

# THE EFFECTS OF VIRTUAL COMMUNITIES ON BRAND EQUITY

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## Abstract

*Scant research attention has been given to the study of the effects of brand community on brand equity. This research study addresses the aforementioned gap by investigating the effects of virtual communities on brand equity. Three antecedents of the Brand Community Identification namely: Integration in Brand Community (IBC), Consumer Knowledge, and Community Engagement, are identified in the conceptual framework. The effect of brand community identification on brand equity was investigated according to four hypotheses. All four hypotheses are supported. The results indicated there are significant positive relationships between Brand Community Identification and Brand Equity. Furthermore, all antecedents of Brand Community Identification (e.g. Integration in Brand Community (IBC), Consumer Knowledge, and Community Engagement) have significant positive relationships with Brand Community Identification.*

## INTRODUCTION

The concept of a brand community was introduced by Muniz and O'Guinn (2001) as "*a specialized, non-geographically bound community, based on a structured set of social relationships among admirers of a brand*" (p.412). Brand communities represent a form of human association situated within a consumption context (Muniz & O'Guinn, 2001). The first definition of virtual communities was proposed by Rheingold (as cited in Leimeister, Sidiras, and Krccmar, 2006). A virtual community is defined as "*social aggregations that emerge from the Net when enough people carry on public discussion long enough, with sufficient human feelings, to form webs of personal relationships in cyber-space*" (p.413).

The concept of brand equity emerged in the early 1990s. According to Bharadwaj, Varadarajan and Fahy (1993), brand equity is an important source of competitive advantage. Aaker (1991) proposes that 1) brand equity creates value for both the customer and the firm, 2) value for the customer enhances value for the firm, and 3) brand equity consists of multiple dimensions, such as perceived quality, brand loyalty, brand awareness, and brand association.

Marketing efforts can be the antecedents of brand equity (Yoo, Donthu, & Lee, 2000), such that

good marketing activities can create more brand value (Muniz & O'Guinn, 2001). Brand community can be created by the company to enhance more brand relationships among the customers. Customers who have good brand experiences and love the brand might join the communities, in which they think that the community can identify itself as a good member and as a good citizen in the society.

Brand community can affect the brand equity in some ways (Muniz & O'Guinn, 2001). However, scant research attention has been given to the study of the effects of brand community on the brand equity. This research paper addresses the aforementioned gap by investigating the effects of virtual communities on the brand equity.

## RATIONALE FOR THE STUDY

Previous research has demonstrated that brand community has some effects on the brand equity (Muniz & O'Guinn, 2001). Brand community has become an interesting research topic among research scholars over the past ten years, especially the studies about virtual communities. Internet can establish and reinforce connection between people. Hagel III and Armstrong (1997) described the importance of virtual communities as follows:

*The virtual community is not only a vehicle for shifting power from vendor to customer. For the community organizer, it's also a powerful vehicle for creating wealth. But traditional economic analysis won't account for its huge potential for growth; it doesn't recognize the size of the opportunity or the key contributions of value. What fuels the value creation that takes place in a virtual community is the economics of increasing returns (p.41).*

Therefore, it should not come as surprise that virtual community is an important tool for marketers to enhance the brand value. This research topic is significant in the marketing communication area, since it is related to the long term brand relationship with the customers.

There are many research studies that addressed the effects of virtual communities (e.g., Ha, 2004; Bughin & Hagel, 2000; Bughin & Zeisser, 2001; Ginsburg & Weisband, 2006; Joon & Young-Gul, 2006; Leimeister, Sidiras & Krömer, 2006; Quinn & Raj, 2005). Moreover, there has been an increasing role of branding in e-marketing. It is surprisingly that there is no attempt to measure brand equity for the internet and its related technologies (Christodoulides, de Chernatony, Furrer, Shiu, & Abimbola, 2006). Therefore, more research is needed to understand what elements of virtual communities would have effects on the brand value. The focus of this paper is to propose a conceptual framework and research methodology and investigate the effects and the relationship of virtual brand community on the brand equity including introducing the antecedents of brand community identification.

## LITERATURE REVIEW

### *Internet Brand Community Definition and Characteristics*

McAlexander, Schouten and Koenig (2002) expand the definition of a brand community from Muniz and O'Guinn (2001) brand community triad, by measuring four customer-centric relationships:

owner-to-product, owner-to-brand, owner-to-company and owner-to-other owners. Luedicke (2006) found that brand community and social environments construct and strengthen each other. A brand community that builds on strong distinctions cannot escape social attention. Consistent with Luedicke (2006) Bagozzi and Dholakia (2006) found that the Linux user's experience level moderates the extent of Linux user group social influence and its impact on the user's participation.

Internet brand communities are growing and have various forms including the extension of a brand community built by corporations and Internet-centric brand communities built by consumers (Kim, 2006). Bughin and Hagel III (2000) mentioned that online communities are an important business model of the World Wide Web. Virtual communities tend to have a stronger operational performance than other business to consumer models in their early stage of development.

The literature suggests that the Internet can serve as a medium for gift giving and influence gift-giving pattern, in which gift giving are community driven (Hollenbeck, Peters & Zinkhan, 2006). Other types of brand community include enthusiast-run community and firm-run community, which might create different behaviors which lead to the different outcomes (Algesheimer, Dholakia & Hermann, 2005). The kind of member subgroups in the community shape the internal norms and rules of behavior based on their interest (Ginsburg & Weisband, 2006).

### *Success of Virtual Communities*

The success of virtual communities can be measured from different perspective according to different stakeholders (Leimeister et al., 2006). Muniz and Schau (2005) found that the nature of the type of brands foster brand communities. Moreover, the capacity of magic, religion, or the supernatural may be one factor that attracts people to form communities.

The sense of virtual community is one success factor of virtual communities. Blanchard and Markus (2004) have identified the "sense of virtual community" among members as a characteristic of a successful virtual community. The literature suggests that the sense of virtual community is affected by the en-

thusiasm of the community's leaders, off-line activities available to members, and enjoyability (Joon & Young-Gul, 2003). Another aspect comes from Quinn and Devasagayam (2005), who found the relationship between ethnicity and membership of a brand community (e.g., Asian Indians in United States) have strong sense of ethnicity which will result in favorable brand loyalty outcomes.

Ginsburg and Weisband (2006) mentioned that the personality traits which are consistent with volunteerism included support of the internet club, the importance of helping other people, the importance placed on relationships with other members, and the willingness to give feedback to improve the club.

### ***Brand Community benefits and drawbacks***

McWilliam (2000) described the benefits when people join the online communities. It is a forum for exchange of common interests; a sense of place with codes of behavior; the development of congenial and stimulating dialogues leading to relationships based on trust and encouragement for active participation by more than an exclusive few. While communities have strong membership success, their marketing spend for building communities has exhibited decreasing returns-to-scale (Bughin & Ziesser, 2001). Therefore, members in the communities must be fast learners to keep up value creation expectation and preserve their autonomy on the World Wide Web (Bughin & Ziesser, 2001).

