>	<i>M: 1.47; SD: 0.95</i>

smartphone (X brand)

Note: 1 USD $\doteq$ 30 NTD (exchange rate of July 15, 2013)

Table 3

Descriptive statistics and discriminant validity.

	<i>M</i>	<i>SD</i>	UV	HV	SV	BI	BL
UV	5.07	1.03	0.79				
HV	5.24	0.94	0.55	0.70			
SV	4.27	1.07	0.27	0.30	0.65		
BI	4.50	1.27	0.31	0.34	0.56	0.75	
BL	4.77	1.27	0.53	0.58	0.45	0.52	0.79

Note: Diagonals are the value of average variance extracted and off-diagonals are the squared correlation.

Table 4

PLS results of structural model.

Variable	Expected sign	Model 1	Model 2: Direct effect	Model 3: Age	Model 4: Gender
Length of brand relationship	C.V. (+)	0.24** (3.19)	0.02 (0.54)	0.01 (0.35)	0.03 (0.58)
Age	M.V.	--	--	0.13* (2.45)	--
Gender	M.V.	--	--	--	-0.08 (1.81)
Functional value	H1 (+)	--	0.26*** (3.66)	0.25** (3.05)	0.25** (3.18)
Emotional value	H2 (+)	--	0.32*** (4.91)	0.30*** (4.15)	0.31*** (4.48)
Social value	H3 (+)	--	0.14* (2.08)	0.14* (2.29)	0.15* (1.99)
Brand identification	H4 (+)	--	0.28*** (4.09)	0.31*** (4.53)	0.29*** (4.05)
Functional value*Age	H5a (-)	--	--	-0.12 (1.35)	--
Emotional value*Age	H5b (-)	--	--	0.22* (2.29)	--
Social value*Age	H5c (-)	--	--	0.29* (2.54)	--
Brand identification*Age	H5d (-)	--	--	-0.22* (2.00)	--
Functional value*Gender	H6a (+)	--	--	--	0.09 (1.11)
Emotional value*Gender	H6b (n.s.)	--	--	--	-0.05 (0.67)
Social value*Gender	H6c (-)	--	--	--	-0.02 (0.27)
Brand identification*Gender	H6d (-)	--	--	--	0.01 (0.11)
$R^2_{\text{Brand loyalty}} =$		5.92%	73.17%	78.25%	74.52%
Effect size (f^2)				0.2336	0.0530

Note:

1. The number in parenthesis is t-value derived from 1000 bootstrapped samples.
2. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Two-tailed test.
3. n.s. refers to no significant difference.

4. The calculation of effect size is based on Cohen (1988) $f^2 = (R^2_{\text{model with moderator}} - R^2_{\text{model without moderator}}) \div (1 - R^2_{\text{model with moderator}})$

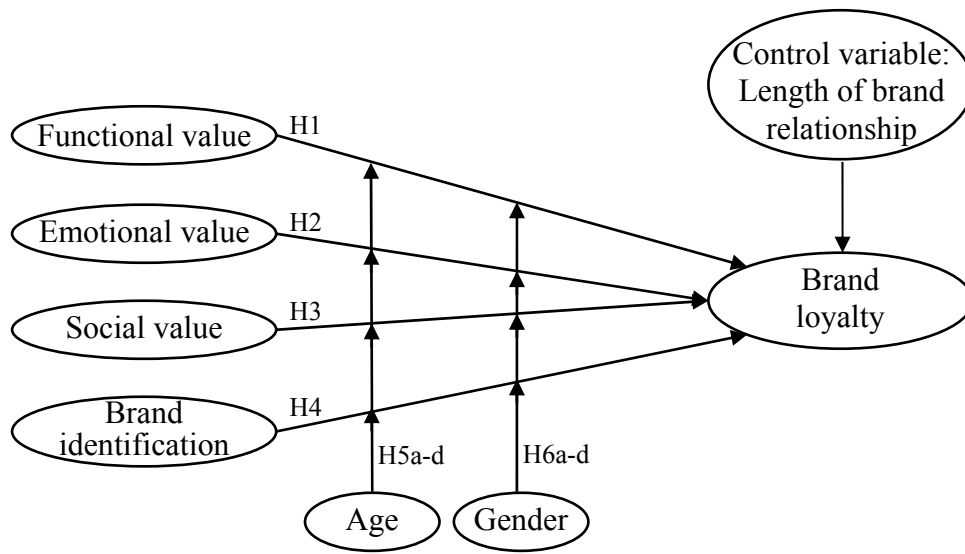
Fig. 1. Research model.

