THE RELATIONSHIP AMONG BRAND AWARENESS, BRAND IMAGE, PERCEIVED QUALITY, BRAND TRUST, BRAND LOYALTYAND BRAND EQUITY OF CUSTOMER IN CHINA'S ANTIVIRUS SOFTWARE INDUSTRY

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Abstract

Objective - The objective of this study is to study influence factors of brand equity and study the relationship among brand awareness, brand image, perceived quality, brand trust, brand loyalty and brand equity.

Methodology - A quantitative study was adopted for collecting data, a total 400 valid questionnaires was collected through an online survey website, every respondents must be the customer of antivirus software. These data was tested in a structural equation model.

Finding - This study found that brand awareness is positive related to brand trust, brand trust is positive related to brand equity, brand image have indirect impact on brand equity through perceived quality and brand trust, perceived quality have a indirect impact on brand loyalty through influence on brand trust, brand loyalty is positive related to brand equity.

Practical implications - Company owner should clear understand brand equity's implication and other influence factor, try to manage their brand properly and build a effective brand strategy in order to make some differentiation from their competitor, then get more advantage in this competing antivirus software market.

Keywords: Brand awareness, Brand image, Perceived quality, Brand trust, Brand loyalty, Brand equity, China antivirus software.

Paper type: Research paper

1. Introduction

In the information network era, the openness and convenience of the internet have greatly changed people's life style and working style (Yu, Li, Dong, 2013). Although the internet brings so many benefits and convenience to people, while the subsequent behavior of interfere personal information has become more serious, personal information safety has become a new problem that appear in people's eyes, people's requirement towards the computer safety has greatly increased. This causes the market demand and scale of antivirus software expanding rapidly. Some researcher pointed out that building an effective brand strategy in the antivirus software industry can enhance companies' competitiveness (Fan and Xue, 2011). Therefore, it is important for a company to manage their brand equity properly, and develop a effectiveness brand strategy.

As the internet develops rapidly, the penetration rate of the internet will be more larger, and it involves a large number of populations in China. According to China Internet Network information center (CNNIC), its "2013 Chinese internet user information safety report" indicated there are 96.5% of internet user had installed antivirus software on their computer, moreover, in the first half of 2013, 74.1% of internet user were attacked by a virus, the relative population had reached 438 million, Therefore, there is no doubt about the antivirus software is significantly important towards people.

Since internet will continuous develop, computer and internet will cover more area and population, which means market demand of antivirus software still has space to expand or cover, so there still has possibility of new entrant appear, and new competitor will be bound to occupy the market share (Fan and Xue, 2011). Therefore, companies must be prepared for the incoming compete, the effective approach to win the game is to enhance brand management and try to understand the factors that affect brand equity, try to plan a effective brand strategy and establish a great brand equity.

Research the brand equity and branding has been an important topic of research in the marketing area (Rios and Riquelme, 2008). Concerning the brand equity study, there are many former literatures had conducted researches on many industries, some scholars use the traditional approach to measuring brand equity applies to online companies (Rios and Riquelme, 2008). Their study found partial support for their model and indicated brand loyalty is directly create brand equity. They approve the brand equity model not only can applies in traditional firm, but also can use to test online companies. In addition, other researchers had tested the brand equity model in the context of higher education (Mourad, Ennew and Kortam, 2010), the result provided partial support for the their hypothesized conceptual framework, the determinants that related image of brand equity being far more significant than determinants that related awareness. Their research is similar to this study research, proposed the brand image dimension and brand awareness dimension have a relationship to brand equity, but the environment is different, the above literatures only test in higher education and online companies. In addition, some researcher built brand equity model to test in other industries such as hotel industries and clothing industries (Xu and Chan, 2009; Tong and Hawley, 2009; Kayaman and Arasli, 2007). Although many scholars conducted the model test in many industries, but author found that, there are few studies research the brand equity in China antivirus industry. Therefore, this study tries to fill the gap and hypothesize a brand equity model to test in this industry, and provide insight to brand managers for better understand the concept of brand equity, building a strong brand equity and enhance competitiveness.

2. Literature review

2.1 Brand equity

Brand equity was defined as the extra value inserted in its name, can be identified by the consumer, it also reflected that consumer is willing to pay towards a certain brand or product in a premium price compare to another brand. (Yoo and Donthu, 2002; Rios and Riquelme, 2008). Brand equity comprises of two separate dimensions: functional and symbolic. The functional dimension is related to functional characteristic and the branded product's performance, it describes how the product or service meets customers' functional needs. The symbolic dimension is associate to intangible parts of the brand, such as image associations, which is indirectly linked to the real features of the product. These intangible factors including "user imagery"(the type of person who uses the brand) and "usage imagery" (the type of situations in which the brand is used) (Delassus and Descotes, 2012; Keller, 2001).