In contrast to the benefits of virtual communities, anti-brand communities have the ability to damage a firm's brand name (Hollenbeck & Zinkhan, 2006). However, there is the positive aspect of anti-brand communities such as internet provides an open forum for the branding activities and discussion and it also serves as a free marketing tool (Hollenbeck & Zinkhan, 2006).

## **CONCEPTUAL FRAMEWORK AND HYPOTHESES**

This research uses the brand equity theory to explain the relationships between the brand community and consumer-based brand equity. The con-

ceptual framework clarifies the antecedents and consequences of the brand community's influence on consumers. The framework draws on recent studies of brand communities, such as McAlexander, Schouten, and Koenig (2002), Muniz and O'Guinn (2001), Algesheimer, Dholakia and Herrmann (2005); brand equity, such as Aaker (1991), Keller (1993) and Yoo and Donthu (2001).

The first antecedent of brand community is the integration in brand community (IBC) which measures four customer-centric relationships: owner-to-product, owner-to-brand, owner-to-company and owner-to-other owners (McAlexander, Schouten, and Koenig, 2002). The integration in brand community is identified as an antecedent because brand relationship quality is found to have positive relationship with community identification (Algesheimer, Dholakia and Herrmann, 2005). Consumers are expected to have positive relationship with the brand before they develop a strong brand community identification.

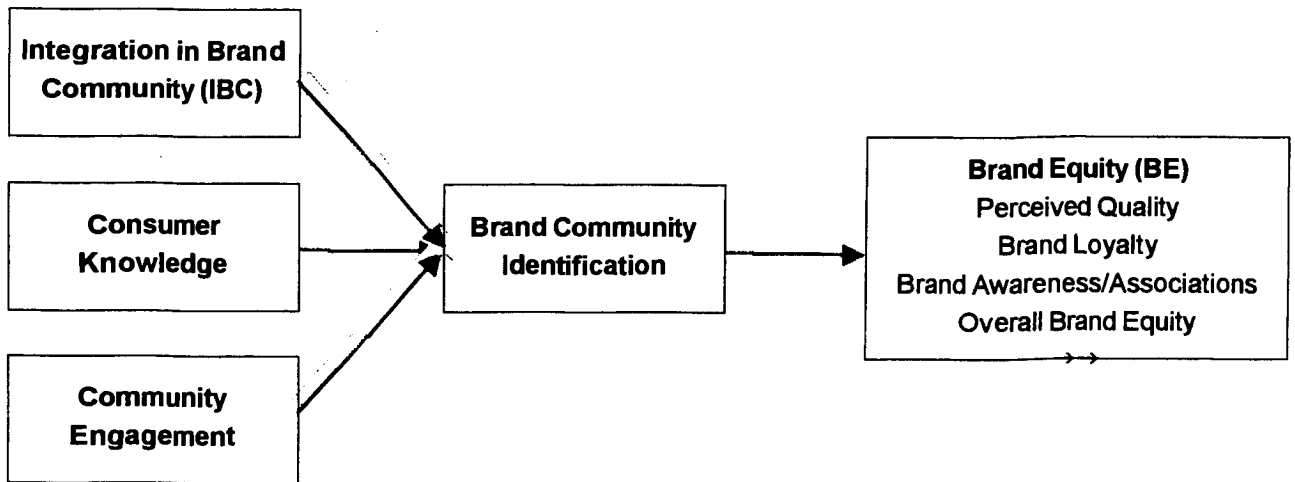
The second antecedent is brand knowledge. According to Keller's customer-based brand equity, brand knowledge is central to this definition (Keller, 1993). Algesheimer et al. (2005) mentioned that level of the brand knowledge has some effects on the brand community identification. Moreover, the third antecedent, community engagement has positive effects on brand community identification (Algesheimer et al., 2005). The stronger the motivation to interact and cooperate with community members, the stronger the brand community identification.

Figure 1, the conceptual framework proposes that the relationship between the antecedents of brand community and brand equity is better understood by the mediating link of brand community identification. According to Muniz and O'Guinn (2001), brand community may affect brand equity. Therefore, the strong community identification is hypothesized to lead to strong positive relationships with all elements in brand equity. In the next session, the model is explained in detail with the proposed hypotheses.

### ***Integration in a Brand Community and Brand Community Identification***

McAlexander, Schouten and Koenig (2002)

**Figure 1: Conceptual Framework**  
**The Effects of Brand Community on Brand Equity**



suggested that the consumer-centric relationships with different entities in the brand community might be cumulative or even synergistic in forming a single construct, which is the integration in a brand community (IBC). Therefore, McAlexander et al. (2002) refers to the integration in a brand community as a consumer relationship.

Algesheimer, Dholakia and Herrmann (2005) found that the consumer’s relationship was an influential antecedent to the member identification with the brand community. Once the consumer has the strong relationship with the brand, he/she will have a strong sense of the membership in the community. Therefore, the hypothesis is specified as follows:

**Hypothesis 1:** Higher level of Integration in Brand Community (IBC) leads to higher Brand Community Identification.

**Consumer knowledge and Brand Community Identification**

*Brand knowledge* is defined in terms of brand awareness and brand image and is conceptualized according to the characteristics and relationships of brand associations (Keller, 1993).

Keller (1993) explained that favorable consumer response and positive customer-based brand equity can lead to enhanced revenue, lower cost and greater profit. Therefore, brand knowledge is central to this definition, in which the favorability,

strength, and uniqueness of the brand associations play a critical role in determining the differential response. Brand knowledge is central to the definition of customer-based brand equity. Consumers use knowledge of the brand to make their purchase decisions among the set of brand choices (Keller, 1993).

Therefore, high-knowledge consumers will have more confidence and lead to positive relationship towards the sense of membership in the community. With high level of brand knowledge, people tend to be proud that they can help others in the brand community. Therefore, we hypothesize the following:

**Hypothesis 2:** Higher level of Brand Knowledge leads to greater Brand Community Identification.

**Community engagement and Brand Community Identification**

Algesheimer, Dholakia, and Herrmann (2005) defines community engagement as “*the positive influences of identifying with the brand community, which are defined as the consumer’s intrinsic motivation to interact and cooperate with community members*” (p.21). Community engagement concept suggests that members are interested in helping other members (Algesheimer, Dholakia, & Herrmann, 2005).

People are willing to participate in the activities

of the community. Since they have the strong motivation to participate in the community, this would lead to the stronger brand community identification. Therefore, the hypothesis is specified as follows:

**Hypothesis 3:** Greater Community Engagement leads to Stronger Brand Community Identification.

### ***Brand community identification and Brand Equity***

Brand community clearly affects brand equity (Muniz Jr & O'Guinn, 2001). A strong brand community can lead to a socially embedded and enhanced loyalty, brand commitment (Keller, 1993). Muniz and O'Guinn (2001) mentioned that "*a brand with a powerful sense of community would generally have greater value to a marketer than a brand with a weak sense of community*" (p.427).

