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## A study of the factors that influence the brand loyalty of Taiwanese adolescents with respect to purchasing mobile. The case of Taichung City

### Abstract

This research mainly discusses the determinant factors on mobile phones brand loyalty of adolescents, to achieve the following research purposes through statistical analysis: (1) discuss the relationship between consumption behaviors and mobile phones brand purchased by adolescents; (2) analyze the relationship between adolescents' perception upon image of mobile phones brand and loyalty of such brand; (3) realize whether the perceived responses presented by adolescents intervened their consumption behavior and perceived image, and further influenced their loyalty of mobile phones brand purchased.

This research took adolescents from senior high and vocational schools in Tainan city as samples, and adopted questionnaire survey of purposive sampling, with 549 valid questionnaires recycled. Further, this research conducted analysis of descriptive statistics, factor analysis, reliability analysis, regression analysis and hierarchical regression analysis through SPSS to gain the result and verify hypotheses in this research. The results showed that the "brand image" of mobile phones had significant influence on "brand loyalty" to adolescent consumers, and "consumption behavior" of adolescent had significant influence on "brand loyalty", while "brand image" and "consumption behavior" influenced "brand loyalty" through significantly mediating effect of "perceived response".

**Keywords:** mobile phones, adolescent, brand loyalty, brand image, consumption behavior, perceived response.

**JEL Classification:** M11, M21, M31.

### Introduction

The Taiwanese mobile phone industry has always been export-oriented; as a result, few studies have addressed Taiwanese mobile phone consumers. The adolescents studied in this article are primarily senior and vocational high school students. Due to rapid technological advances, mobile phones have become a daily necessity of life. However, manufacturers have not performed market research to understand the factors that students consider when purchasing mobile phones. Therefore, this study sought not only to help mobile phone manufacturers understand the consumer behaviors of Taiwanese senior and vocational high school students with respect to purchasing mobile phones but also to discuss how mobile phone manufacturers might develop appropriate marketing strategies to build their brand images and increase brand loyalty for mobile phones. The implementation of these strategies would help to produce a Taiwanese mobile phone market that is mutually beneficial to both adolescent consumers and mobile phone manufacturers.

The major motivations for writing this paper are the desire to understand adolescent consumer behaviors, lifestyles, and information sources with respect to purchasing mobile phones, the promotional activities of mobile phone manufacturers, and the factors that influence the brand image and brand loyalty of mobile phone products.

The major purpose of this study is to increase the depth of understanding regarding the relationships among adolescent consumer behaviors, brand image, and brand loyalty by investigating the relevant factors that influence adolescent brand loyalty with respect to the purchase of mobile phones and analyzing the correlations among these factors. The question regarding whether cognitive responses interfere with the aforementioned relationships is also investigated. These results might evidence for future researchers and industry members. The purposes of this study are as follows:

1. To analyze the relationship between the perspectives of adolescent consumers with regard to mobile phone brand image and brand loyalty for mobile phone purchases.
2. To investigate the relationship between adolescent consumer behaviors and brand loyalty for mobile phone purchases.
3. To determine whether the cognitive responses to mobile phone brands interfere with adolescent consumers' brand image perceptions, thereby influencing their brand loyalty for mobile phone purchases.
4. To understand whether the cognitive responses to mobile phone brands interfere with adolescents' mobile phone consumer behaviors, thereby influencing their brand loyalty for mobile phone purchases.

This study seeks to understand adolescents' consumer behaviors, their mobile phone brand

preferences, and their information sources for mobile phone purchases. This study also attempts to determine how appropriate marketing channels and vendor promotions increase the brand loyalty of adolescent consumers, thereby providing evidence for the mobile phone industry with regard to the development of new products and the establishment of brand images.

## 1. Literature review

**1.1. Factors that influence brand loyalty.** In 1950, the American Marketing Association (AMA) defined marketing as “the performance of business activities

that direct the flow of goods and services from producers to [a] consumer or user”. Marketing evolved over time and was redefined in 2004 as “an organizational function and a set of processes for creating, communicating, and delivering value to customers and for managing customer relationships in ways that benefit the organization and its stakeholders”.

Kotler (2003) noted the important features of brands and regarded product branding as an aspect of marketing that can benefit consumers, manufacturers, and society as a whole. These benefits are summarized in Table 1.

Table 1. A summary of brand importance

Object	Importance
Brand benefits for consumers	(1) A brand name is synonymous with product quality, and consumers might associate a brand name with a product's quality and reliability (Kotler, 2000). (2) Product identification and the product information functionality of a brand can help buyers to differentiate among many homogeneous products, thereby improving consumer-purchasing efficiency (Whetten & Godfrey, 1998). (3) Brand can become the basis for explaining special qualities of products, thereby allowing consumers to notice new products that might be useful to them (Kates, 2004).
Brand benefits for manufacturers	(1) Brands allow manufacturers to more conveniently process orders and track after-sale issues (Solomon, 2007). (2) Brand names and registered trademarks provide legal protection for product inventors (Shaw, 2004). (3) Brands help companies cultivate a base of highly loyal consumers (Martin & Osberg, 2007).
Brand benefits for society	Brands provide sufficient legal protection to prevent imitation by competitors and encourage manufacturers to develop new product features, thereby causing products to be more diverse and providing more choices for consumers (Mair, J. & I. Marti, 2006).