Some scholars suggested brand equity can help marketers focus, giving them a way to explain their past marketing performance and blueprint their future marketing schedule and it also be a significant concept for brand manager to understanding and managing customer behavior (Keller, 1999; Faircloth, 2005). Similar to brand image, some researchers considered if a brand has a lower brand equity, then it may have to pay more attention in marketing and promotional activity in order to maintain its position in customer's mind, because a advertisement may cause customer's interest behavior, which means marketing activities can help build a image in consumer's mind and brand image would positively affect the overall brand equity (Arora, Raisinghani, Arora and Kothari, 2009; Juntunen, Jouni and Juga, 2010). Brand equity, whether online or offline, cannot be created without consumers recognize and recall the brand in their minds (Rios and Riquelme, 2008).

Based on the information above, that is: brand equity is directly influenced by brand image. Not only brand image was considered as the antecedents of brand equity, but also consider that brand equity can be strengthened by the creation of brand loyalty (Arora, Raisinghani, Arora and Kothari, 2009). Another factor that influencing brand equity is brand trust. Rios and Riquelme (2008), indicated consumers need to trust the seller to purchase online, websites that give consumers peace of mind will create more brand equity and patronage.

Brand equity as an important role that influencing the customers' selection process, especially in the service industry (Mourad, Ennew and Kortam, 2010). That means, sometimes brand equity can drive customers' purchase intension and even affect the brand loyalty. Besides, there is a dual relationship whereby brand equity leads to brand loyalty and also, brand loyalty leads to more strengthened brand equity, also brand equity has a positive relationship with brand loyalty (Arora, Raisinghani, Arora and Kothari, 2009). Base the above information, we assume there is a dual relationship between brand equity and brand loyalty, although it is a dual relationship, it seems brand loyalty is more appropriate to be an antecedent of brand equity. In summary brand equity has a strong relationship with brand image, brand awareness and brand loyalty, the hypothesized as follow:

H1: brand image is positive related to brand equity.
$H0_1$: brand image is no positive related to brand equity.

H2: brand trust is positive related to brand equity.

H0$_2$: brand trust is not positive related to brand equity.

H3: brand loyalty is positive related to brand equity.

H0$_3$: brand loyalty is not positive related to brand equity.

2.2 Brand awareness

According to Aaker (1996), brand awareness is a significant and sometimes underestimate antecedent of brand equity. It affects customers' perceptions, attitudes and reflects the salience of the brand in the customer's mind. However, some scholars defined brand awareness as the power to link the brand to a product category (Mourad, Ennew and Kortam, 2010). In some contexts, it can drive customers to choose another brand and even change customer's loyalty (Aaker, 1996).

Yoon (2002), suggested that awareness is significantly related to web site trust, some scholars defined brand trust online as a consumer psychological state of confidence and positive expectations from a brand, and also indicated that in a virtual environment where exists potential uncertainties and risks, it is difficult for consumers to confirm product quality. Therefore, trust towards a website brand undoubtedly is a key to virtual transactions (Lin and Lee, 2012). In addition, Delgado-Ballester and Munuera-Aleman (2001) indicated brand trust as a feeling of security that the brand will meet consumers' expectations; trust is one of the most important variables in developing long term customer relationships, such as brand loyalty. Moreover, some researchers realizing the importance of brand trust in internet companies' marketing strategies, given the inherent uncertainty and decreasing product differentiation in the internet business environment (Ha, 2004).

On the other hand, Loyalty underlies the ongoing process of continuing and maintaining a valued and important relationship that has been created by trust (Chaudhuri and Holbrook, 2001). Some scholars suggested that brand trust will contribute to both purchase loyalty and attitudinal loyalty. Trusted brands should be purchased more frequently and should cause a higher degree of attitudinal commitment (Chaudhuri and Holbrook, 2001). However, in this large and growing literature, the role that brand trust play in the creation of brand loyalty as a determinant of brand equity outcomes has not been explicitly considered (Chaudhuri and Holbrook, 2001). In addition, Chiou and Droge (2006); Floh and Treiblmaier (2006) also found that, trust had a direct effect and significant influence on brand loyalty, and trust is positively related to brand loyalty (Rios and Riquelme, 2008).