The literature on brand equity usually suggests that brand equity should be an important research domain in marketing because it is considered the combination of important consumer behavior variables such as brand loyalty, perceived quality, brand awareness, and brand associations (Aaker, 1996).

Aaker (1991) defined brand equity as *a set of assets and classified brand equity into four most important dimensions, namely brand awareness, brand associations, perceived quality and brand loyalty*. Consistent with Aaker (1991), Keller (1993) explained a conceptual model of brand equity from the perspective of the individual consumer by developing the concept of "*customer-based brand equity*". Customer-based brand equity is "as the differential effect of brand knowledge on consumer response to the marketing of the brand" (p.8). Customer-based brand equity occurs when the consumers is familiar with the brand and holds some favorable image, and unique brand associations in memory (Keller, 1993). According to Aaker (1991, 1992, 1993) and Keller (1993), the dimensions of brand equity are described as follows:

**Brand awareness** refers to the strength of a brand's presence in consumers' minds. Brand awareness is an important component of brand equity (Aaker, 1991; Keller, 1993).

If consumers are not aware of the brand's presence in the market, the brand will not have any meaning to the consumers. Hence, other dimensions of brand equity will not occur to the consumers. Keller (1993) conceptualized brand awareness as consisting of both **brand recognition and brand recall**. According to Keller (1993), brand recall refers to consumers' ability to retrieve the brand from memory. Aaker (1992) mentioned that brand awareness was actually the third most mentioned asset. For many companies, brand awareness is pivotal and it underlies the strength of successful brands.

**Brand associations** are believed to contain the meaning of brand equity (Keller, 1993). A brand may drive the associations from a range of sources, brand personality and organizational associations are the most important type of brand associations (Aaker, 1991). Aaker (1991) and Keller (1993) mentioned that a brand personality is a key component of brand equity. Further, Aaker (1991) suggested that brand associations could provide value to the consumer by providing a reason for consumers to buy the brand and create positive attitudes towards brands. Keller (1993) mentioned about another dimension of brand knowledge, which is 'brand image'. He defines brand image '*as a perception about a brand as reflected by the brand associations*' (p.3).

**Perceived quality** is not the actual quality of the product. However, it is the consumer's subjective evaluation of the product (Zeithaml, 1988). Perceived value provides a reason to buy for the consumers and differentiates a brand from competitors. Aaker (1992) mentioned that brand equity can help customers interpret, process, store, and retrieve information about products and brands. It also affects the consumers' confidence in their purchase decision. Customers will usually be more comfortable with the brand which they have experienced.

Aaker (1991) defined **brand loyalty** as "the attachment that a customer has to a brand" (p.39). From an attitudinal perspec-

tive, Yoo and Donthu (2001) defined brand loyalty as “the tendency to be loyal to a focal brand, which is demonstrated by the intention to buy the brand as a primary choice” (p.3). The attitudinal perspective emphasized on **consumer** intention to be loyal to the brand, which is opposed to behavioral perspective which emphasized on the consumer’s actual loyalty.

Muniz and O’Guinn (2001) noted that brand communities directly affect all four of these components of brand equity. Therefore, the strong brand community identification would lead to lead to greater brand awareness, brand association, perceived quality and brand loyalty. Therefore, hypotheses are specified as follows:

**Hypotheses 4:** Stronger Brand Community Identification leads to greater a) Brand awareness/ Brand association, b) Perceived quality, c) Brand loyalty, d) Overall Brand Equity.

## **METHOD OF THE STUDY**

### ***Data Collection Method***

Muniz and O’Guinn (2001) found the evidence of brand community in both face-to-face and computer-mediated environment. For this paper, we focused on computer-mediated environment brand community. The primary data were collected through sample survey. The questionnaire was distributed both online and offline.

The target population was the members of virtual community. The scope of the study is on the high technology product category. The rationale for the product category selection is that the virtual community is activated online and the top product online is linked with high-tech products, such as software program, mobile phone, computer, car, etc. The respondent was asked whether he/she was in any virtual community. If a respondent free in this category, he/she was invited to fill the questionnaire.

### ***Procedure***

The survey questionnaire includes six main sections. The questionnaire was used as the data collection instrument. To ensure the cultural equivalence, translation and back-translation techniques were used in the development of the questionnaire. A bilingual graduate student translated the questionnaire from English to Thai, and it was translated back to English by a bilingual faculty. About fifteen respondents did the pre-test of the questionnaire to ensure that they understood all instructions and all statements in the questionnaire.

A screening question was asked by the interviewer to screen the respondents. The respondents were asked whether they have joined any community that relates to some particular brand. If the answer was ‘yes’, the interviewer invited the respondent to fill the questionnaire. Next, the respondents were told that “The purpose of this survey is to study the effects of brand community on the brand value. To ensure valid and meaningful findings, we need your help”.

The first part of the questionnaire complies with the details of the brand community, respondents were asked to specify the brand name, the name of the community, the product category, and other details about their brand community. In the second part, the respondents were asked to express their personal opinion on general perception about the relationship of the brand which they have specified. In the third part, the respondents were asked to indicate the product knowledge for the brand that they have specified. In the fourth part, the respondents were asked to express their personal opinion towards the membership of their brand community. In the fifth part, they were asked to express their personal opinion about the participation in the community. In the last part of the questionnaire, the respondents were asked to express their perception toward the brand that they mentioned.

### ***Sampling Method***

We used random sampling and the snowball sampling method in this study. Since we would like to have the information from the members of virtual communities, the first task is to search for some high-

tech virtual communities. For example, in Thailand i-phone club has been found on the Internet ([www.thaiiphonclub.com](http://www.thaiiphonclub.com)). The overall membership of this club till 9 of December, 2007 is 1,362 members. The members visiting the website each day is approximately 19-25 members. The other example of virtual community was from Apple computer ([www.thaimacclub.net](http://www.thaimacclub.net)). This website was the website for the Mac users. Another example of Apple computer club was from Thailand Mac User Community ([www.macdd.com](http://www.macdd.com)). We approached some members of the communities and asked them to recommend other members in the communities.

### Sample Size

According to Ho (2006), structural equation modeling is a test of model fit. It is the use of the chi-square test to predict the viability of several assumptions, therefore, sample size is sufficiently large. Hair et al. (1998) suggested that the absolute minimum sample size must be at least greater than the number of covariances in the data matrix. Although there is no a single criterion that can calculate the sample size, the most appropriate minimum ratio is ten respondents per parameter (Ho, 2006).

Therefore, according to our constructs, we have 45 items measure, if we multiply by ten respondents per parameter, we will have approximately 450 sample for our study.

### Measurement

There are altogether eight constructs in the study, which are Brand Community Integration (BCI), Consumer Knowledge, Brand Community Identification (BCI), Community Engagement, Brand Equity: Perceived Quality, Brand Loyalty, Brand Awareness/Brand Association, and Overall Brand Equity.

All scales in eight constructs are adopted from previous literature. The scales adopted were tested with high reliability (see Table 6). The following contains the details of each scale used in the study.