Defined completely, brand loyalty is a long-standing non-random behavioral response that denotes a commitment to the purchase of a brand after deciding among one or more brands (Kotler, 2002). Thus, brand loyalty arises when a consumer has a strong desire to have a particular type of product or service and is willing to engage in a long-term business relationship with an enterprise that provides this product or service (Engel, Blackwell, and Miniard, 1993). In other words, brand loyalty refers to an experience in which a consumer uses a product from a brand that previously provided consumer satisfaction, thereby generating repeat purchasing behavior. In summary, brand loyalty is the combination of a consumer's behavioral loyalty and attitudinal loyalty toward a brand.

The four dimensions of brand loyalty are behavioral loyalty, attitudinal loyalty, multi-brand loyalty, and general loyalty. In general, consumer loyalty is considered from the attitudinal and behavioral dimensions. Because the adolescents examined in this study are students, if brand loyalty for mobile phones is primarily measured using actual purchasing frequencies or total purchase amounts, then a lack of variability will occur. Therefore, measurements of adolescent loyalty with respect to mobile phone purchases should primarily use an attitudinal perspective that incorporates their emotions, values, trust, and support, combined with a behavioral consideration of their repurchase intentions (Pappu & Quester, 2006).

As the extant literature (Tsiotsou & Alexandris, 2009) describes, factors that influence brand loyalty include product characteristics, the environment, socio-economic and demographic contexts, purchasing behavior, marketing strategies, and market structure. This study selected, modified, and operationalized the variables relevant to consumer characteristics, consumer behavior, brand image, promotional activities, cognitive responses, and demographics for use in this investigation.

**1.2. Brand image.** Brand image is the set of concepts, feelings, and attitudes that a consumer has regarding a brand (Ko, Kim, Claussen & Kim, 2008). This concept incorporates the combination of words, products, and consumer emotions related to a brand. Brand image also represents the representation of a product in a consumer's mind, which is the conception formed by consumers through cognition concerning their memories of a brand and their overall feelings regarding the brand; in other words, the combination of all available information and product experience constitutes a “brand image”.

Brand image, which is produced by companies' dedication to brand-related activities that provide the impetus that prompts consumers to purchase products, can be divided into three images: functional, social, and perceived (Whan Park, Jaworski and MacInnis, 1986). Many determinants of brand image exist, such as the appearance, attributes, and functions of products as well as the roles that these

products play in consumers' lives. Thus, brand image incorporates not only the functional properties of products but also emotional and symbolic considerations. Therefore, a close and interactive relationship exists between consumers and brands (Baldinger and Rubinson, 1996).

Biel (1992) claimed that the three elements that affect the relationship between consumers and brand images are manufacturer image (i.e., corporate image), product image, and competitor brand image; thus, brand image influences the image of the brand user (see Figure 1).

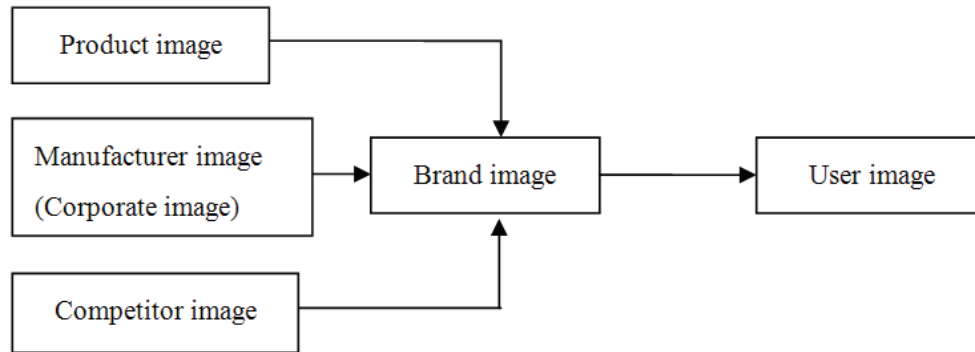


Fig. 1. Elements that affect the relationship between consumers and brand images

To consolidate the above review of brand literature, this study assessed brand image dimensions by measuring functional, symbolic, and experiential images.

1. **Functional image.** Questionnaire items regarding functional image addressed design, practicality, functionality, and reputation.
2. **Symbolic image.** Questionnaire items regarding symbolic image addressed social status, interpersonal relationships, and personal style.
3. **Experiential image.** Questionnaire items regarding experiential image addressed interest, warmth, joyfulness, and self-expression.

**1.3. Consumer behavior.** Kotler (1997) stated that the process of making purchase decisions originates from consumer perceptions of the existence of problems or needs; thus, the factors that induce an awareness of needs might be either internal demands or external stimuli. Promotion activities can provide the fastest and most direct ways for new products to enter the market and achieve the following three goals:

1. Inform potential consumers about the new and unknown product.
2. Attract consumers who wish to try this product.
3. Search for appropriate distribution channels (Kotler, 2000).

Certain researchers have used behavioral learning theories to examine how incentives influence brand loyalty (Fornerino & d’Hauteville, 2010). If price incentives are more obvious than the other advantages of a brand, then consumers will learn to use price incentives; thus, promotions strengthen promotional tendencies. If other advantages of a

brand are more obvious than price incentives, then brand loyalty will increase (Kotler, 1984).