Moreover, Brand awareness is also widely acceptable that have a positive effect on brand equity. According to Yoo and Donthu, (2002) they suggested brand awareness had an equivalent, positive effect on brand equity (Yoo and Donthu, 2002). But combined Mourad et al (2010)'s research, brand awareness is the antecedent of brand trust, and brand trust is directly affect brand loyalty. Therefore, this study hypothesized as follow:

H4: brand awareness is positive related to brand trust.

H0$_4$: brand awareness is not positive related to brand trust.

H5: brand trust is positive related to brand loyalty.

H0$_5$: brand trust is not positive related to brand loyalty.

2.3 Brand image

According to Keller (2001), Brand image can be seen as all the different awareness, beliefs, opinions, and behaviors customers related to their brand, whether created purposefully by the corporation or not. In the recent years, a widely accept that brand image includes a consumer's knowledge and beliefs about the brand's various products and its non-product attribute. The better the brand image, the better the quality as perceived by customers (Lee, Lee and Wu, 2009; Iversen and Hem, 2007). And some scholars also defined brand image symbolize the individual implication about a brand that customer have kept in mind (Iversen and Hem, 2007). Besides, other scholar also define brand image is the overall emotion image the customers holds about the brand and can be seen in isolation or in relation to other brands (Faircloth, 2005).

In some researchers' study, a different level of brand image may affect brand association, brand loyalty and perceived quality, and if this three dimension change will also cause overall brand equity' change (Lee, Lee and Wu, 2009). In (Mourad et al, 2010)'s research, brand image is directly affect perceived quality, then the perceived quality is directly affect brand loyalty. Therefore, this study was conceptualized a relationship between brand image and perceived quality.

In addition, some scholars developed some factors that can affect brand image, which include: price, after sales service, personality, social image, positioning, relationship, location, country of origin and staff, all of these factors are belong to brand image attributes, and with brand awareness, consumer attributes, as the three sub-component that directly affect brand equity, (Mourad, Ennew and Kortam, 2010).

In summary, brand image is very important that have a great effect on brand equity as well as brand awareness, brand managers should also develop a brand image strategy to enhance the image that customer had stored in mind. If brand managers cannot do well with the brand image, a mismatch of brand image with a consumer's expectation will give a chance for competitors (Janonis and Virvilaitė, 2007), and lost companies' market share and even loyalty customers. Sometimes, A good advertising can help companies develop a global brand image and enrich its brand equity (Arora, Raisinghani, Arora and Kothari, 2009). A better image may appear differentiation in customers' mind, then affect customer purchase intension, finally contribute to a better brand loyalty and brand equity. And then the strong brand image will delivering a positive effect to brand loyalty and brand equity. Therefore, this study hypothesized as follow:

H6: brand image is positive related to perceived quality.

H0$_6$: brand image is not positive related to perceived quality.

2.4 Brand loyalty

In the early 1990s, loyalty was shown to be one of the fundamental drivers of company profitability (Reichheld, Markey Jr and Hopton, 2000). But for a long time, brand loyalty has been one of the most discussed and most misunderstood marketing concepts (Kabiraj and Shanmugan, 2010). Some scholars defined brand loyalty is a preference for a certain brand that lead to its repeated purchase behavior (Arora, Raisinghani, Arora and Kothari, 2009). According to Oliver (1999), he defined brand loyalty is an extremely promise to repurchase a preferred brand or product consistently in the future, thus causing repetitive same-brand purchasing behavior, and ignore the potential affect by situational influences and marketing efforts. Loyalty is widely accepted that divide in two concepts, behavior loyalty

and attitudinal loyalty. Behavior loyalty is defined as the willingness of the average consumer to repurchase the brand. Attitudinal loyalty is the level of commitment of the average consumer towards the brand (Chaudhuri and Holbrook, 2001). But it's a counterpart, some scholars defined brand loyalty refers not only to one's preference to repurchase or repatronize the same brand over and over, but also to have a psychological commitment or attitudinal bias toward the brand (Schoenbachler, Gordon and Aurand, 2004). Similarly, According to Yoo and Donthu (2002), pointed out brand loyalty refers to overall attitudinal commitment toward the brand as an attitudinal index of behavioral brand loyalty. Loyalty as a general commitment that causes consumers to purchase a brand time after time and resist switching to another (Veronique and Descotes, 2012). However, all these explanations are supported Oliver's definition.

