Corporate social responsibility and customer equity in smart phone industry, a Chinese customer perspective

Dongyong, Zhang [a], Xiaolu, Li [b], Qiaoyun Ma [c]

[a,b,c] College of Information and Management Science,
Henan Agricultural University, China.
[c] Corresponding author: maqiaoyun@163.com

Abstract: Customer equity is the total value of potential future revenue generated by a company's customers in a lifetime. It is a result of customer relationship management. The more loyal a customer, the more is the customer equity. Since the concept of customer equity was introduced into China, it has become the center of discussion in academia and industry. Scholars have tried to explore drivers of customer equity and factors that stimulate these drivers. But studies on the relationship between corporate social responsibility (CSR) and customer equity are sparse. The purpose of this study is to explore how a company's customer equity can be enhanced by improving its performance in CSR. The smart phone industry is selected as a case study, and 171 smart phone users are questionnaire surveyed. Market responsibility, social responsibility and environment responsibility are included as three dimensions of CSR, and value equity, brand equity and relationship equity are regarded as three drivers of customer equity. 10 hypothesized relationships between CSR and customer equity are tested. Structural equation model (SEM) is employed to analyze data. It was found that a company's CSR performance has significant impact on customer equity (with path coefficient of 0.767), and the relationship between the dimensions of CSR and the drivers of customer equity are also significant. However, the impact of market responsibility and social responsibility on value equity is more significant than that of environmental responsibility (with path coefficient of 0.754, 0.582, and 0.349 respectively). Social responsibility and market responsibility have closer relationship with brand equity than environmental responsibility does (with path coefficient of 0.789, 0.460, and 0.207 respectively). In addition, social responsibility is strongly related to relationship equity while environmental responsibility has a relatively weaker relationship with relationship equity, and market responsibility works in between (with path coefficient of 0.831, 0.779, and 0.290). These results indicate that for smart phone industry, customers pay more attention to a company's performance in social responsibility, then its performance in market responsibility, and lest attention is paid to environmental performance. But it does not mean that Chinese smart phone industry should invest less on environmental protection and resource preservation because almost half of our respondents agree on green packaging and less wastes. Along with the increasing awareness Chinese people gain, environmental performance will soon become an important affecting factor of customer equity. The results suggest that smart phone companies should focus on improving their CSR performance so as to build and improve their customer equity, which will eventually help them achieve profit goals.

Keywords: Customer Equity; Corporate Social Responsibility; smart phone industry; China

Introduction

In the 1990s, some foreign companies realized the importance of customer and believed that customers are profit sources of the company. Therefore, they changed their marketing idea from solely focusing on selling products to customers to establishing and maintaining a stable development relationship with customers so as to enhance their core-competitiveness. Under this background, Blattberg and Deighton (1996) proposed the concept of customer equity (CE), and a company's CE is defined as the total of the discounted lifetime values of all of its customers. This led to a wave of interest in CE from the academic world.

Current research on CE mainly focuses on the following three aspects. The first is the focus on the basic theory of

CE. Great attention has been paid to the study of the drivers of CE. Rust et al. (2000) suggested three drivers of CE, value equity, brand equity and retention equity, which are also regarded as three components of CE. Lemon et al. (2001) redefine the retention equity as relationship equity, and since then relationship equity has been accepted by most scholars as the third driver of CE. Value equity and brand equity are used to assess the customer satisfaction with company's products and services, while relationship equity is used to assess the closeness of the relationship between a company and its customers. Shao et al. (2012) regarded that any single customer or company is embedded in complex social networks and they constructed a model of drivers of CE based on social network theory. According to this model, the drivers of CE under the inner-company network effects are the value and brand, value is the objective evaluation of products or services by customers, and brand is the subjective evaluation of products or services by customers. While company's market position is the driver of CE under the inter-company network effects, benefits and quality of the relationships are the drivers of CE under the company-customer network effects.

The second focus is the measuring of CE. By comparing the difference between aggregate and disaggregate-level approaches for measuring CE, Kumar (2007) proposed an integrated approach to help firms to effortlessly select the best method to measure CE in a given situation. This approach can be used in different scenarios and make up the limitation such as availability of transaction data or size of wallet information. Pfeifer (2011) combined the retention rates and revenue per renewal to estimate the company's current CE, it considered the condition that the reporting period spans multiple renewal periods and made up the traditional models' inadequacy. Shao et al. (2014) constructed a CE measurement model based on the drivers of CE from the perspective of social networks, and applied the model to Harbin branch of China Mobile Communication Corporation. The results showed that this model could reduce the system errors when measuring CE.