## INTEGRATION IN A BRAND COMMUNITY (IBC) SCALE

The integration in a brand community scale is adapted from McAlexander et. al (2002). IBC measures four *customer-centric relationships*: owner-to-product, owner-to-brand, owner-to-company, and owner-to-other owners. The reliability of the scale were good from the previous literature, the alpha value ranged from 0.70 to 0.90 (McAlexander et. al, 2002).

The customer-product relationship is measured with four items, whereby the respondents would express their opinion about the product that they own. The customer-brand relationship is measured by brand-related value and brand loyalty. The customer-company relationship is measured by the feelings of the owner about the organization that it sponsored. The customer-customer relationship measures the feelings than owners of the product have about other owners.

All items were measured on a 6-point Likert scale (anchored by 1 = "Strongly disagree", 2 = "Slightly disagree", 3 = "Disagree", 4 = "Agree", 5 = "Slightly agree", and 6 = "Strongly agree"). Table 1 presents fourteen items of community integration scale (IBC).

**Table 1: 14 ITEMS – Community Integration scale items (6-point Likert-type scale)**

#### Product

1. I love this brand.
2. I am proud of this brand.
3. This brand is one of my favorite possessions.
4. This brand has good performance.

#### Brand

5. I value this brand's heritage.
6. I would recommend this brand to my friends.
7. If I were to replace this brand, I would buy the same brand.
8. This brand is of the highest quality.
9. This brand is the ultimate high technology product.

#### Company

10. The company of this brand understands my

needs.

11. The company of this brand cares about my opinions.

#### **Other owners**

12. I have met wonderful people because of this brand.
13. I feel a sense of kinship with other owners of this brand.
14. I have an interest in a club for the owners of this brand.

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### **Consumer Knowledge scale**

The consumer knowledge scale is adopted from Algesheimer, Dholakia, and Herrmann (2005). The consumer knowledge scale consists of three items. Consumer knowledge is measured with the items that attempt to capture the feelings of the respondents on the knowledge of the brand that they have. The coefficient alpha from the previous literature was .89 (Algesheimer, Dholakia, & Herrmann, 2005). All items were measured on a 6-point Likert scales (anchored by 1 = "Strongly disagree", 2 = "Slightly disagree", 3 = "Disagree", 4 = "Agree", 5 = "Slightly agree", and 6 = "Strongly agree"). Table 2 presents three items of brand knowledge.

**Table 2: 3 ITEMS – Consumer Knowledge scale (6-point Likert-type scale)**

- 
1. When compared to others, I know a lot about this brand.
  2. My friends consider me an expert regarding this brand.
  3. I consider myself very experienced with this brand.
- 

### **Brand Community Identification scale**

The brand community identification scale is adopted from Algesheimer, Dholakia, and Herrmann (2005). The brand community identification scale is measured by how the person consider himself/herself to be a member-that is the same of belonging to the brand community. The coefficient alpha from the previous literature was .89 (Algesheimer, Dholakia,

& Herrmann, 2005). All items were measured on a 6-point Likert scales (anchored by 1 = "Strongly disagree", 2 = "Slightly disagree", 3 = "Disagree", 4 = "Agree", 5 = "Slightly agree", and 6 = "Strongly agree"). Table 3 presents five Items of brand community identification scale.

**Table 3: 5 ITEMS – Brand community identification scale (6-point Likert-type scale)**

- 
1. I am very attached to the community
  2. Other brand community members and I share the same objectives
  3. The friendships I have with other brand community members mean a lot to me.
  4. If brand community members planned something, I'd think of it as something "we" would do rather than something "they" would do.
  5. I see my self as a part of the brand community.
- 

### **Community Engagement scale**

The community engagement scale is also adopted from Algesheimer, Dholakia, and Herrmann (2005). The community engagement scale is measured the positive influences of identifying with the brand community, which refer to the consumer's motivation to cooperate with other members in the community. The coefficient alpha from the previous literature was .88 (Algesheimer, Dholakia, & Herrmann, 2005).

All items were measured on a 6-point Likert scales (anchored by 1 = "Strongly disagree", 2 = "Slightly disagree", 3 = "Disagree", 4 = "Agree", 5 = "Slightly Agree", and 6 = "Strongly agree"). Table 4 presents four items of the community engagement scale.

**Table 4: 4 ITEMS – Brand Community Engagement (6-point Likert-type scale)**

- 
1. I benefit from following the brand community's rules
  2. I am motivated to participate in the brand community's activities because I feel better afterwards.
  3. I am motivated to participate in brand community's activities because I am able to support other members.



- I am motivated to participate in the brand community's activities because I am able to reach personal goals.

### Brand equity scale

The scale of brand equity is adopted from the work of Yoo, Donthu and Lee (2000). Cronbach's measure of reliability coefficient was calculated for the items of each construct. The reliability from the previous literature is as follow: 'perceived quality' = .93; 'brand loyalty' = .90; 'brand association and brand awareness' = .94; and 'overall brand equity (OBE) = .93 (Yoo, Donthu & Lee, 2000). This scale had been validated by Washburn and Plank (2002), which mentioned that their research result provide some support for Yoo and Donthu's scale.

Yoo, Donthu and Lee (2000) developed the consumer-based overall brand equity scale (OBE). The respondents were asked to express their intention to select the focal product against the competitive products. Each item of the consumer-based overall brand equity scale (OBE) is designed to measure the incremental value of the focal product due to the brand name.

All items were measured on a 6-point Likert scales (anchored by 1 = "Strongly disagree", 2 = "Slightly disagree", 3 = "Disagree", 4 = "Agree", 5 = "Slightly agree", and 6 = "Strongly agree"). Nineteen items for brand equity measures presents in Table 5

**Table 5: 19 ITEMS – Dimensions of brand equity (6-point Likert-type scale)**

#### *Perceive quality*

- This brand is of high quality
- The likely quality of this product is extremely high.
- The likelihood that this product would be functional is very high.
- The likelihood that this product is reliable is very high.
- This product must be of very good quality.
- This product appears to be of very poor quality. (r)

#### *Brand Loyalty*

- I consider myself to be loyal to this brand.
- This brand would be my first choice.
- I will not buy other brands.

#### *Brand awareness/associations*

- I know what this brand looks like.
- I can recognize this brand among other competing brands.
- I am aware of this brand.
- Some characteristics of this brand come to my mind quickly.
- I can quickly recall the symbol or logo or logo of this brand.
- I have difficulty in imaging this brand in my mind. (r)

#### *Overall brand equity (OBE)*

- It makes sense to buy this brand instead of any other brand, even if they are the same.
- Even if another brand has same features as this brand, I would prefer to buy this brand.
- If there is another brand as good as this brand, I prefer to buy this brand.
- If another brand is not different from this brand in any way, it seems smarter to purchase this brand.

Remark: (r) = reverse-coded.