Brands higher in attitudinal loyalty will cause higher relative prices and lead to greater willingness to sacrifice by paying a premium price for a valued brand (Chaudhuri and Holbrook, 2001). Thereby, brand loyalty is a valuable asset for every brand (Nguyen, Barrett and Miller, 2010). Thus, a better brand loyalty will generate more profit and market share, that it can reduce marketing cost and may be helpful for building brand equity. Besides, it is also a core dimension of brand equity (Aaker, 1996).

On the other hand, Zeithaml (1988) suggested that perceived quality reflects an overall judgment, and some scholars suggested perceived quality can enhance brand loyalty by increasing customer satisfaction and providing reasons to purchase the product (Arora, Raisinghani, Arora and Kothari, 2009). Moreover, Rios and Riquelme (2008) and Aaker (1991), indicates that loyalty can be influenced by the other dimensions of brand equity, which is perceived quality. Linking the above information, it seems perceived quality has a positive impact on brand loyalty. Therefore, this study hypothesized perceived quality is positive related brand loyalty.
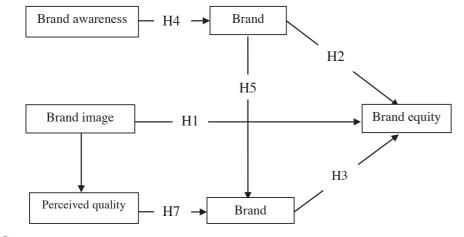
H7: perceived quality is positive related brand loyalty.
$H0_7$: perceived quality is not positive related to brand loyalty.

3. Conceptual Framework

Based on the above literatures and hypothesis, this study combined several relationships, which include brand awareness, brand image, perceived quality, brand trust, brand loyalty and brand equity, then proposed a framework as follows to applied in the China's antivirus software industry.

Figure 1: Conceptual Framework

4. Methodology

4.1 Population and sample

This research is similar to most literatures, it applied a quantitative methodology for complete this research, the questionnaire is necessary. As a result, this research was designed the questionnaire and use online survey system for data collection, the first step is to decide sample, it used the formula:

$$n = \frac{N}{1+Ne^2} \tag{1}$$

This formula is come from Yamane, (1967). In his research, this simple formula also uses to calculate sample size. The meaning of this formula as follows:

n = Numbers of sample or sample size
N = The population in this study who are the user of antivirus software in China, according to CNNIC (China Internet Network Information Center)'s statistical data, at the end of 2013, China internet user had reached 590 million, there are 96.5% internet user using antivirus software. Hence, the population of this study is 569 million.
e^2 = probability of error, this study was 95% confidence level, this number is 5%.
So this calculator will be:

$$n = \frac{560,000,000}{1+560,000,000(0.05)^2}$$

n=399.99 samplings

Base on this equation, the study was required 400 participants; also the questionnaire was design online, and conducts a random online survey in order to collect data.

4.2 Research Instrument

The instrument for this study is questionnaire, author was based on the former literature to construct a questionnaire, all the questionnaire from other literature was adapted in order to fit this research topic. The questionnaire consisted seven parts:
They are demographics factor, brand awareness, brand image, perceived quality, brand trust, brand loyalty and brand equity. The part2- part7 was used likert scale for respondents to fill within five points, from (1) strongly disagree, (2) disagree, (3) uncertain, (4) agree, (5) strongly agree. All the question was designed in English, and then it was be translated in Chinese,

4.3 Reliability

In this study, a Cronbach's alpha was used for measure the reliability of questionnaire, reliability test is an assessment of the degree of consistency between multiple measurements of a variable. The Cronbach's alpha coefficient was used to estimate the internal consistency and reliability of measures (Malhotra and Birks, 1999). The Cronbach's alpha value with great than 0.7 will be reliable in the data collection. If the value more close to 1 that means the question is more reliability. The coefficient value will be calculated by using the statistics software, conduct the Cronbach's alpha test can make sure whether the questionnaire is reliability or not.

4.4 Data collection

All the data was be collected from online survey, so a survey website was necessary, author selected one of the famous online survey website in order to complete data collection. According to website's system mechanism, if participants don't finish the questionnaire, it cannot submit to the website. Therefore, every questionnaire would be completed. Although the website can assure every participant finish the questionnaire, but in order to avoid the invalid respondents, this study was distributed 503 questionnaires, and chooses 400 valid questionnaires, the validity rate was 79.5%, and these 400 questionnaires were come from 25 difference cities of China, it was cover most area of China.