Another group of scholars have been trying to improve CE. Wang et al. (2014) took the online banking industry as a case study to empirically analyze the relationship between the perceived value of online banking by customers and the bank's CE, and the value perceived by customers was measured from five dimensions: functional value, emotional value, social value, self-efficacy value and perceived loss. The results show that the emotional value, social value and self-efficacy value perceived by customers of online banking have significant positive relationship with the brand equity and relationship equity, while the perceived loss has significant negative relationship with the brand equity and relationship equity. Based on the result, the authors suggested that online banking should be promoted by the banks because it improves improve CE by improving the customer's perceived value.

In addition, some scholars have proved that a company's CSR performance is related to the brand equity, one of the drivers of CE. Xin (2013) chose the customer's CSR experience as an intermediate variable. By doing a questionnaire survey, he found that a company's CSR performance had a significant positive impact on brand equity. Cui et al. (2015) took brand reputation as intermediate variable, and tried to explore the relationship between CSR and brand equity with a questionnaire survey. The results show that a company's CSR performance has a positive impact on brand equity. Hur et al. (2016) considered gender differences in the study of the relationship between CSR and brand equity. He found that gender has an impact on the relationship between CSR and brand equity, and the male are, in general, more aware of the positive relationship between CSR and brand equity than the female. Pan (2016) took CSR performance as intermediate variable, and through empirical analysis, he proved that company's product crisis has a negative impact on brand equity and the degree of product crisis is positively correlated with the loss of brand equity. However, better CSR performance could reduce the loss of brand equity in the event of product crisis.

Despite the research interest in CE and in the relationship between CSR and brand equity, studies on the relationship between CSR and CE are rare. Given the importance of CE for a company's long-term development and the fact that brand equity is just one of the drivers of CE, it is much needed to explore the relationship between CSR and two other drivers of CE i.e. value equity and relationship equity. To fill the gap, this paper would investigate the relationship between CSR and all three aspects/drivers of CE. Case study approach is employed and smart phone industry is looked into. The second part of the paper discusses the theoretical framework of the paper, and ten hypothesized relationships between CSR and CE are proposed. In section 3, the sampling frame and analysis method are described. The results of the analysis are presented in section 4. Section 5 discusses the implication of the relationship between CSR and CE from three aspects, market responsibility and CE, social responsibility and CE and environment responsibility and CE. Finally, section 6 explains the limitation of this paper and the future research suggestions are put forward.

Theoretical frameworks

Dimensions of corporate social responsibility

In 1979, Carroll (1979) defined CSR as the sum of the economic, legal, ethical, and discretionary responsibility fulfilled by a company over a certain period of time. The economic responsibility is the responsibility that the business has to provide goods and services that society wants and to sell them at a profit, and all other business roles are based on this fundamental assumption. However, the society expects the business to fulfill its economic mission within the framework of legal requirements, which is called legal responsibility. Ethical responsibilities are the additional behaviors and activities that are not necessarily codified into law but nevertheless are expected of business by society's members. Discretionary responsibilities are those behaviors which are purely voluntary, and the decision to assume them is guided only by a business's desire to engage in social roles not mandated, not required by law, and not even generally expected of businesses in an ethical sense. Since the concept of CSR was put forward, it has been widely accepted by scholars and has been regarded as the cornerstone of dimensions of CSR. However Carroll's four dimensions of CSR are solely based on the Western context and may not work for the developing countries and transitional economies (Zhang et al. 2017). Based on Chinese context, the Chinese Academy of Social Sciences (CASS) proposed their CSR framework which includes four dimensions, including responsibility management, market responsibility, social responsibility and environmental responsibility. Responsibility management is actually the programming formulated by the company's managers to systematically manage the CSR practices. Market responsibility is the responsibility to provide valuable products or services to the market efficiently and at low cost so as to achieve profitable and sustainable development. That is similar to the economic responsibility proposed by Carroll. Social responsibility is the responsibility to operate and manage the company in a way that is beneficial to society, for example …. Environmental responsibility is the responsibility to protect the environment in their daily operation (CASS, 2016). Due to the availability data, only market responsibility, social responsibility and environmental responsibility are included in this research, and the indexes are adopt from the 2016 CASS (see Table 1). The reason for the removal of responsibility management in this paper is that it mainly includes the company's CSR idea, the company's core issue of CSR, the company's annual plan of CSR or the relevant information of CSR reports and so on. While the respondents of this study are ordinary smart phone customers, the content of responsibility management is not clearly known to them based on Chinese context. Therefore, without consideration of the responsibility management could ensure the facticity of the research data.