## DATAANALYSIS

### *Response Rate*

Since the main purpose of this study is the exploratory research, in which to investigate the effects of virtual communities on brand equity, therefore the sample size for this study is reduced to 250 set of questionnaire. A total of 250 questionnaires were distributed for a survey and a total of 197 responses were received. Of these returned questionnaires, 8 questionnaires were incomplete. Therefore, the usable questionnaires were 189, with the response rate was 78.8%.

## Respondents' Profile

In this study 52.4% of the respondents were male and 47.6% of the respondents were female. 9% of the respondents have joined the community for less than one month, 42% of them have joined the community for 1-6 months, 7.9% of them joined the community for, 7-11 months, 36.5% of them have joined the community for 1-2 years, 21.2% of them have joined the community for 3-4 years, and 6.9% of them have joined the community for more than 5 years. The age of the respondents, 32.3% of the respondent belongs to 19 to 22 age group, and 35.4% of the respondents belongs to 27 to 30 years.

The descriptive analysis indicated that the member of the community usually contact other member via multiple channels. Internet was the top channel that members usually used. The result indicated that 17.2% used face-to-face as only one channel to communicate, 17.5% use mobile phone as only one channel and 62.4% use internet as only one channel to communicate with others. Most of the respondents (100%) used internet (which might mix with other channels) to communicate with other members in the community.

## Reliability Analysis

Cronbach's measure reliability coefficient was used to measure the internal consistency of each scale. In general, all constructs were found to be reliable since alpha reliability coefficients of all measurement scale ranged between 0.71 and 0.94 (see Appendix A-Reliability Testing). According to Nunnally (1978), if alpha value is more than 0.7, this indicate that its measures are reliable. In this study, Cronbach's alpha of all constructs are presented in Table 6. The values of Cronbach's alpha justifies that the construct have satisfactorily met the required criteria. The summary of the construct is presented in table 6:

**Table 6: Construct Reliability**

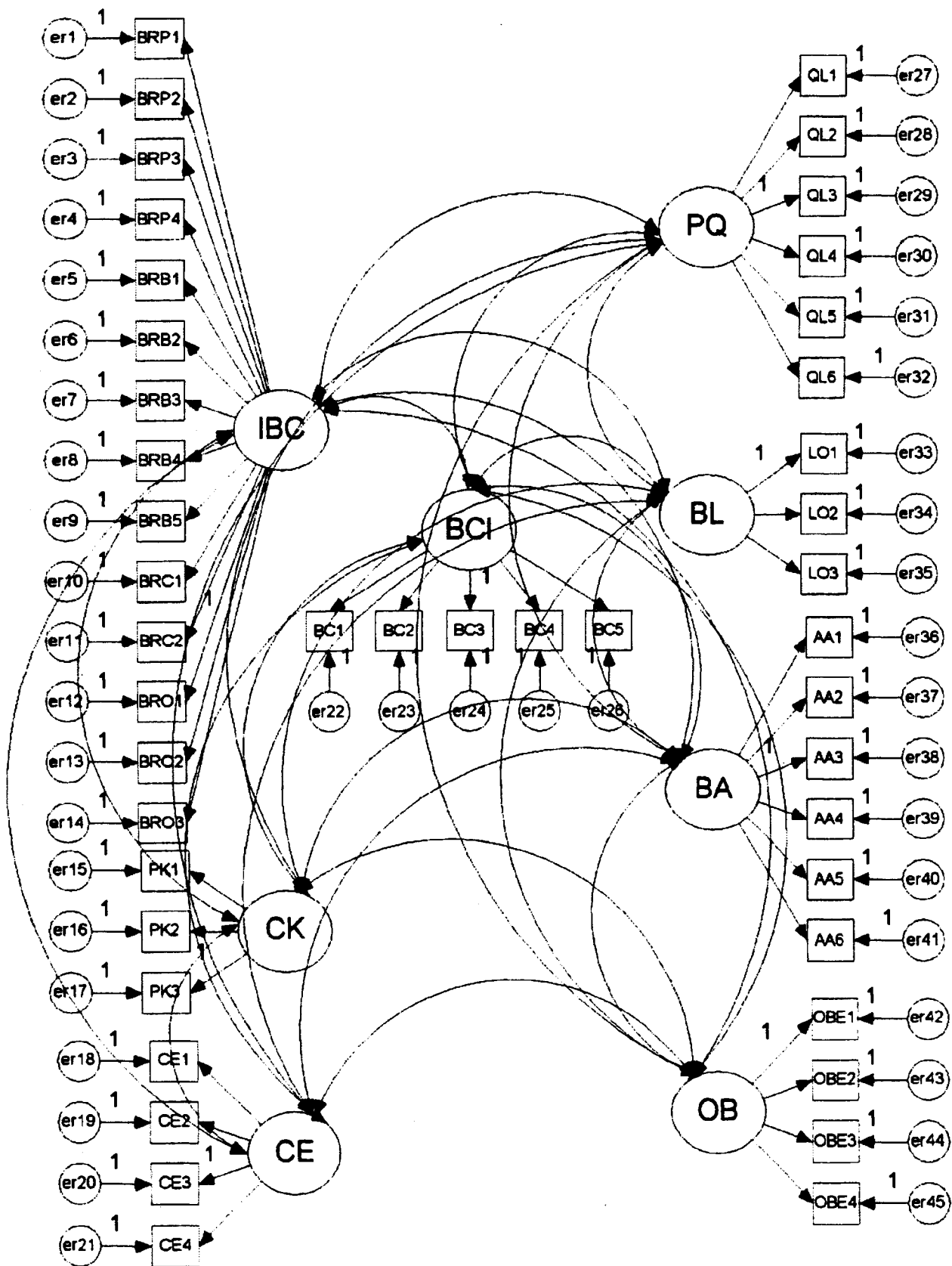
Scale Name	Cronbach's $\alpha^*$	Number of Items
Brand Community Integration (BCI)	.940	14
Consumer Knowledge	.856	3
Brand Community Identification (BCI)	.892	5
Brand Community Engagement	.887	4
Brand Equity - Perceived Quality	.900	6
Brand Equity - Brand Loyalty	.719	3
Brand Equity – Brand Awareness and Brand Association	.849	6
Brand Equity – Overall Brand Equity	.931	4

\*All the scales are six-point, with "Strongly Disagree" and "Strongly Agree" as the anchors.

## Confirmatory factor analysis (CFA)

Confirmatory factor analysis was used to assess the items of the constructs, which is shown in the correlation matrix of the items. According to Anderson and Gerbing (1988), confirmatory factor analysis is used to detect the unidimensionality of each construct. Unidenmensionality is evidence that a single trait or construct underlies a set of measures (Anderson & Gerbing, 1988). Ho (2006) explained that CFA is used to determine the degree of model fit, to check the adequacy of the factor loadings, and the standardized residuals and explained variances for the measurement variables. The measurement model is presented in Figure 2.