Fig. 2. The moderating effect of age on the relationship of emotional value and brand loyalty.

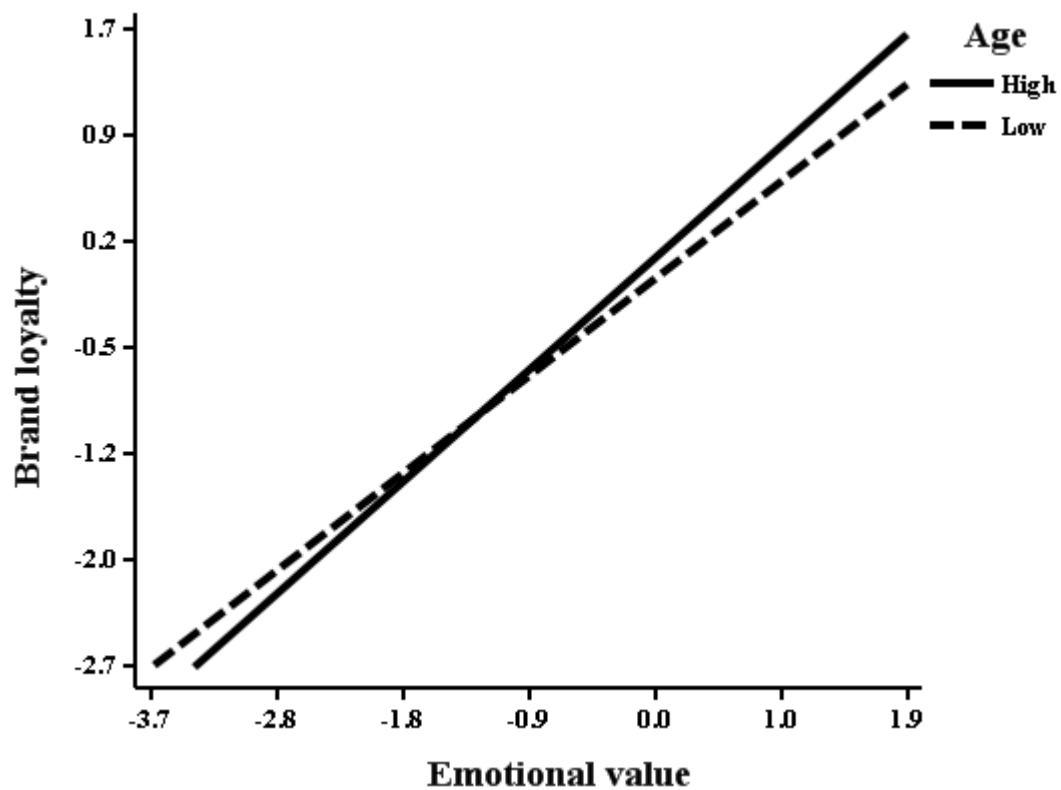


Fig. 3. The moderating effect of age on the relationship of social value and brand loyalty.