Table 1 Dimensions of CSR

	Dimensions	Sub-indexes
CSR	Market Responsibility	ensure shareholder's benefit achieve sustainable supply chain customer satisfaction dedicate to technological innovation
	Social Responsibility	follow the law and regulations establish good community relations guarantee safety in production
	Environment Responsibility	environmental protection?

Source: CASS, 2016

Drivers of customer equity

As proposed by Rust et al. (2000), CE has three drivers as shown in Table 2.

Table 2   Drivers of Customer Equity

	Drivers	Sub-drivers
Customer Equity	Value Equity	High quality product? Reasonable price Low transaction costs? Easy to buy?
	Brand Equity	Brand awareness (popularity of brand) Brand preference (be willing to recommend to someone) Good brand reputation
	Relationship Equity	Special treatment (unique sense of use of the products) Affinity programs (actively participate in activities) Community-building programs (communication between customers)

Value equity refers to the CE obtained from the value perceived by customer, and it is more about recognition, objective evaluation or rational judgment. Value equity could be expressed by three sub-drivers i.e. high quality of the product?, reasonable price and convenience to buy. High quality indicates the products and service with high quality provided by a company. Reasonable price means the products and services should be sold to customers at the price that they are willing to pay for. Convenience includes the actions taken by a company to reduce costs of the transaction between future customer and company, that is convenience to buy. A company can build its CE through improving product quality, lowering price and reducing transaction costs.

Brand equity refers to the CE obtained through the customer's subjective evaluation of the brand. This evaluation is more a kind of emotional evaluation or irrational judgment, and that is influenced by the customer's consumption experience and the relationship between the customer and the brand. Brand equity could be expressed by three sub-drivers i.e. brand awareness, brand preference, and brand reputation. Brand awareness reflects the recognition and popularity of the brand. Brand preference reflects the customer's predilection for the brand and the willingness to recommend it to other people. Brand reputation reflects the reputation that customers believe the brand should have in the industry. Hence a company can build its CE through gaining brand popularity, brand preference, and brand reputation which are subjective evaluation factors.

Relationship equity refers to the CE obtained through customer retention activities and relationship development activities. These activities could help the returned customers to buy from the company again. Relationship equity has three sub-drivers i.e. special treatment, affinity programs and community-building programs. Special treatment reflects the customer's unique perception of the company's products after using them. Affinity programs reflect the levels of customer participation in activities organized by the company. Community-building programs indicate the levels of communication among customers of a product. In brief, a company can build its CE through strengthening special treatment, affinity programs and community-building programs which are subjective evaluation factors.

How does CSR impact on CE

The electronic industry is the pioneer in applying the triple-bottom-line approach to their daily operation, and the triple-bottom-line approach calls for simultaneous progress in terms of social, environmental, and economic goals for a company's daily operation and supply chain management (Wilhelm et al. 2015). Smart phone is quietly changing our way of life, and our choice of smart phone is being influenced by many factors including the quality, price, design and the image of a smart phone company in the sights of the public. Therefore, in this paper, the smart phone companies in the electronics industry are selected as a case study to explore whether the CSR performance of

the smart phone companies will affect the choice of their customers, and then affect their CE.

As noted by Xin, 2013 and Cui (2015), a company's CSR performance has a positive impact on its brand equity. Since the brand equity is one of the drivers of the CE, it is reasonable to assume a possible relationship between CSR and CE. Indeed, when the company actively carries on CSR activities, such as abide by the relevant laws and business ethics, hold community activities to promote communication and protect the environment and so on, customers would notice these behaviors through mass media and word of mouth. What's more, the trust of the products' quality would be established and the relationship closeness would also be improved. Hence the hypothesized relationship between CSR and CE goes as follows.