Figure 2: Measurement Model



**Table 7: Incremental Fit Indices**

Model	Baseline Comparisons				
	NFIDelta1	RFIrho1	IFIDelta2	TLI rho2	CFI
Default model	.754	.734	.851	.837	.849
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

The chi-square goodness-of-fit test shows that the model did not fit the data well,  $\chi^2(N = 189, df = 917) = 1967.32, p < .001$ . Although the model did not fit the chi-square test well, the baseline comparisons fit indices of NFI, RFI, IFI, TLI, and CFI are close to 0.9 (see table 7).

The unstandardized regression weights are all significant by the critical ratio test ( $> \pm 1.96, p < 0.001$ ) (see Table 8). The standardized regression weights range from 0.34 to 0.92 (see Table 9). These values indicate that 45 measurement variables are significantly represented by their respective latent constructs.

**Table 9: Standardized Regression Weights**

	Estimate
BRO 2 <--- IBC	.699
BRO 1 <--- IBC	.667
BRC 2 <--- IBC	.619
BRC 1 <--- IBC	.730
BRB 5 <--- IBC	.697
BRB 4 <--- IBC	.776
BRB 3 <--- IBC	.736
BRB 2 <--- IBC	.733
BRB 1 <--- IBC	.800
BRP 4 <--- IBC	.786
BRP 3 <--- IBC	.763
BRP 2 <--- IBC	.829
BRP 1 <--- IBC	.772
PK 3 <--- CK	.802
PK 2 <--- CK	.825
PK 1 <--- CK	.825
CE 3 <--- CE	.843
CE 2 <--- CE	.841
CE 1 <--- CE	.756
CE 4 <--- CE	.823
BC 3 <--- BCI	.821
BC 2 <--- BCI	.710
BC 1 <--- BCI	.782
BC 4 <--- BCI	.834

BC 5 <--- BCI	.804
QL 3 <--- PQ	.839
QL 4 <--- PQ	.844
QL 5 <--- PQ	.865
QL 2 <--- PQ	.887
QL 1 <--- PQ	.907
QL 6 <--- PQ	.437
LO 1 <--- BL	.871
LO 2 <--- BL	.690
LO 3 <--- BL	.514
OBE 1 <--- OB	.837
OBE 2 <--- OB	.911
OBE 3 <--- OB	.921
OBE 4 <--- OB	.851
AA 3 <--- BA	.860
AA 4 <--- BA	.823
AA 5 <--- BA	.717
AA 2 <--- BA	.765
AA 1 <--- BA	.843
AA 6 <--- BA	.341
BRO 3 <--- IBC	.614

The explained variances for the 12 measurement variables are represented by their squared multiple correlations (see Table 10). The percentage variance explained range from 0.116 or 11.6% (AA6) to 0.849 or 84.9% (OBE3). The residual (unexplained) variances are calculated by subtracting each explained variance from 1. Thus, for the 45 measurement variables the residual variance range from 15.1% to 88.4%.

**Table 10: Explained Variances (Square Multiple Correlations) for the 45 Measurement Variables**

	Estimate
BRO 3	.377
AA 6	.116
AA 1	.711

Table 8: Regression Weights

	Estimate	S.E.	C.R.	P	Label
BRO 2 <--- IBC	1.000				
BRO 1 <--- IBC	.935	.106	8.853	***	
BRC 2 <--- IBC	.843	.102	8.232	***	
BRC 1 <--- IBC	.915	.095	9.662	***	
BRB 5 <--- IBC	1.072	.116	9.240	***	
BRB 4 <--- IBC	1.038	.101	10.247	***	
BRB 3 <--- IBC	1.033	.106	9.742	***	
BRB 2 <--- IBC	.881	.091	9.696	***	
BRB 1 <--- IBC	.973	.092	10.563	***	
BRP 4 <--- IBC	.916	.088	10.381	***	
BRP 3 <--- IBC	.940	.093	10.091	***	
BRP 2 <--- IBC	1.030	.094	10.926	***	
BRP 1 <--- IBC	.974	.095	10.205	***	
PK 3 <--- CK	1.000				
PK 2 <--- CK	1.071	.090	11.918	***	
PK 1 <--- CK	1.014	.085	11.911	***	
CE 3 <--- CE	1.000				
CE 2 <--- CE	.982	.070	14.116	***	
CE 1 <--- CE	.848	.071	12.015	***	
CE 4 <--- CE	1.043	.076	13.665	***	
BC 3 <--- BCI	1.000				
BC 2 <--- BCI	.922	.086	10.775	***	
BC 1 <--- BCI	.925	.075	12.292	***	
BC 4 <--- BCI	1.005	.074	13.499	***	
BC 5 <--- BCI	.988	.077	12.801	***	
QL 3 <--- PQ	1.000				
QL 4 <--- PQ	.992	.068	14.600	***	
QL 5 <--- PQ	1.031	.068	15.196	***	
QL 2 <--- PQ	1.115	.070	15.882	***	
QL 1 <--- PQ	1.074	.065	16.519	***	
QL 6 <--- PQ	.585	.095	6.180	***	
LO 1 <--- BL	1.000				
LO 2 <--- BL	1.028	.102	10.036	***	
LO 3 <--- BL	.742	.105	7.060	***	
OBE 1 <--- OB	1.000				
OBE 2 <--- OB	1.116	.067	16.548	***	
OBE 3 <--- OB	1.171	.069	16.877	***	
OBE 4 <--- OB	1.082	.074	14.708	***	
AA 3 <--- BA	1.000				
AA 4 <--- BA	.978	.069	14.200	***	
AA 5 <--- BA	.780	.068	11.450	***	
AA 2 <--- BA	1.016	.081	12.623	***	
AA 1 <--- BA	1.045	.071	14.787	***	
AA 6 <--- BA	.582	.125	4.666	***	
BRO 3 <--- IBC	.811	.099	8.164	***	

AA 2	.586	BRB 3	.542
AA 5	.514	BRB 4	.601
AA 4	.678	BRB 5	.486
AA 3	.740	BRC 1	.533
OBE 4	.724	BRC 2	.384
OBE 3	.849	BRO 1	.445
OBE 2	.830	BRO2	.489
OBE 1	.701		
LO 3	.264		
LO 2	.476		
LO 1	.759		
QL 6	.191		
QL 1	.822		
QL 2	.786		
QL 5	.747		
QL 4	.713		
QL 3	.703		
BC 5	.647		
BC 4	.696		
BC 1	.611		
BC 2	.503		
BC 3	.675		
CE 4	.678		
CE 1	.571		
CE 2	.707		
CE 3	.711		
PK 1	.681		
PK 2	.681		
PK 3	.643		
BRP 1	.596		
BRP 2	.687		
BRP 3	.583		
BRP 4	.618		
BRB 1	.640		
BRB 2	.537		

### *Structural equation modeling (SEM)*

The structural equation model specified the three antecedents of brand community identification as the exogenous constructs (integration of brand community, consumer knowledge and community engagement). The exogenous constructs is selectively related to the exogenous mediating construct, brand community identification. The exogenous mediating construct is related to the endogenous construct (perceived quality, brand loyalty, brand awareness/associations and overall brand equity). Goodness-of-fit was calculated and the result of the measurement model and the intercorrelations among the constructs are reported. The structural equation model for this study is presented in Figure 3.