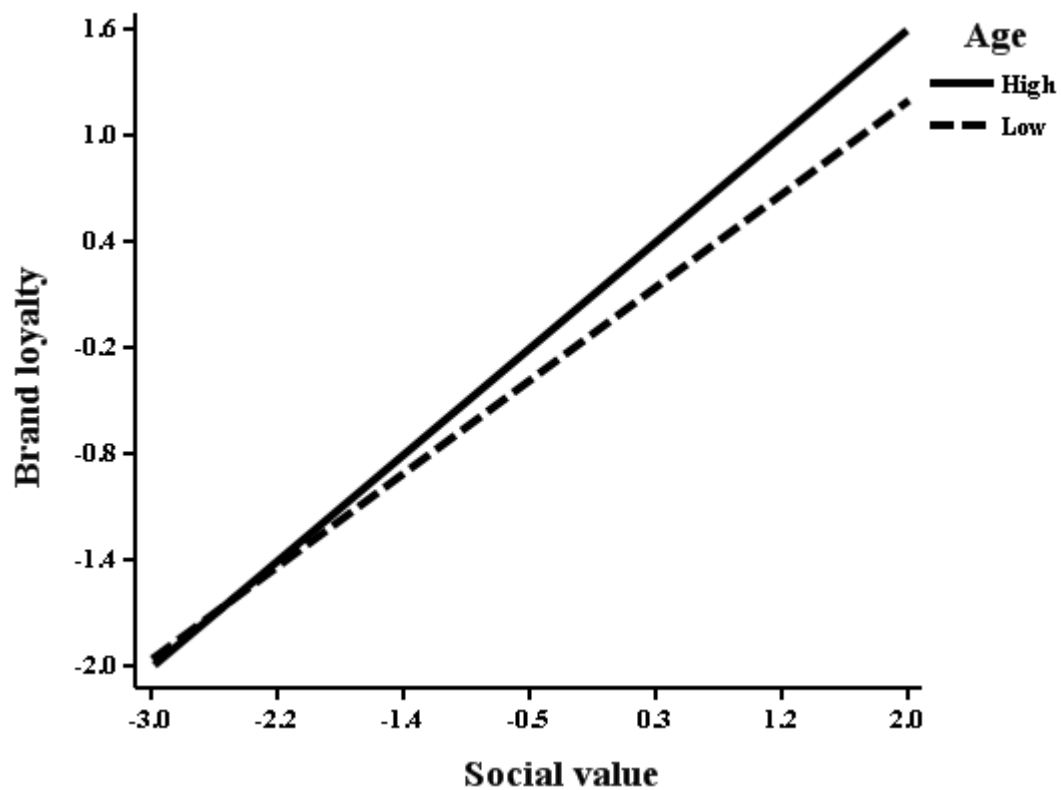
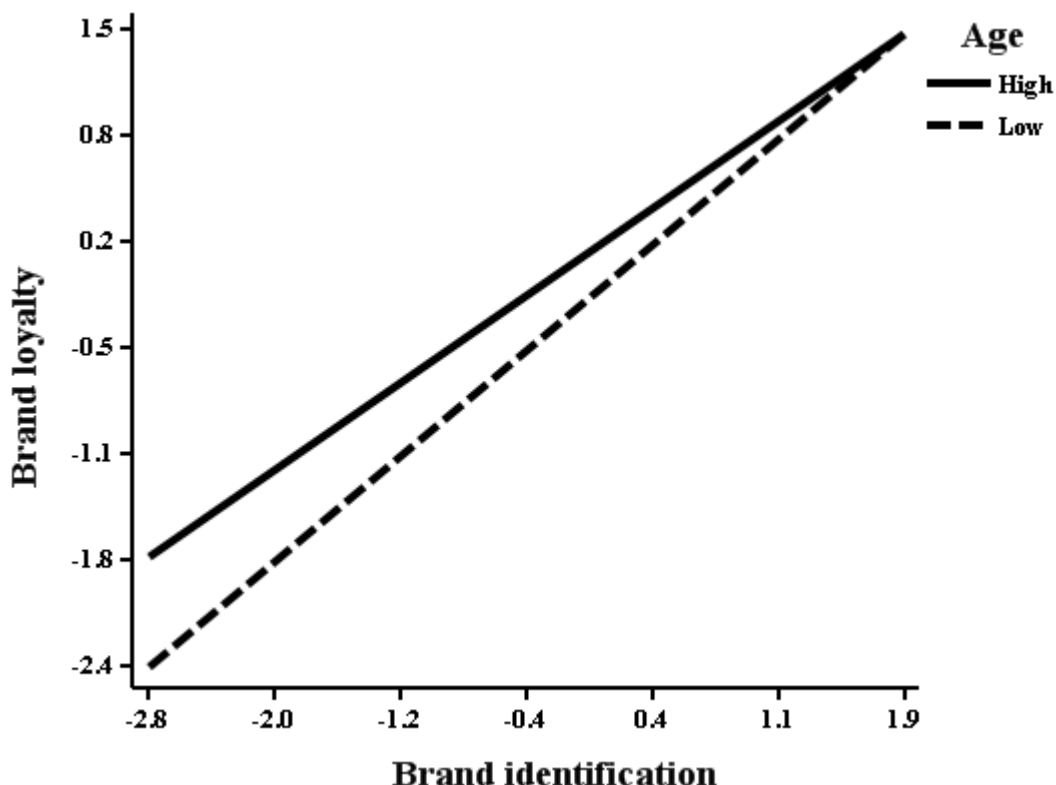


Fig. 4. The moderating effect of age on the relationship of brand identification and brand loyalty.