H. CSR has a positive impact on CE.

As the communication agency between companies and customers, the market could not only give feedback to the company about the customer's demand, but also help the customer to recognize the company's efforts in taking their market responsibility. Companies work hard to satisfy not only shareholders' demand but also other stakeholders' by providing high quality products and services for the customers. So whether or not a company takes its market responsibility is important for its long-term development. In addition, smart phone companies value technologically innovation as much as their shareholders, supply chain, and customers. If a smart phone company actively fulfills its market responsibility, customers would have a positive evaluation about its products services and brand, hence would be more readily accept the price of its products and services, and more likely to recommend the brand to other people. All of these would help customers develop a sense of belonging to the brand, which is beneficial to the company's CE building. Hence, it is hypothesized that:

H1a. A company's market responsibility has positive impact on its value equity.
H1b. A company's market responsibility has positive impact on its brand equity.
H1c. A company's market responsibility has positive impact on its relationship equity.

As shown in Table 1, the social aspect of CSR includes following the law and regulations, establishing good community relations and ensuring safe production. A company could fulfill its social responsibility by following laws and regulations in its daily management, by providing jobs for the society, by supporting the socially excluded groups and people in need, by giving charity to sufferers of natural disaster, and by sticking to "safety first" in every part of its production process. Although these socially responsible actions might generate extra costs to the company, it would bring positive impact on the company too, for example, it would increase the brand influence, handle negative effects of media exposure, and help company to attract new customers and retain the old customers. Therefore, it is hypothesized that:

H2a. A company's social responsibility has positive impact on its value equity.
H2b. A company's social responsibility has positive impact on its brand equity.
H2c. A company's social responsibility has positive impact on its relationship equity.

In recent years, companies are increasingly aware of the environmental side of CSR and have been making effort to be environmentally responsible. Initially, companies only devote to reduce pollution and emissions, conserve resources, and improve resource efficiency, and so on. However, along with worsening of environmental pollution, companies have to take their environment responsibility in an innovative way. Low-carbon management approach has become a popular management approach for companies to clean the air and improve air and water quality. On the other hand, the public are increasingly aware of the importance of environmental protection and would like to vote for companies with good environmental performance. Therefore, it is hypothesized that:

H3a. A company's environment responsibility has positive impact on its value equity.
H3b. A company's environment responsibility has positive impact on its brand equity.
H3c. A company's environment responsibility has positive impact on its relationship equity.

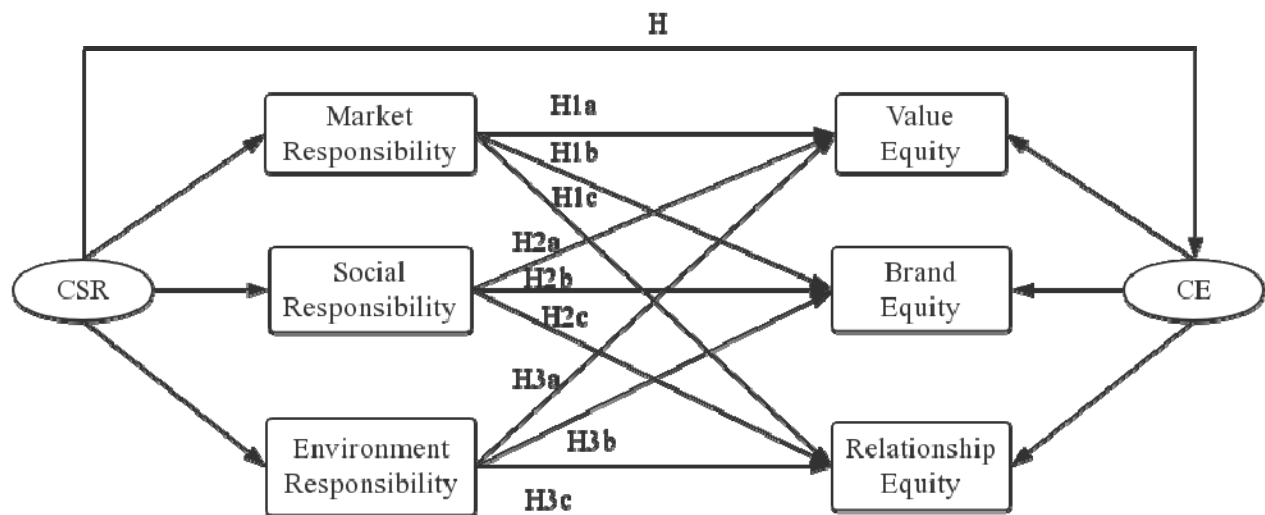The above hypotheses are shown in detail in Figure 1.