Consumer behavior measurements involve the use of a mix of the three major consumer-behavior-related dimensions: lifestyle, information sources, and promotional activities. The lifestyle dimension is measured via the Activities, Interests, and Opinions (AIO) Inventory. The information sources dimension is measured using consumers’ interpersonal relationships and personal use experiences, reports from the mass media and professionals, and manufacturer sales behavior (Kotler, 1997). The promotional activity dimension is measured using “price-oriented” and “non-price-oriented” items. This study employs these major dimensions to discuss the influence of the relationship between consumer behavior and brand loyalty (Pappu & Quester, 2008).

**1.4. Cognitive responses.** Judith and Richard (2002) claimed that perceived quality and brand loyalty were strongly correlated, and these considerations should affect purchasing behavior. Other researchers (Aaker & Biel, 1993) have argued that brands are correlated with overall quality; in addition, perceived quality should affect consumer purchasing decisions and quality-based loyalty. The cognitive responses proposed by scholars can be summarized in terms of the following two dimensions:

1. **Perceived quality.** Consumers first become aware of the perceived quality of a product via the perceptions generated by the product’s attributes; these perceptions are then combined into an overall perception of product quality. Therefore, goodwill, internal quality, and brand cognition influence perceived quality.

2. **Perceived value.** Consumer perceptions of value are not solely influenced by price. If a product includes sufficient functionality and information, then consumers will determine the reasonable value of the product from this information.

The literature has shown that consumers have different perceptions of different products; these perceptions influence consumer behavior, brand image, and brand loyalty. This study uses the perceived value and perceived quality traits discussed in the relevant literature to measure brand loyalty.

**1.5. Demographic variables.** Studies have indicated that differences in demographic variables influence consumer brand loyalty; thus, demographic considerations are the most fundamental research variable in any study of brand loyalty or

consumer purchasing behavior. The demographic variables originate from two major sources: those related to consumers' basic personal information and those related to consumers' purchasing behaviors. This study examines four variables that describe consumers' basic personal information: gender, age, parent's occupation, and average monthly household income. In addition, this study examines five variables that describe consumers' purchasing behaviors with respect to mobile phones: purpose, brand, location, reason, and price. These nine variables were used to measure the demographic factors in this study.

**1.6. Literature review summary.** Based on the above discussion of the relevant literature, various factors influence brand loyalty. Table 2 lists the influential factors examined in this study and the theories related to them.

Table 2. The influential factors of brand loyalty and their relevant theories

Influencing factors and brand loyalty dimensions		
Influencing variable	Measurement dimension	Relevant theory
Brand loyalty	Behavior	The behavioral loyalty variables assess external manifestations of brand loyalty.
	Attitude	The attitudinal loyalty variables assess internal manifestations of brand loyalty.
Brand image	Functional	The functional measurement variables are related to design and practicality.
	Symbolic	The symbolic measurement variables examination social status, interpersonal relationships, and personal style.
	Experiential	The experiential measurement variables relate to interest, warmth, joyfulness, and self-expression.
Consumer behavior	Lifestyle	The lifestyle variables relate to the content of the AIO scale.
	Information sources	The information source variables assess interpersonal relationships, personal user experiences, reports from the mass media and professionals, and manufacturer sales behaviors.
	Promotional activities	Monetary promotions were assessed by the variables that represent tangible benefits. Non-monetary promotions were assessed by variables that represent happiness benefits.
Cognitive response	Perceived quality	Perceived quality is measured by the perceptions of product attributes and company reputations.
	Perceived value	The reasonableness of perceived product value is measured.
Demographic variables	Basic consumer information	Gender, age, parent's occupation, and average household monthly income were measured.
	Purchasing behavior information	Brand, purpose, reason, location, and price of purchasing bicycles were measured.

Source: This study.

**1.7. Research hypotheses.** Table 3 presents the hypotheses that were based on the above literature review.

Table 3. A compilation of hypotheses to be verified regarding adolescent brand loyalty

Hypothesis number	Hypothesis to be verified
H1	Brand image significantly influences brand loyalty.
H2	Consumer behavior significantly influences brand loyalty.
H3	Cognitive response significantly moderates the influence of brand image on brand loyalty.
H4	Cognitive response significantly moderates the influence of consumer behavior on brand loyalty.

Source: This study.

**2. Research methods**

**2.1. Research framework.** Figure 2 presents the research framework of this study.

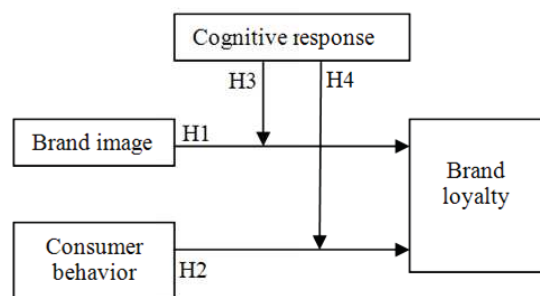


Fig. 2. Research framework

**2.2. Participants.** Senior and vocational high school students in Taichung City participated in this study. According to the website of the Central Region Office of the Taiwanese Ministry of Education, 20 public and private senior and vocational high schools are located in Taichung City, including National Taichung First Senior High School, National Taichung Second Senior High School, National Taichung Girls' Senior High School, National Wen-Hua Senior High School, Taichung Municipal Chung-Ming Senior High School, Taichung Shi Yuan Senior High School, Taichung Municipal Huiwen High School, Stella Matutina Girls' High School, Viator Senior High School, I-Ning Senior High School, Ming-Der Girls' High School, the Affiliated High School of Tunghai University, Shinmin High School, Ling-Tung High School, National Taichung Home Economics and Commercial High School, National Taichung Agricultural Senior High School, National Taichung Industrial High School, Kuang-Hwa Vocational High School of Technology, National Jhuolan Experimental Senior High School, and I-Ning High School. Students from these schools participated in this study.