四、建議

經由這次參與研討會，與相關實務及學術界的先進交流，獲得許多寶貴的經驗，讓我更深刻體認做研究應該要具備國際化的視野，才可以從更嚴謹及創新的角度來思考研究方向及邏輯架構。

透過參與研討會的經驗，讓我知道與人交流的寶貴，更讓我有更積極的動力撰寫更有品質的論文，並期望未來可以多多參與研討會，透過與先進交流過程，讓目前的研究更加完善及嚴謹，更開啟自我未來研究的視野及能力。

五、攜回資料名稱及內容

研討會參與證明、研討會論文相關論文集及光碟、其他研討會相關資訊。

六、其他

附件六

科技部補助專題研究計畫國外學者來臺訪問成果報告

日期：__年__月__日

計畫編號	MOST — — — — —		
計畫名稱			
邀訪學者 姓名		服務機構 及職稱	
國籍		來臺時間	年 月 日至 年 月 日
來訪目的 (可複選)	☐ 技術指導 ☐ 實驗設備設立 ☐ 計畫諮詢/顧問 ☐ 學術演講 ☐ 國際會議主講員 ☐ 其他		

一、訪問過程

二、對本項專題計畫產生之影響、貢獻或主要成果

三、建議

四、其他

科技部補助計畫衍生研發成果推廣資料表

日期:2014/08/06

科技部補助計畫	計畫名稱：智慧型手機品牌忠誠模式：具吸引力替代方案可得性之調節角色	
	計畫主持人：廖奕雯	
	計畫編號：102-2410-H-041-003-	學門領域：資訊管理

無研發成果推廣資料

102 年度專題研究計畫研究成果彙整表

計畫主持人：廖奕雯

計畫編號：102-2410-H-041-003-

計畫名稱：智慧型手機品牌忠誠模式：具吸引力替代方案可得性之調節角色

成果項目			量化			單位	備註（質化說明：如數個計畫共同成果、成果列為該期刊之封面故事...等）
			實際已達成數（被接受或已發表）	預期總達成數(含實際已達成數)	本計畫實際貢獻百分比		
國內	論文著作	期刊論文	0	1	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	1	1	100%		
		專書	0	0	100%		
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（本國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		
國外	論文著作	期刊論文	0	0	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	0	0	100%		
		專書	0	0	100%	章/本	
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（外國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		

其他成果 (無法以量化表達之成果如辦理學術活動、獲得獎項、重要國際合作、研究成果國際影響力及其他協助產業技術發展之具體效益事項等，請以文字敘述填列。)	在論文發表過程中，與會來賓相當肯定台灣智慧型手機的發展，也覺得許多行動商務或是 APP 應用在台灣的环境有許多發展的潛力及前瞻性。我會繼續研究研討會及延伸相關的論文方向，探討台灣這個獨特環境中，行動應用程式及行動商務其他相關議題，相信經由這次參與研討會的過程，與相關學者交換許多不同的意見，對於本身研究有相當大的助益。
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	成果項目	量化	名稱或內容性質簡述
科 教 處 計 畫 加 填 項 目	測驗工具(含質性與量性)	0	
	課程/模組	0	
	電腦及網路系統或工具	0	
	教材	0	
	舉辦之活動/競賽	0	
	研討會/工作坊	0	
	電子報、網站	0	
	計畫成果推廣之參與（閱聽）人數	0	

科技部補助專題研究計畫成果報告自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現或其他有關價值等，作一綜合評估。

1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估

☒達成目標

☐未達成目標（請說明，以 100 字為限）

☐實驗失敗

☐因故實驗中斷

☐其他原因

說明：

2. 研究成果在學術期刊發表或申請專利等情形：

論文：☒已發表 ☐未發表之文稿 ☐撰寫中 ☐無

專利：☐已獲得 ☐申請中 ☒無

技轉：☐已技轉 ☐洽談中 ☒無

其他：（以 100 字為限）

3. 請依學術成就、技術創新、社會影響等方面，評估研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）（以 500 字為限）

智慧型手機在台灣的發展相當迅速，且台灣對智慧型手機的持有率及汰換率也相當高，因此，本研究欲探討智慧型手機品牌之顧客忠誠度的影響因素，並以年齡及性別為影響之調節變數作探討。

本研究提出一個研究模式，探討顧客知覺價值對手機品牌忠誠度的影響，顧客知覺價值分成四個構面，分別為功能性價值、情感性價值、社會性價值及品牌認同感等。探討這四個構面對手機品牌忠誠度的影響。研究結果發現四個因素皆會影響手機品牌忠誠度，另外，年齡對於知覺價值對品牌忠誠度的影響，有調節的效果。

本研究結果可提供給智慧型手機開發廠商做為手機開發之參考，也可以提供給相關行銷部門做為行銷推廣策略制定之參考。另外，也讓民眾了解顧客在選擇智慧型手機品牌時所重視的因素，並進一步探討性別及年齡對智慧型手機品牌選擇的調節性影響。