Figure 1: The Impact of CSR on CE

Methodology

Sampling and data collection
This paper uses the questionnaire survey to collect data and then test the hypotheses. Convenience sampling method is employed, and the target respondents are smart phone users in China. A web-based link of the questionnaire was sent to respondents via Wechat, QQ and email (Wechat and QQ are the main stream social media apps in China). The survey started in June 2017 and ended in December 2017. The collected questionnaires were preliminary screened and some invalid questionnaires were removed. Out of the 304 questionnaires sent out, 243 were returned (a response rate of 79.9%) in which 171 were considered valid.

Measurement
The questionnaire is mainly composed of three parts. The first part covers the basic information of respondents such as gender, age, education level, and so on. The second part of the questionnaire aims to measure the smart phone companies' CSR performance from three aspects, market responsibility, social responsibility and environment responsibility, and 18 questions are included in this part. The third part of the questionnaire is trying to explore the respondents' perceptions of the smart phones used in terms of their value equity, brand equity, relationship equity, and 11 questions are included in this part.

Data analysis
The responses were measured following a five-point Likert scale (1=strongly disagree, 5=strongly agree). Data was analyzed using descriptive statistical analysis and hypothesis analysis. Reliability and validity tests were carried out. Reliability reflects whether items of the same aspect measures the same contents, and validity refers to whether the items measure the research content (Rong, 2007). To be consistent with the statistical language, each question in the second part and the third part of the questionnaire is referred to as an item when conducting data analysis (for

example, question 1 is referred to as item 1). The standard load coefficient, critical ratio (C.R.), Cronbach's Alpha and average variance extracted (AVE) are used as the measures of reliability and validity. Structural equation modeling (SEM) technique is used to test the hypotheses. The association among variables was measured with the path coefficients. SPSS 17.0 and AMOS 17.0 are employed to analyze data.

Results

Descriptive statistical analysis
171 smart phone users are surveyed, in which 79 are males (46.2%) and 92 are females (53.8%) (see Table 3). 96.5% of the respondent age between 18 and 45, and only 6 respondents are 46 years of age or older, indicating that most of the smart phone customers are young people. 93 respondents (54.4%) was undergraduate and 39 respondents (22.8%) was post graduate and above. For monthly income, 26.9% of the respondents earn 4001-6000 Yuan per month and 26.3% earn 2000 Yuan and less per month. The respondents with 2001-4000 Yuan of monthly income were 19.3% whereas 17.5% respondents were 6001-8000 Yuan of monthly income. The details of demographic information can be viewed in Table 3.

Table 3: Demographic Information of the Respondents

		N	%	Cumulative percentage(%)
gender	male	79	46.2	46.2
	female	92	53.8	100
age	18-25	89	52	52
	26-35	51	29.8	81.9
	36-45	25	14.6	96.5
	over 45	6	3.5	100
education	undergraduate and below	33	19.3	19.3
	undergraduate	93	54.4	73.7
	post graduate and above	39	22.8	96.5
	others	6	3.5	100
monthly income（yuan）	below 2000	45	26.3	26.3
	2001-4000	33	19.3	45.6
	4001-6000	46	26.9	72.5
	6001-8000	30	17.5	90.1
	8001-10000	10	5.8	95.9
	more than 10000	7	4.1	100

Reliability and validity analysis

With the help of the SPSS software and AMOS software, reliability and validity tests are conducted and the results are shown in Table 4 and Table 5.

Table 4 shows that Cronbach's alpha coefficients for all variables are between 0.762 and 0.945 (in the sixth column of Table 4), the values of the standard load coefficient are between 0.527 and 0.978 (in the third column of Table 4), and the values of the critical radio (C.R.) are between 5.868 and 16.808 (in the fifth column of Table 4). Hence the level of internal consistency for the scale with this sample is acceptable.