The chi-square goodness-of-fit test shows that the model did not fit the data well,  $\chi^2 (N = 189, df = 935) = 2257.228, p < .001$ . Although the model did not fit the chi-square test well, the baseline comparisons fit indices of NFI, RFI, IFI, TLI, and CFI are close to 0.9 (see table 11). Table 12 presents the overall model fit, which shows that model does not fit well (GFI = .601), however, RMSEA value (RMSEA = .087) is acceptable.

**Table 11: Incremental Fit Indices**

Model	Baseline Comparisons				
	NFI $\Delta$ 1	RFI $\rho$ 1	IFI $\Delta$ 2	TLI $\rho$ 2	CFI
Default model	.718	.701	.812	.800	.811
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

**Table 12: Overall Model Fit Statistic**

Model	GFI	AGFI	RMR	RMSEA	NFI	CFI
Default	.601	.558	.109	.087	.718	.811

Figure 3: Path Model

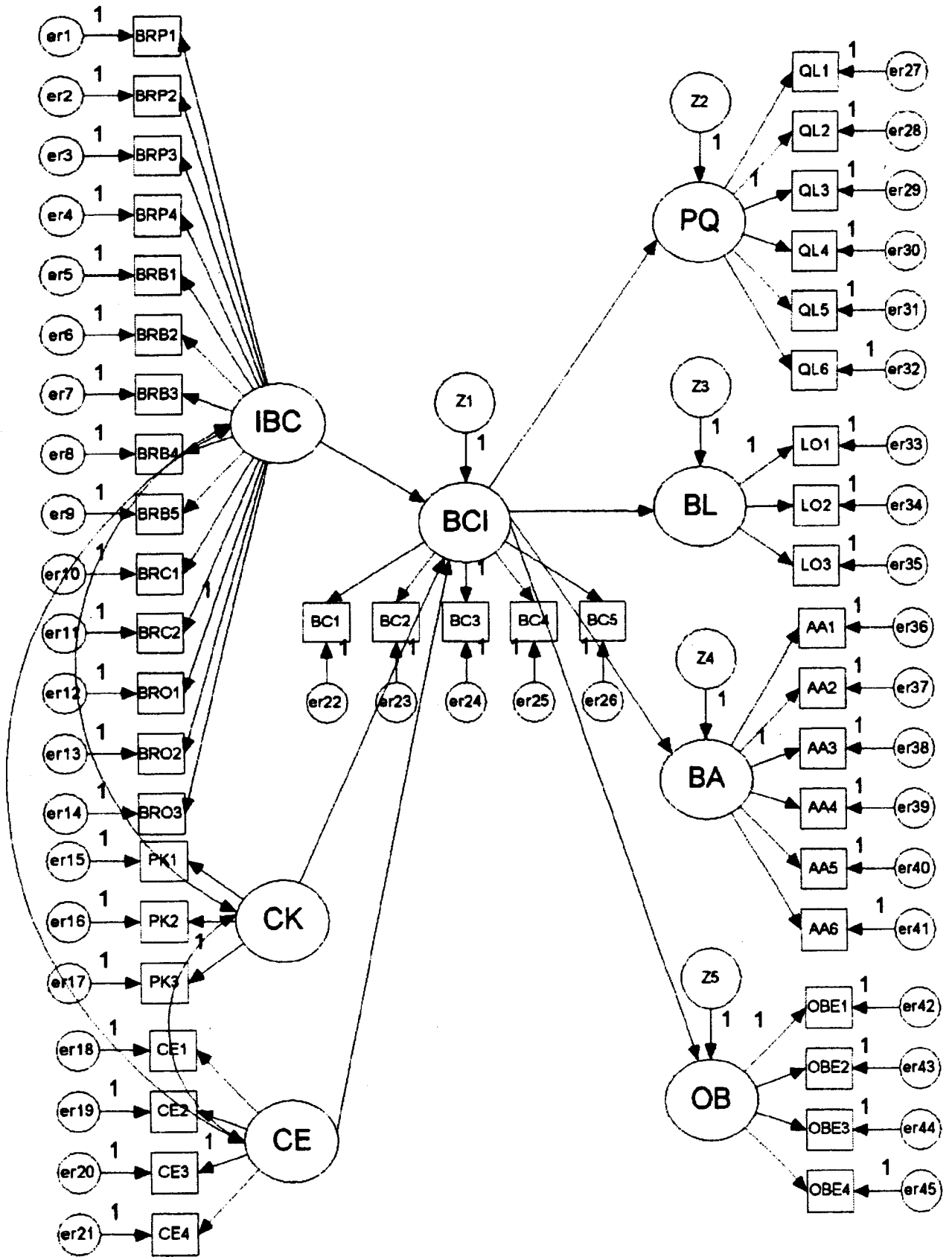
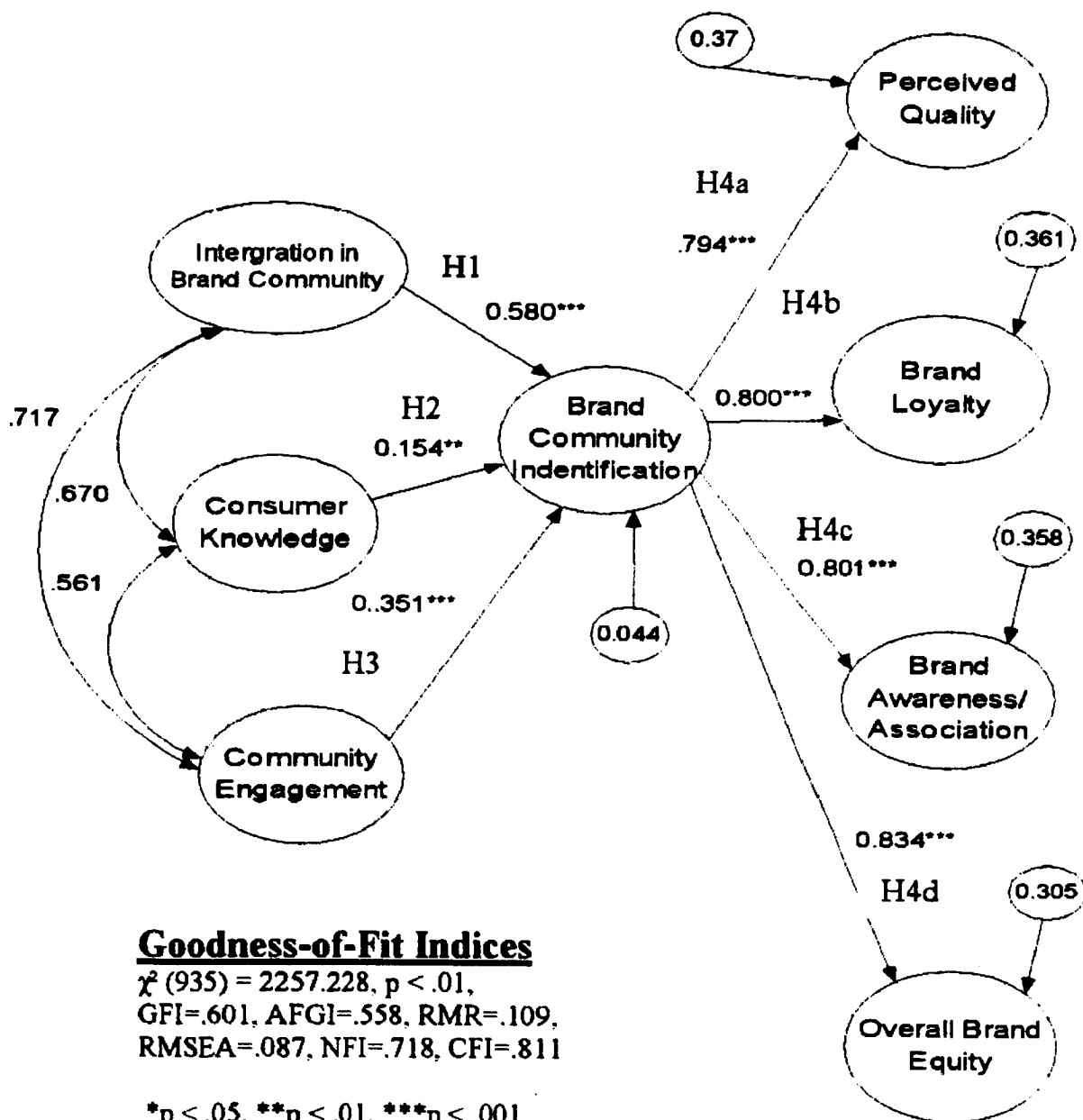