**2.3. Questionnaire sample size and recovery rate.** Students in the above 20 high schools participated in this study. School instructors were commissioned to distribute and recover questionnaires; in addition, other questionnaires were personally distributed in schools. A total of 585 questionnaires were distributed across 17 senior and vocational high schools, and 554 questionnaires were recovered. Five questionnaires were invalid, and 549 copies were valid; thus, the valid response rate was 93.6%.

**2.4. Data analyses.** This study uses the following analyses:

1. Reliability analysis.
2. Validity analysis: (a) content validity; (b) criterion validity; (c) construct validity.
3. Factor analysis. A principal components analysis was performed to analyze brand loyalty, consumer behavior, brand image, and cognitive response; the most important factors were extracted to reduce the variable dimensions and identify the principal dimensions that influenced brand loyalty.
4. Regression analysis. Multiple and hierarchical regressions were used to explore the causal relationships between brand loyalty and the dimensions of brand image, consumer behavior, and cognitive response.

**3. Data results and analysis**

This study sought to explore the relationships that govern how brand loyalty for mobile phone

purchases is influenced by brand image, consumer behavior, and cognitive responses among the adolescent students of Taichung City senior and vocational high schools. In this paper, SPSS 12.0 was used as the primary data analysis software to compile and analysis the questionnaire data.

**3.1 Reliability and validity analyses.** *3.1.1. Reliability analysis.* Before the questionnaires were formally distributed, a pre-trial reliability analysis was performed on 50 completed questionnaires to appropriately adjust the questionnaire design. To verify whether the answers provided by the 549 respondents for the 54 questions of the formal questionnaire were consistent, a reliability analysis was performed on each of the four questionnaire dimensions: brand loyalty, brand image, consumer behavior, and cognitive response. Table 4 presents the Cronbach's  $\alpha$  values for each dimension of the pre-test and formal questionnaires.

Table 4. Cronbach's  $\alpha$ s for each dimension examined in this study

Dimension	Number of questionnaire items	Cronbach's $\alpha$ for the pre-test questionnaire	Cronbach's $\alpha$ for the official questionnaire
Brand loyalty	8	0.770	0.808
Brand image	16	0.883	0.888
Consumer behavior	18	0.813	0.788
Cognitive response	12	0.876	0.834

Source: This study

*3.1.2. Validity analysis.* This study assessed content validity primarily to systematically evaluate the appropriateness of the questionnaire. The questionnaire design primarily reflected the relevant studies by Assael (1998) and Oliver et al. (1999), who first proposed a questionnaire design to analyze brand loyalty and assess the correlations related to brand loyalty in 1991. After discussing and modifying the proposed questionnaire with the assistance of an advising professor, the questionnaire was summarized and organized. The questionnaire was distributed after conducting a pre-test and implementing the required modifications; thus, the questionnaire used for the primary experiment should exhibit sufficient validity.

**3.2. Factor analysis.** Based on Kaiser (1974), the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (MSA) can be used to determine whether the study variables, dimensions, or questionnaire items are suitable for factor analysis. The KMO and Bartlett's test values obtained by assessing the questionnaire results are presented in Table 5.

Table 5. KMO and Bartlett's test values

Research variable	KMO MSA	Significance from Bartlett's test of sphericity
Brand loyalty	0.746	0.000
Brand image	0.905	0.000
Consumer behavior	0.793	0.000
Cognitive response	0.807	0.000

Source: This study.

In this paper, multiple regression analyses were used to investigate the influences of various dimensions on brand loyalty, thereby deconstructing the interactions

that underlie their predictive power and effects including the correlations and interactions among brand loyalty and the diverse aspects of brand image, consumer behavior, and cognitive response.

*3.2.1. Regression analysis of brand image and brand loyalty.* A multiple regression analysis was performed using product image, personal image and corporate image as the independent variables and brand loyalty as the dependent variable to explore the influence of brand image on brand loyalty. Table 6 summarizes the results of this analysis.

Table 6. Regression analysis with regard to brand image and brand loyalty

Independent variable		Dependent variable	Brand loyalty (standardized $\beta$ coefficient)
Brand image	Product image		0.102
	Personal image		0.157**
	Corporate image		0.207***
$R^2$			0.145
Adj. $R^2$			0.139
F-value			25.094
P-value			0.000***
DW-value			2.018

Note: \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Source: This study.

The comprehensive analysis indicated that brand image significantly influenced brand loyalty; therefore, Hypothesis 1 was supported.

*H1: The hypothesis that brand image significantly influences brand loyalty was supported.*

*3.2.2. Regression analysis of consumer behavior and brand loyalty.* A multiple regression analysis was employed to investigate the influence of consumer behavior on brand loyalty. Table 7 summarizes the results of this analysis.

Table 7. Regression analysis with regard to consumer behavior and brand loyalty

Independent variable		Dependent variable	Brand loyalty (standardized $\beta$ coefficient)
Consumer behavior	Lifestyle		0.150***
	Information sources		0.322***
	Promotional activities		0.070
$R^2$			0.166
Adj. $R^2$			0.160
F-value			29.434
P-value			0.000***
DW-value			2.028

Note: \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Source: This study.