Table 4 Reliability Analysis

Variables	Items	Standard Load Coefficient	P	C.R.	Cronbach's Alpha
market responsibility	MR1	0.620	***	7.499	0.849
	MR2	0.621	***	7.506	
	MR3	0.635	***	7.669	
	MR4	0.670	***	8.075	
	MR5	0.540	***	6.551	
	MR6	0.654	***	7.898	
	MR7	0.702	***	8.451	
	MR8	0.709	***		
social responsibility	SR1	0.767	***	8.04	0.792
	SR2	0.565	***	6.325	
	SR3	0.561	***	6.287	
	SR4	0.583	***	6.499	
	SR5	0.642	***	7.026	
	SR6	0.632	***	1.000	
environment responsibility	ER1	0.978	***	16.808	0.945
	ER2	0.970	***	16.583	
	ER3	0.978	***	16.801	
	ER4	0.805	***		
value equity	VE1	0.530	***		0.762
	VE2	0.846	***	6.943	
	VE3	0.772	***	6.684	
	VE4	0.610	***	5.868	
brand equity	BE1	0.780	***		0.798
	BE2	0.756	***	9.41	
	BE3	0.731	***	9.11	
relationship equity	RE1	0.527	***		0.770
	RE2	0.720	***	6.504	
	RE3	0.739	***	6.592	
	RE4	0.818	***	6.92	

***means P<0.001, MR=Market responsibility, SR=Social responsibility, ER=Environment responsibility, VE=Value equity, BE=Brand equity, RE=Relationship equity

The validity includes three aspects i.e. content validity, convergent validity and discriminant validity. The content validity in this study is achieved because the variables and items selected in this paper were obtained on the basis of reading a large number of literature. The values of square root of AVE between the same two variables are between 0.8882 and 0.9826 (on the main diagonal of Table 5), indicating the convergent validity is achieved. And the value of the square root of AVE between the same two variables is higher than the correlation coefficients between any two different variables (in the lower left corner of Table 5), indicating the discrimination validity likely exists between the two scales.

Table 5: Correlation Coefficients and Square root of Average Variance Extracted

	MR	SR	ER	VE	BE	RE
MR	0.9222					
SR	0.744	0.8916				
ER	0.356	0.342	0.9826			
VE	0.692	0.485	0.343	0.8882		
BE	0.395	0.778	0.201	0.311	0.8944	
RE	0.687	0.726	0.283	0.832	0.672	0.8934

MR=Market responsibility, SR=Social responsibility, ER=Environment responsibility, VE=Value equity, BE=Brand equity, RE=Relationship equity

Hypotheses Analysis

SEM was carried out with the help of AMOS 19.0 (Table 6). The goodness of fit indices, such as chi-square (χ^2), degrees of freedom (df), comparative fit index (CFI), incremental fit index (IFI) and root mean square error of approximation (RMSEA), are used in this study. χ^2/df =2.532 , CFI=0.827, IFI=0.829 and RMSEA=0.095 indicating that the model is reasonably fit and acceptable to conduct further research.

The results of SEM also indicate the impact of CSR on CE, and the impact of each CSR dimension (market responsibility, social responsibility and environmental responsibility) on each driver of CE (value equity, brand equity and relationship equity). A path coefficient of 0.767 indicates that the perceived CSR performance has a significant and positive impact on CE, proving the acceptable of hypothesis **H** (CSR has a positive impact on CE). The relationships among three dimensions of CSR and three drivers of CE vary. Market responsibility has statistically significant impact on value equity and relationship equity, with path coefficients of 0.754 and 0.779 respectively. It proves that hypothesis **H1a** (A company's market responsibility has positive impact on its value equity.) and hypothesis **H1c** (A company's market responsibility has positive impact on its relationship equity.) are acceptable. What is surprising is that the impact of market responsibility and brand equity is relatively insignificant compared with the impact on the other two drivers, with a path coefficient of 0.460. However, the hypothesis **H1b** (A company's market responsibility has positive impact on its brand equity.) can still be accepted. The social responsibility is found to be strongly related to value equity, brand equity and relationship equity with the path coefficients of 0.582, 0.789 and 0.831. Therefore, the hypothesis **H2a** (A company's social responsibility has positive impact on its value equity.), **H2b** (A company's social responsibility has positive impact on its brand equity.) and **H2c** (A company's social responsibility has positive impact on its relationship equity.) are proved to be acceptable. With path coefficients of 0.349, 0.207 and 0.290 respectively, environmental responsibility has positive impacts on value equity, brand equity and relationship equity, although the impacts are relatively weak, which indicates that the hypothesis **H3a** (A company's environmental responsibility has positive impact on its value equity.), **H3b** (A company's environmental responsibility has positive impact on its brand equity.), and **H3c** (A company's environmental responsibility has positive impact on its relationship.) are true/correct.