According to the questionnaire website, it is called WenJuan website, it is the Chinese biggest free online survey platform, it is serving more than 3000 enterprises. In this study, the simple random sampling was used through online surveys, and it was random sampling 400 valid questionnaires from this website, the user of this website comes from 25 cities of China and covers most areas of China. Thus, this website has a high level of representation and it can be trusted and reliability. Cause of the convenient sampling, the questionnaire was posted on this website and there have many respondents can see this questionnaire and choose to answer or not, this kind of sampling method is suitable for using cause of the large population. In addition, it is proper to use an online survey for this research, because the main topic is to study the brand equity on China antivirus software market, the user of antivirus software may use internet frequently, so they need an antivirus software to protect their information, conduct an online survey is easy to find respondents and collect data.

4.5 Data analysis

Structural equation model (SEM) was adopted to examine the relationship among brand image, brand awareness, perceived quality, brand trust, brand loyalty and brand equity. In general, Structure equation model is defined as the statistical procedure for evaluating the combined relationship of multiple independent variables (Lanza, 2008). Therefore, use SEM technique is considered as a valid method to measure this study's conceptual framework.

In addition, the descriptive statistics was used to describe the main characteristics of collection of information. In this study, the descriptive statistics technique was used to describe the demographic factors, such as gender, age, income per month and education levels. The descriptive statistics were used includes standard deviation, frequency and mean. This study was use inferential statistics technique to explain the relationship among brand image, brand awareness, perceived quality, brand trust, brand loyalty and brand equity. A statistic software was used for evaluating the goodness of fit. The goodness of fit describes how well it fits into a set of observations (Maydeu-Olivares and Garcia-Forero, 2010), as Chi-square, goodness of fit index, average goodness of fit index and root means square error of approximation index was used in this stage.

5. Results

In this study, a total 400 valid questionnaire had collected for brand equity research, From the chapter four, the result of demographic factor can be summary as male 47%, and female 53%, and major age of respondents is 25 - 32 years old (36.5%), major education level of respondent is bachelor degree (50.75%), major income per month is 4001-8000 yuan (31.75%), major occupation of respondents is company employee (54.50%), for the software using situation, the 360 antivirus is the major software that respondent used (68.25%).

Table 1: Reliability of Variables (Cronbach's alpha)

Variables	Pre-test	Actual
Brand awareness	0.86	0.867
Brand image	0.778	0.805
Perceived quality	0.892	0.856
Brand trust	0.877	0.855
Brand loyalty	0.876	0.820
Brand equity	0.942	0.864

This reliability analysis included six variables they were brand awareness, brand image, brand trust, perceived quality, brand loyalty and brand equity. For pre-test value was tested from 39 questionnaires, and the actual test was from 400 questionnaires.

The value of brand awareness: for pre-test the value is 0.860, for the actual test is 0.867. The value of brand image: for pre-test the value is 0.778, for the actual test is 0.805. The value of perceived quality: for pre-test the value is 0.892, for the actual test is 0.856. The value of brand trust: for pre-test the value is 0.877, for the actual test is 0.855. The value of brand loyalty: for pre-test the value is 0.876, for the actual test is 0.820. The value of brand equity: for pre-tset the value is 0.942, for the actual test is 0.864. Whether the pretest value and actual value is all above 0.75, according to the Nunnally (1978), the threshold should be higher 0.7, so it means all the questions are reliability.

Table 2: Correlation Analysis of Variables

Variables	BA	BI	PQ	BT	BL	BE
BA	1.000					
BI	0.787**	1.000				
PQ	0.694**	0.728**	1.000			
BT	0.672**	0.686**	0.766**	1.000		
BL	0.586**	0.614**	0.712**	0.729**	1.000	
BE	0.604**	0.625**	0.715**	0.717**	0.722**	1.000

NOTE: the asterisks means correlation is significant at the 0.01 level

From this table, it shows the correlation is significant in the 0.01 level, and the value range is from -1 to +1, the value more close to +1 means the high correlation, the value more close to -1 means the low correlation, in this study the correlation value range is from 0.586 to 0.787, in summary, the correlation of these variables were positive correlate.

Table 3: Convergent and Discriminant Validity

The table above was show the convergent and discriminant validity of this study, the convergent validity refers to the degree of difference measurement items that are theoretical tap to the same variable, thus, the value of correlation among a1 to a5 was higher than the a1 compare to the BI1, which means a1 to a5 can be measure the variable of brand awareness, and BI1 to BI4 cannot measure the variable of brand awareness. The discriminant validity refers to the difference measurement items that are theoretical to be unrelated, therefore, the table above can be proved both convergent and discriminat validity of this study.