This comprehensive analysis indicated that consumer behavior significantly influenced brand loyalty; therefore, Hypothesis 2 was supported.

*H2: The hypothesis that consumer behavior significantly influences brand loyalty was supported.*

*3.2.3. The moderating effect of cognitive response on brand image and brand loyalty.* An interaction

regression analysis, which uses the concept of hierarchical regression, was employed to investigate whether the two cognitive response dimensions of perceived quality and perceived value moderated the relationship between brand image and brand loyalty. Table 8 summarizes the interaction of these two factor dimensions with brand loyalty.

Table 8. The moderating effects of cognitive response on brand image and brand loyalty

Independent variable		Brand loyalty (standardized $\beta$ coefficient)		
		Model 1	Model 2	Model 3
Brand image	Product image	0.102	.037	-.488
	Personal image	0.157**	.043	.606*
	Corporate image	0.207***	0.169**	-.178
Cognitive response	Perceived quality		.068	-.434
	Perceived value		0.226***	.383*
Product image x perceived quality				.109
Product image x perceived value				.967
Personal image x perceived quality				-.704
Personal image x perceived value				-.079
Corporate image x perceived quality				1.389*
Corporate image x perceived value				-1.124*
$R^2$		0.145	0.181	0.206
Adj. $R^2$		0.139	0.172	0.186
F-value		25.094***	19.558***	10.276***
P-value		0.000	0.000	0.000
$\Delta F$		25.094***	9.770***	2.262*
Significance of $\Delta F$		0.000	0.000	0.037

Note: \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Source: This study.

To understand the interaction effects of these two factor dimensions, corporate image and perceived value were converted into dummy variables by categorizing the responses to these factors into high

and low groups based on the average score. The interaction plot between the independent variable and these moderating dummy variables is presented in Figure 3.

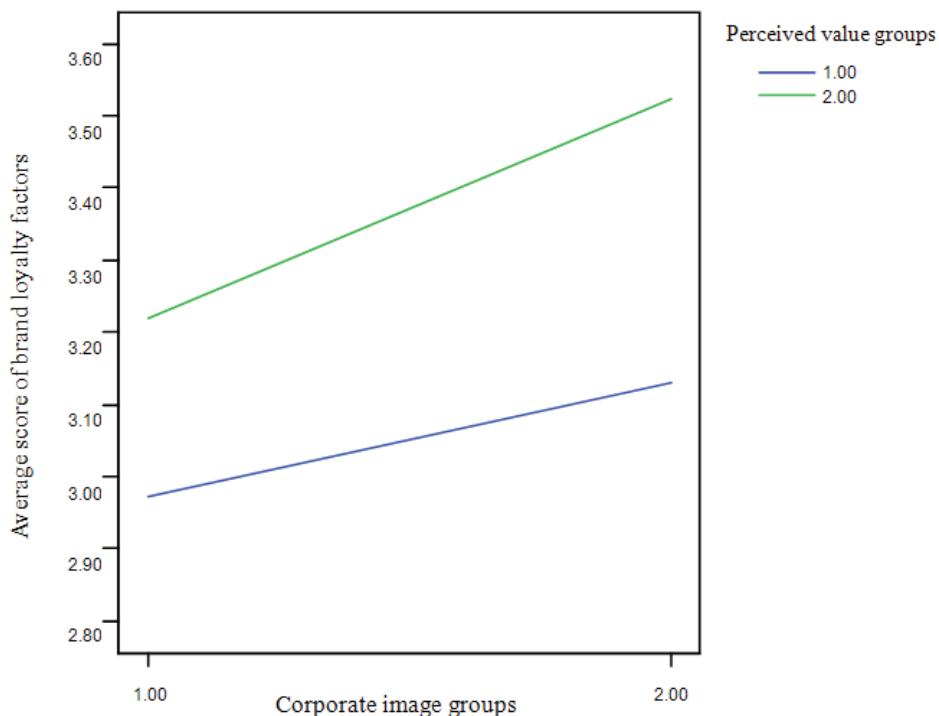


Fig. 3. The interaction between corporate image and perceived value

Corporate image and perceived quality were converted into dummy variables by categorizing the responses to each of these factors into high and low

groups based on average score. Figure 4 presents the plot of the interaction between the independent variable and moderating dummy variables.