Table 6: Path Coefficients Between Variables

Variables		Path Coefficients
CSR $\longrightarrow$ CE		0.767
market responsibility $\longrightarrow$ value equity		0.754
market responsibility $\longrightarrow$ brand equity		0.460
market responsibility $\longrightarrow$ relationship equity		0.779
social responsibility $\longrightarrow$ value equity		0.582
social responsibility $\longrightarrow$ brand equity		0.789
social responsibility $\longrightarrow$ relationship equity		0.831
environment responsibility $\longrightarrow$ value equity		0.349
environment responsibility $\longrightarrow$ brand equity		0.207
environment responsibility $\longrightarrow$ relationship equity		0.290

Discussion and recommendations

Customer equity, as an important equity in current companies, plays a vital role in modern economies. Under this background and from the perspective of Chinese smart phone users, this paper has studied the impact of perceived CSR performance on CE. Proposed hypotheses are tested with the empirical findings and the results suggest strong relationships between perceived CSR performance and CE for Chinese smart phone companies. Three dimensions of CSR are proved to have positive impacts on three drivers of CE, although with different significance levels.

Market Responsibility and CE

As one of the dimensions of CSR, market responsibility has positive impacts on all three drivers of CE, value equity, relationship equity, and brand equity, although the significant level for the value equity is the highest, brand equity the lowest, while the relationship equity in the middle. This result is what we would expect if we look at the aspects of market responsibility and CE into account. Market responsibility mainly includes companies' responsibilities to ensure shareholder's benefit, achieve sustainable supply chain, ensure customer satisfaction and dedicate to technological innovation (see Table 1). While high quality, reasonable price, convenience to buy, brand awareness (well-known brand), brand preference (be willing to recommend to someone), good brand reputation, special treatment (unique sense of use of the products), affinity programs (actively participate in activities), community-building programs (communicate frequently between customers) are the sub-drivers to measure CE (see Table 2).

Market responsibility has the strongest relationship with relationship equity. There may be reasons for this. Ensuring customer satisfaction is one important aspect of market responsibility and when smart phone companies fulfill this responsibility, relevant behaviors will be conducted and the relationship between company and customer will be strengthened. In the face-to-face interview, one interviewee was using Huawei mobile phone. She said she had great experience using the phone, and she was willing to focus on the company's new feeds. For instance, she followed Huawei Mobile Phones on Weibo (a social platform in China which is similar to the Facebook in the West) and participated in the online activities from time to time. Clearly customer satisfaction is very important for the building of relationship equity for smart phone companies.

The market responsibility has second highest effect on value equity. A possible explanation is that only if smart phone companies actively undertake market responsibility, for example, strictly supervising the companies in the supply chain and investing in technological innovation, the high quality of products and services will be ensured to be provided to customers, and in turn, customers would be more willing to accept the products, which is valuable for phone companies to build value equity. For example, 32.7% of the respondents in the questionnaire survey used the iPhone, indicating that the products are acceptable among customers. Personally think that it is inseparable from its strict supplier management and technological innovation. Apple has well-established *Supplier Code of Conduct* and regularly checks supplier companies to avoid non-compliance operations affecting product quality. In addition, in the past two years, Apple's R&D expenditure rate is about 5% per year. It can be seen that Apple tries its best to innovate in technology, ensure product quality and bring new experiences to customers. The brand equity is

influenced comparatively less significant by market responsibility. This results are consistent with Cui et al. (2015) .Smart phone companies perform the responsibility could improve the positive brand image and market position in public, but it is not enough to rely solely on this to establish brand equity and it should be combined with other two dimensions of CSR.