Table 4: Goodness of fit Statistic

Absolute Fit Measure		
Degree of Freedom (df)	243	
Minimum Fit Function Chi-Square (χ^2)	275.343 (P =0.0754)	
Normal Theory Weighted Least Squares Chi-Square	273.942 (P = 0.0841)	
Goodness of Fit Index (GFI)	0.946	>0.9
Root Mean Square Residual (RMR)	0.0208	<0.05
Standardized RMR	0.0295	<0.05
Root Mean Square Error of Approximation (RMSEA)	0.0179	<0.06

Incremental Fit Measure		
Adjusted Goodness of Fit Index (AGFI)	0.933	>0.9
Normed Fit Index (NFI)	0.99	>0.9
Non-Normed Fit Index (NNFI)	0.999	>0.9
Comparative Fit Index (CFI)	0.999	>0.9

The goodness of fit which indicated this model was good fit, after calculate the Normed Chi-square is 1.127, which is within the acceptable level, GFI is 0.946, RMR, SRMR and RMSEA close to 0.01 also within the threshold, in addition, the incremental fit measure all indexes are higher than 0.9 acceptable level.

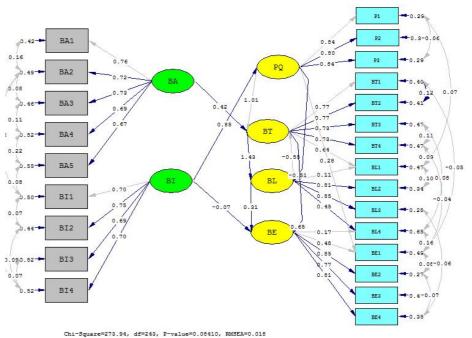**Table 5:** Standardized Total, Indirect Effects and Direct Effect.

Effect / Cause	Perceived quality			Brand trust			Brand loyalty			Brand equity		
	TE	IE	DE	TE	IE	DE	TE	IE	DE	TE	IE	DE
Brand awareness	--	--	--	0.23	-0.2	0.42	--	--	--	--	--	--
Brand image	0.85	0.0	0.85	--	--	--	--	--	--	0.47	0.54	-0.1
Perceived quality	--	--	--	0.73	-0.3	1.01	0.52	1.03	-0.5			
Brand trust	--	--	--	--	--	--	0.8	-0.6	1.43	0.61	-0.0	0.65
Brand loyalty	--	--	--				--	--	--	-0.0	-0.3	0.31

Note: TE= total effect IE= indirect effect DE= directly effect

From the table, it showed the result was brand image is negative related to brand equity, and perceived quality is negative related to brand loyalty, other relationship were similar with previous literatures, brand awareness is positive related to brand trust, brand image is positive related to perceived quality, perceived quality is positive related to brand trust, brand trust is positive related to brand loyalty, brand loyalty is positive related to brand equity.

Figure 2: Structural Equation Model: Standardized Solution

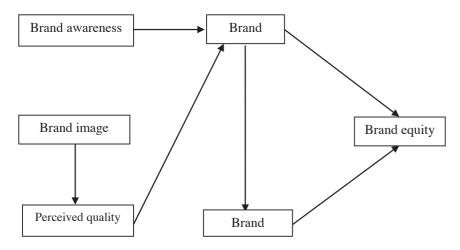Chi-Square=273.94, df=243, P-value=0.08410, RMSEA=0.018

This figure was showed the standardized path coefficient among the observed variables and latent variables (brand awareness, brand image, perceived quality, brand trust, brand loyalty, brand equity), all the path are significant and this model's Chi-square is 273.94 with P= 0.0641, the measurement items were consistent with the data.

6. Conclusion

The result was partial support previous study, in this study, brand image had direct effect to brand equity as β= -0.07, the result was rejected the H1: brand image is positive related to brand equity, which means brand image cannot directly affect brand equity, there must be some mediators exists, brand image had the direct effect on perceived quality β= 0.85, which indicated that perceived quality is the mediator between brand image and brand equity. brand trust had direct effect to brand equity as β= 0.65, the result was support H2: brand trust is positive related to brand equity, brand loyalty had direct effect to brand equity as β= 0.31, the result was support H3: brand loyalty is positive related to brand equity, brand awareness had direct effect to brand trust as β= 0.42, the result was support H4: brand awareness is positive related to brand trust, brand trust had direct effect to brand loyalty as β= 1.43, the result was support H5: brand trust is positive related to brand loyalty, brand image had direct effect to perceived quality as β= 0.85, the result was support H6: brand image is positive related to perceived quality, the perceived quality had direct effect to brand loyalty as β= -0.51, the result was rejected H7: perceived quality is positive related to brand loyalty. The result which indicated that, perceived quality is not positive related to brand loyalty, from the table 15, perceived quality had indirect effect to brand loyalty as β=1.03, that means perceived quality is not directly affect brand loyalty, and they need a mediator to mediate the relationship between perceived quality and brand loyalty, from figure 2, which shows perceived quality had a direct effect on brand trust β=0.93, and brand trust had a direct effect on brand loyalty β=0.2, that means brand trust is the mediator between perceived quality and brand loyalty. Thus, the proposed model can be modified as follows:

Figure 3: Modified Conceptual Framework

7. Discussion

The result was partial supported the proposed model, in the proposed model, brand image is positive related to brand equity, perceived quality is positive related to brand loyalty, although the result was rejected this relationship, they cannot directly created brand equity and brand loyalty, but the result indicated that, brand trust is the mediator between perceived quality and brand loyalty, in the research of Zeithaml (1988), there is relationship exist between perceived quality and brand loyalty, but the his finding was difference with this research, and the important thing was the environment, his research environment was base on America, and traditional companies, but for antivirus software company, which was not the traditional companies, it belongs to online companies, the main business for online companies which was based on internet, and countries also was another factor that affect the relationship, because this relationship had not been testing in software market of China.

In addition, in the research of Alam, Arshad and Shabbir (2012), they indicated that brand credibility as the mediator between perceived quality and brand loyalty, and perceived quality was not directly affect brand loyalty, brand credibility was a multi-characteristic term that included brand trust. Therefore, this finding was supported the modified relationship: brand trust as the mediator between perceived quality and brand loyalty. In the research of Lee, Lee and Wu, (2009), which indicated that brand image is directly affect perceived quality then enhance brand equity, that means the perceived quality was the mediator that mediate the relationship between brand image and brand equity. Therefore, it was support the modified relationship, perceived quality as one of the mediator between brand image and brand equity.

According to the hypothesis 2, 3, 4, 5, and 6 the results all supported these relationships, which are brand trust is positive related to brand equity, brand loyalty is positive related to brand equity, brand awareness is positive related to brand trust, brand trust was positive related to brand loyalty, brand image is positive related to perceived quality.

8. Implication

Establish a effectiveness brand strategy is a valid method to improve brand equity and earn more profit. For the software companies, most of them do not have the entity shop that can let customer touch and feel, it provided product and service base on internet environment, thus, most of the software companies only active within internet environment, and ignore the real environment, to find a effectiveness brand strategy must follow the step below.

First step, focus on the marketing activities whether online or offline, although the result indicated brand image have no relationship with brand equity, but it can through enhance the brand image, perceived quality and brand trust to improve brand equity. Thus companies should not ignore marketing activities. Generally, most companies think the user of antivirus software often active online, and they provide many advertise online, try to attract more customers, but compare the influence power, TV still has very big influence power in some degree, thus, focus on marketing activities can be helpful for creating brand trust. Moreover, a brand name that can remember easily is also important for building brand awareness, marketer must pay more attention on brand image and brand awareness, because they are the cornerstone of brand trust.

Second step, while companies get the effort from marketing activities, it must focus on the quality. Although the result indicated perceived quality have no relationship with brand loyalty, but it can indirectly improve brand loyalty through influenced on brand trust, and it is significant factor for online companies. A better product or service cannot only depend on marketing activities, a better product must include a better quality, better performance, for software companies, the major product is antivirus software, the quality for software means the software must have a better ability of killing virus, and protect user's data and information, thus, the technology is very important for antivirus software, a software which have a high technology that can kill more virus and protect user's system can make user trust and rely it, while the brand trust have been established, the company can earn more loyal customers, brand loyalty is most dominantly influenced by brand trust, for brand equity, it also most depend on brand trust and partially depend on brand loyalty, although companies can earn more loyal customers through brand trust, but the difficult thing is to maintain the loyal customers, to maintain loyal customers, it must let customers feel this product have more value that worthy to buy or keep using, it can provide some extra service to add more value to the product, while customers feel more value from the product, they may keep using the product and service, finally, the brand equity can be effectiveness improved.

9. Limitation

The limitation in this study included the research method, the research method in this study was used quantitative method to study the influence factors of brand equity, all the relationship was base on the former literatures, lack of the real situation, which means this study can combined qualitative and quantitative method, it may get the better model, because most literatures was base on western countries, the west people's feeling and opinion was difference compare with Chinese, if this study can conducted some deep interview or focus group, it may get the more appropriate factors of brand equity.
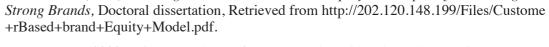
Another limitation is the online survey, in the real life, when researcher collect questionnaires, it can interaction with respondents, and explain the question, and observed the attitude of the respondents, that can be judged which questionnaire is valid. But for the online survey, researcher cannot know respondent's attitude, and cannot explain to them.