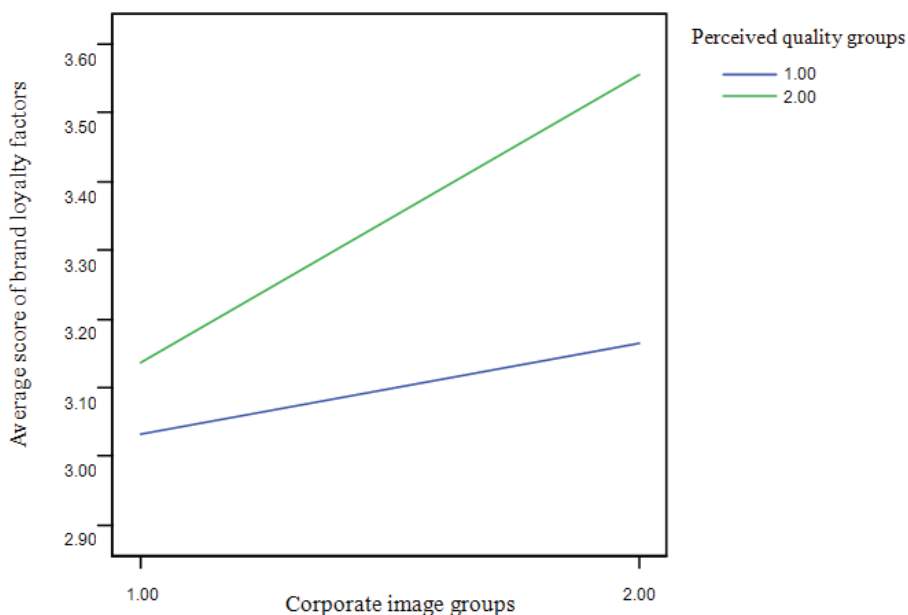


Fig. 4. The interaction between corporate image and perceived quality

Figure 4 shows that the two regression slopes are not parallel, which indicates that perceived cognitive response quality strengthens the relationship between brand image and brand loyalty.

Both Model 3 in Table 8 and the interaction plots between brand image and cognitive response displayed in Figures 3 and 4 illustrate that the corporate image × perceived quality ( $\beta = -1.124, p = 0.021 < .05$ ) and corporate image × perceived value ( $\beta = 1.389, p = 0.032 < 0.01$ ) interactions have significant positive influences. These findings confirm that specific cognitive response factors

affect the relationship between brand image and brand loyalty. Thus, Hypothesis 3 was supported.

*H3: The hypothesis that cognitive response significantly moderates the influence of brand image on brand loyalty was supported.*

3.2.4 The moderating effects of cognitive response on consumer behavior and brand loyalty. The moderating effects of the two cognitive response dimensions (perceived quality and perceived value) on consumer behavior (i.e., lifestyle, information sources, and promotional activities) and brand loyalty were analyzed. Table 9 summarizes the analytical results.

Table 9. The moderating effects of cognitive response on consumer behavior and brand loyalty

Independent variable		Dependent variable	Brand loyalty (standardized $\beta$ coefficient)		
			Model 1	Model 2	Model 3
Consumer behavior	Lifestyle		0.150***	.137**	-.331
	Information sources		0.322***	.230***	.545*
	Promotional activities		0.070	.074	-.488*
Cognitive response	Perceived quality			.068	-.593
	Perceived value			.256***	.259
Lifestyle × perceived quality					1.599***
Lifestyle × perceived value					-1.116**
Information sources × perceived quality					-.965*
Information sources × perceived value					.693*
Promotional activities × perceived quality					.302
Promotional activities × perceived value					.568
$R^2$			0.166	0.241	0.282
Adj. $R^2$			0.160	0.233	0.264
F-value			29.434***	28.144***	15.594***
P-value			0.000	0.000	0.000
$\Delta F$			29.434***	22.036***	4.138***
Significance of $\Delta F$			0.000	0.000	0.000

Note: \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Source: This study.

First, lifestyle and perceived quality were converted into dummy variables by categorizing the responses to each of these factors into high and low groups

based on the average score. Figure 5 presents the plot of the interaction between the independent variable and these moderating dummy variables.

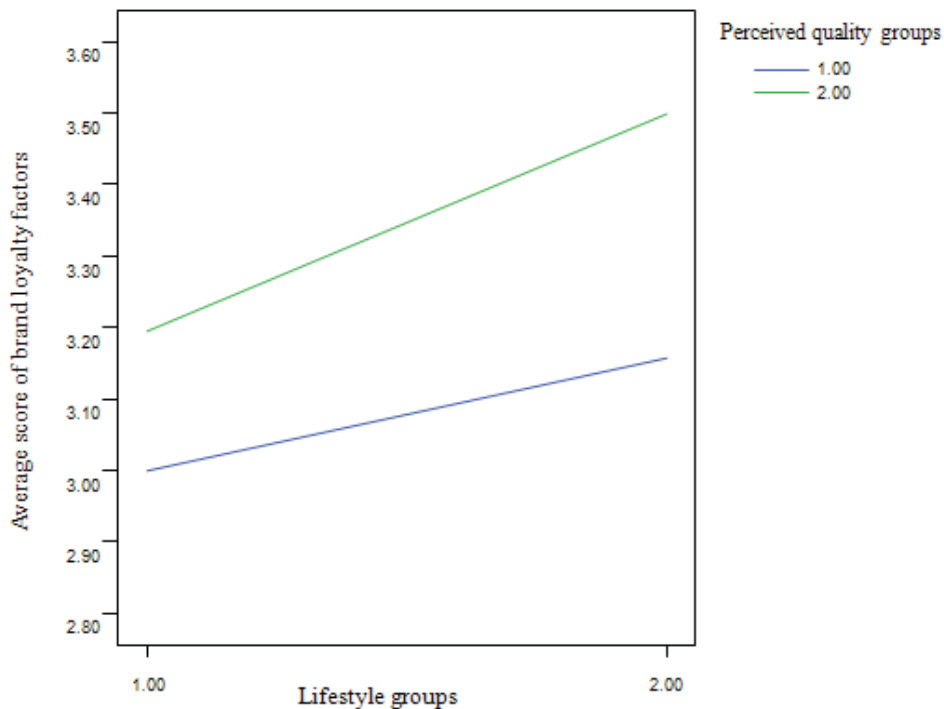


Fig. 5. The interaction between lifestyle and perceived quality

Subsequently, lifestyle and perceived value were converted into dummy variables by categorizing the responses to each of these factors into high and low

groups based on the average score. Figure 6 presents the plot of the interaction between the independent variables and these moderating dummy variables.