Social Responsibility and CE

Social responsibility is measured from three aspects, following the law and regulations, establishing good community relations, guaranteeing safety in production. The results show that social responsibility has statistically significant impact on three drivers of CE i.e. value equity, brand equity and relationship equity, and its impact on relationship equity is the highest. It can be seen from the results of the questionnaire, 62% of the respondents agree with the viewpoint - " I think the communication and display activities held by the smart phone company will increase my sense of belonging to the brand." More than half of the respondents think that the community activities can definitely make them feel like communicating with the company. Therefore, when a phone company takes their social responsibility seriously, especially when they develop community relation programs and work on building strong community relations, the customers of the company may participate in the activities and thus keep in touch with the company. It is helpful to build the relationship equity for the companies. Brand equity is also impacted by social responsibility. It is evident that when smart phone companies actively undertake their social responsibilities, the brand awareness and reputation will be increased within their customers. Take the China Post-Graduate Mathematical Contest in Modeling for example, HUAWEI has supported the contest for three consecutive years. And the largest competition scale was that 19065 post-graduates from 31 provinces and cities in China successfully participated in this contest. This would definitely help increase the brand influence and get more people to accept the brand, which is beneficial to build brand equity. Though statistically significant, the impact of social responsibility on value equity is the weakest among the three drivers of CE. A plausible reason for this could be that value equity is customers' subjective evaluations of the product quality, price and convenience, but social responsibility is mainly focusing on arousing the customers' emotional identification. Although to some extent, this emotional response could help the customers to accept its products and services, it puts emphasis on improving brand influence and communication.

Environment Responsibility and CE

Unlike market responsibility and social responsibility, environmental responsibility is found to be insignificant relationship with value equity, brand equity and relationship equity in this study. This result is surprising, but given the fact that China's high speed economic growth have been based on environmental degradation and Chinese people's awareness towards a quality environment is yet to be raised, the low demand of consumers for environmental responsibility by the phone companies is understandable. However, along with the rising of environmental awareness in China, companies, including the smartphone companies have to pay more attention to their environmental responsibility to sustain long term development. For instance, the questionnaire in this study designs two questions to reflect the customers' attitude toward companies' environment responsibility performance, and the two questions are "I think the company's product packaging is green with no excessive waste" and "I think the space arrangement of the company's offline sales store is reasonable and there is no waste of resources". 46.37% of the respondents said yes to the first question, and 50.28% of the respondents agreed with the second statement. It can be seen that almost half of the customers evaluate the companies' environmental responsibility performance through the companies' behaviors they have known. Therefore, although environmental responsibility has less impact on value equity, brand equity and relationship equity in current situation, the situation is changing, and a company's environment responsibility will greatly impact on the CE in the future.

Hence engaging in CSR activities is a great way for smart phone companies to improve their CE. Our results may help the top managers of the smart phone companies and other enterprises to consider including CSR in their company policy in order to obtain the recognition of its products and services, improve brand influence as well as establish great relationship with customers to attract new customers and retain old customers that will ultimately enhance CE to provide the competitive and achieve the profit goal. Furthermore, the findings of this study do not only lead the managers of the Chinese companies to improve the CE through focusing on CSR activities, but also provide scholars and practitioners with better understanding of the relationship between CSR and CE in other developing countries.

CSR and CE have been the focus of interest for scholars and practitioners. However, most of the studies were conducted in developed countries. CSR activities and the building of CE vary across nations. This study may be a baseline to lead and help scholars and practitioners to study this phenomenon with different cultures and research

objects, especially in developing countries. This finding can add contribution to the current CSR-CE relationship research, it is also useful to industrial managers and government policy makers in China and other developing countries.

However, the study is subject to some possible limitations. First, due to limited time frame and funding, convenience sampling is used, therefore results of this study are subject to possible bias because of the size of the sample. Second, it has been tried to examine the perceived impact of CSR on CE, which may be different based on a different kind of companies or countries. In addition, the respondents' perceptions of the companies' CSR activities might have been shaped by their actual knowledge and that may affect the results. Third, there are possibly other factors which have impact on CE for the companies, whereas only CSR is considered in this study.

The main aim of company is profitability and cannot carry on CSR activities without considering return on investment. Then, for the company, the return should ultimately be reflected in financial performance. A future study may be designed to explore the relationship between CSR and financial performance, CE as intermediate variable. In addition, future study could examine the perceptions of CSR and its relationship with financial performance in different industries.

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