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Appendices

Questionaire

Part 1: demographic factors, this part will ask you some question about your personal information. Please fill √ in the blanks below: (each question only have one choice)

1. Are you using or used a antivirus software?
☐ Yes   ☐ No

2. What is your age?
☐ Below 18   ☐ 18-25   ☐ 26-32
☐ 33-40   ☐ 41-50   ☐ 51-60

3. What is your gender?
☐ Male   ☐ Female

4. What is your education level?
☐ Below junior school   ☐ Junior school   ☐ Senior school
☐ Junior college   ☐ Bachelor degree   ☐ Master degree
☐ Doctor degree

5. What is your income per month?
☐ Below 1,000 yuan ☐ 1,000-2,000 yuan ☐ 2,001-3,000 yuan
☐ 3,001-4,000 yuan ☐ 4,001-8,000 yuan ☐ More than 8,000 yuan

6. What is your occupation?
☐ Student   ☐ Company employee   ☐ Government employee
☐ Teacher   ☐ Engineer   ☐ Businessman
☐ Worker   ☐ Scholar   ☐ Freelancer
☐ Other _____.

7. which software did you used or using? (Choose the most frequently you used)
☐ 360 antivirus   ☐ Rising antivirus   ☐ Tencent guanjia
☐ Kingsoft   ☐ ESET NOD32   ☐ Kaspersky Anti – Virus
☐ G-Data   ☐ JiangMin   ☐ AVG antivirus
☐ Norton   ☐ Avira Antivirus   ☐ Avast
☐ McAfee   ☐ Bitdefender Antivirus   ☐ Microsoft Security Essentials
☐ Others_____.

Part 2: this part including question of brand awareness, brand image, perceived quality, brand trust, brand loyalty and brand equity. Please base on the item that you selected in question 7 above to answer the question below. Each question in the questionnaire will be answer within five points, from (1) strongly disagree, (2) disagree, (3) uncertain, (4) agree, (5) strongly agree. Please fill √ in the blanks below:

2.1 Brand awareness	Strongly disagree----Strongly agree				
	1	2	3	4	5
2.1.1 I am aware of this software.					
2.1.2 This antivirus software I am really familiar with.					
2.1.3 When I think of antivirus software, This software comes to my mind.					
2.1.4 I know how the symbol of this software brand looks like.					
2.1.5 I can quickly recall the logo of This software.					

2.2 Brand image	Strongly disagree----Strongly agree				
	1	2	3	4	5
2.2.1 This software is strong in characteristic					
2.2.2 This software had an attractive brand					
2.2.3 This software provide many extra service not only provide antivirus service.					
2.2.4 This software that I am using had a well known brands.					

2.3 Perceived quality	Strongly disagree----Strongly agree				
	1	2	3	4	5
2.3.1 This software that I am using had an excellent quality.					
2.3.2 This software that I am using had an superior performance.					
2.3.3 This software that I am using had an excellent reliability.					

2.4 Brand trust	Strongly disagree----Strongly agree				
	1	2	3	4	5
2.4.1 This software meet my expectation.					
2.4.2 I feel confidence in this software.					
2.4.3 This software never disappoint me.					
2.4.4 I could rely on this software to solve my problem.					

2.5 Brand loyalty	Strongly disagree----Strongly agree				
	1	2	3	4	5
2.5.1 I use this software because it is the best choice for me.					
2.5.2 I consider myself to be loyal to This software.					
2.5.3 In the future, I would like to keep using or purchase This software.					
2.5.4 I would not switch to other brand, even if I had a problem with This software.					

2.6 Brand equity	Strongly disagree----Strongly agree				
	1	2	3	4	5
2.6.1 It makes sense to buy or use this software instead of any other brand, even if they are the same.					
2.6.2 Even if another software has same features as this software , I would prefer to buy or use this software.					
2.6.3 If there is another brand as good as this software, I prefer to buy or use this software.					
2.6.4 If another brand is not different from this software in any way, it seems smarter to purchase this software.					

THE RELATIONSHIP BETWEEN INTEGRATED MARKETING COMMUNICATION AND MARKETING COMMUNICATIONS' OBJECTIVES OF MARKETING DIRECTORS IN THAILAND

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