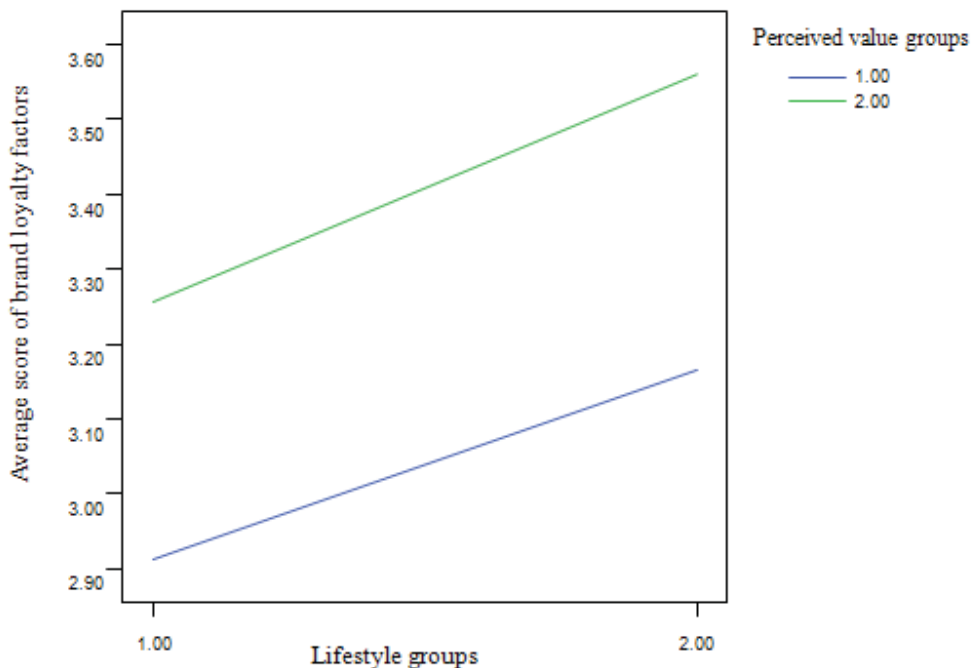


Fig. 6. The interaction between lifestyle and perceived value

Third, information source and perceived quality were converted into dummy variables by categorizing the responses to each of these factors into high and low

groups based on the average score. Figure 7 presents the plot of the interaction between the independent variables and these moderating dummy variables.

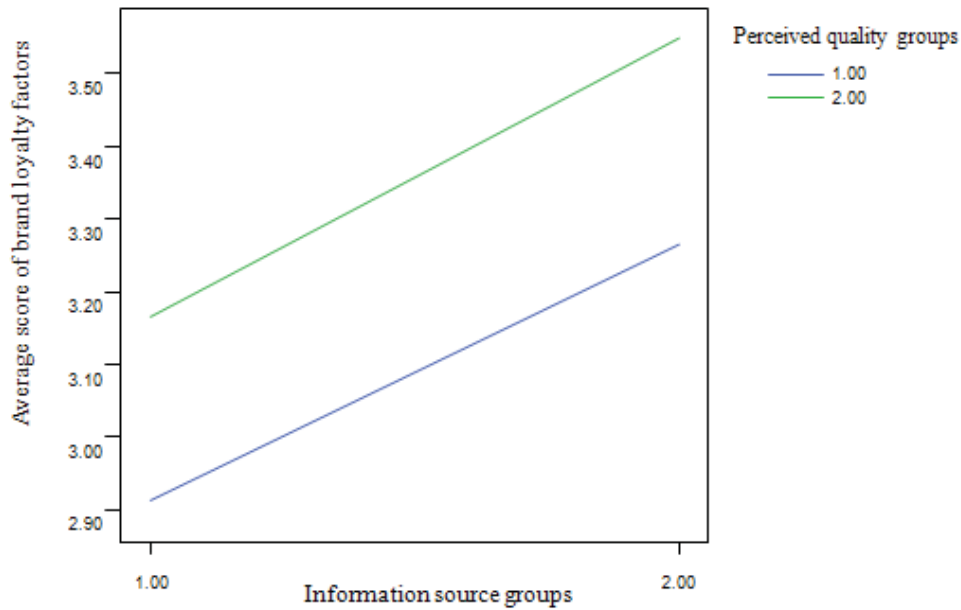


Fig. 7. The interaction between information sources and perceived quality

Finally, information source and perceived value were converted into dummy variables by categorizing the responses to each of these factors into high and low

groups based on the average score. Figure 8 presents the plot of the interaction between the independent variables and these moderating dummy variables.