Figure 4: The result of Structural Equation Modeling



According to the parameter estimates presented in Figure 4, six paths specified in the model were found to be *highly statistically significant* ( $t$ -value  $> \pm 1.96$ ). These paths reflected the impact of Integration of Brand Community, Consumer Knowledge, and Community Engagement on Brand Community Identification; and the impact of Brand Community Identification on Brand Equity.

The results suggest that the Integration in Brand Community has strong correlation with Community Engagement. This implies that people who have strong brand relationships, also have strong motiva-

tion to engage in the brand community.

According to the path analysis, the more prior the brand relationship (Integration in Brand Community-IBC), the more strongly people identified themselves with the brand community ( $\beta = 0.58$ ). Therefore, **Hypothesis 1 is supported** (H1: Higher level of Integration in Brand Community (IBC) leads to higher Brand Community Identification).

Based on the present results, the greater the brand knowledge that people have, the more strongly people identified themselves with the brand community ( $\beta = 0.15$ ). Therefore, Hypothesis 2 is



supported. (H2: Higher level of Brand Knowledge leads to greater Brand Community Identification).

The result showed further that when people have more motivation to join the community (Community Engagement), the more strongly people identified themselves with their community ( $\beta = 0.35$ ). Therefore, *Hypothesis 3 is supported*. (H3: Greater Community Engagement leads to stronger Brand Community Identification).

The last hypothesis is also supported by the result. The more people identified themselves with their brand community, the greater the Brand Equity, e.g. Perceived Quality, Brand Loyalty, Brand Awareness/Brand Association, Overall Brand Equity ( $\beta = 0.79$ ;  $\beta = 0.80$ ;  $\beta = 0.80$ ;  $\beta = 0.83$  respectively). Therefore, **all Hypotheses 4 are supported**. (H4: Stronger Brand Community Identification leads to greater a) Brand Awareness/Brand Association, b) Perceived Quality, c) Brand Loyalty, and d) Overall Brand Equity).

## CONCLUSION

The goal of this paper is to investigate the relationships between Virtual Community and Brand Equity. Four constructs were presented as integrated element of virtual community (e.g. Integration in Brand Community (IBC), Consumer Knowledge, Community Engagement and Brand Community Identification). Integration in Brand Community (IBC), Consumer Knowledge, and Community Engagement were hypothesized to be antecedents of Brand Community Identification, in which these antecedents should have positive relationships with Brand Community Identification.

The results imply that the stronger the prior brand relationship, the greater is peoples' identification as the members in the community. The reasons are because they love the brands and they also see themselves as part of brand community. The more people have brand knowledge, the greater the members see themselves as a part of the brand community. The stronger the motivation to participate in brand community, the greater the members attachment to the brand community. Furthermore, there is positive relationship between the Brand Community Identification and Brand Equity. The more people see them-

selves as having strong attachments with the community, the more they value the brand in terms of brand loyalty, brand association/brand awareness, perceived quality. These findings lead to a particular important implication both theoretical and managerial. The last section introduces these implications.

## THEORETICAL IMPLICATION

A particular important implication of the study is that the prior brand relationship, brand knowledge, community engagement, community identification has positive relationships with brand equity. These relationships imply that the strong brand community would lead to strong brand value.

## MANAGERIAL IMPLICATIONS

In particular, the paper builds a theoretical foundation based on past research in virtual community that should be helpful in addressing some new challenge in developing communication strategies that have arisen because of changes in marketing environment.

The results have implications for marketing managers, especially marketing communication managers. The implication is that virtual brand communities can affect the brand value. Consumers who are attached with the some particular virtual communities would perceive that the product has more quality (perceived quality), they will have more loyalty to the brand (brand loyalty), they also learn more about the brand from other members (brand awareness/brand association). Since, brand value can help to create virtual communities, building and managing virtual communities would become the new challenge for marketing communication managers.

Managers will not only focus on Brand Community Identification, but also their antecedents (Integration of Brand Community, Consumer Knowledge, and community engagement). Managers have to focus their marketing efforts to build strong brand relationships. Without these strong brand relationships, it is quite hard to make people have strong attachment to the community. Consumers also need to receive the facts about the brand. When they learn

more about the brand, they will have the strong motivation to engage in the brand community, which in turn, will result in strong community attachment in the future.

## LIMITATIONS AND FUTURE RESEARCH

Although the result of the study provides theoretical and substantive explanations between brand community and brand equity, this research has several limitations. Overcoming them can be a direction for future research. First, the small sample size of the study might affect the results of the study. Future research is needed to validate and generalize the findings with larger sample size. Second, additional research is needed to find other antecedents of virtual communities. Even consumer knowledge has some positive relationship but it has no strong relationship with community identification in this study ( $\beta = 0.15$ ). For example, from a recent study, Hsiu-Fen and Gwo-Guang (2006) found that system quality, information quality and service quality had a significant effect on member loyalty through the use of online community. Other antecedents would make the model stronger and could suggest other valuable implications for marketing strategies and tactics.

Thirdly, the findings of this study indicated the need for constructive replication comparing different product categories, for example mobile phone and car; or product versus service. Finally, future research might need to explore other type of brand communities, for example anti-brand communities, to investigate the relationship between brand community and brand equity.

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