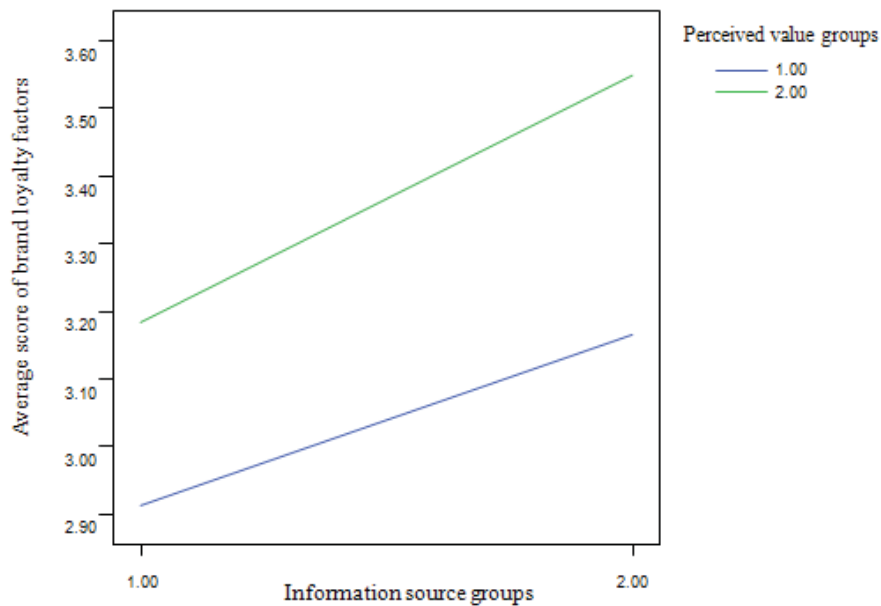


Fig. 8. The interaction between information sources and perceived value

In summary, manufacturers understand the lifestyles that drive consumers' purchasing behaviors and can provide additional information sources to these customers, thereby enhancing brand loyalty for situations in which consumers experience high levels of perceived value and quality. This finding confirms that certain cognitive response factors affect the relationship between consumer behavior and brand loyalty. Thus, Hypothesis 4 was supported.

*H4: The hypothesis that cognitive response significantly moderates the influence of consumer behavior on brand loyalty was supported.*

**Conclusions and recommendations**

This study analyzed the factors that influence the brand loyalty of adolescents with respect to mobile phone purchasing. The empirical results of this study provide the following contributions to academics and practitioners.

**Implications for academia. The compilation, summarization, and verification of the literature.**

This study compiled and referenced the extant literature, and a rigorous scale development was performed in which appropriate questionnaire items were screened, and dimensions were reconstructed to ensure scale applicability. The assessments of the administered survey demonstrated that it had excellent reliability and adequate content validity; thus, this scale is a potential tool for future researchers who wish to study brand image, consumer behavior, cognitive response, and brand loyalty with respect to the purchase of mobile phones by adolescents.

**The verification of the relationships among brand image, consumer behavior, and brand loyalty.**

The data analysis of this study verified the modeled relationships among brand image, consumer behavior, and brand loyalty. These three variables are relevant to adolescent brand loyalty with regard to the purchase of mobile phones. In addition, brand image and consumer behavior both positively influenced brand loyalty; this finding might provide valuable evidence for subsequent researchers.

**The verification that cognitive response moderates brand image, consumer behavior, and brand loyalty.**

The data analysis of this study verified that the interactions among brand image, consumer behavior, and cognitive response significantly influenced brand loyalty. This result might provide a theoretical and empirical foundation for future research.

**Implications for managerial practice.**

In this study, the relationships among the four factors of brand image, consumer behavior, cognitive response, and brand loyalty were investigated. The results of this investigation provided implications for managerial practice. In particular, it is hoped that these findings provide information that enable mobile phone brand manufacturers to develop products that are appropriate to the consumer behaviors of adolescents, thereby expanding the market space and establishing adolescent loyalty to mobile phone brands.

**Brand image strengthening.**

This study verified that brand image influences brand loyalty; therefore, mobile brand manufacturers must design products that can strengthen personal image by increasing product quality, providing excellent post-sale services, and establishing an excellent corporate image by participating in social welfare activities. These actions are likely to create a positive brand image from the perspective of consumers, obtain

consumer acceptance, and establish brand loyalty in a competitive environment.

**Consumer demand satisfaction.**

This study verified that consumer requirement satisfaction increases brand loyalty. Consumers who believe that manufacturers can satisfy their needs are willing to exhibit sustained brand loyalty and become part of a loyal customer base.

**The cultivation of brand loyalty among adolescents.**

This study demonstrated that consumer behavior, brand image, and cognitive response influence brand loyalty and confirmed that consumer brand loyalty is due to multiple dimensions.

**Suggestions for academics. Brand loyalty depends on brand trust and consumer need satisfaction.**

This study primarily addressed brand loyalty with respect to consumer behavior and brand image. Consumer loyalty depends on improvements in satisfaction and is even more dependent on brand trust.

**Empirical research on brand loyalty with respect to mobile phones.**

This study found that consumer behavior and product brand image were significantly correlated with brand loyalty, which confirms the importance of brand management. It is hoped that these findings generate additional discussion and research among scholars.

**Suggestions for practitioners.**

This study demonstrated that adolescent consumer groups are a new market for the mobile phone industry. Adolescents exhibit high degrees of acceptance of new products; therefore, new competitors are attracted to this battleground, and competition will continue to increase. Manufacturers continue to introduce new products in attempts to meet adolescents' needs and establish brand loyalty. If consumer behaviors differ from the marketing strategies that promote the image of a product brand, then brand loyalty will significantly differ from manufacturers' expectations; therefore, manufacturers should develop appropriate marketing efforts that target consumers based on their characteristics and potential consumer behaviors. The following section recommends practices for the mobile phone industry.

1. The strengthening of customer relationship management.
2. The establishment of brand image.
3. Recognizing the importance of adolescent consumer behaviors.
4. The upgrading of quality and after-sales service
5. The construction of communication channels with customers.
6. The exploitation of advantages to extend brands.

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