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**IMPACT OF PRODUCT-HARM CRISIS ON BRAND EQUITY:
THE MODERATING ROLE OF CSP**

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ABSTRACT

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There is an increasing amount of product-harm crisis in the past few years; and the impact of a product-harm crisis becomes more and more influential due to the high increasing speed of globalization. And it is believed that the negative damages to a firm leading to a loss of the intangible assets is bigger than other costs such as the cost of the product recall. Brand equity is a very important and valuable intangible asset for a firm; and it is particularly vulnerable during the crisis. And CSP (CSP) is a hot concept associated with product-harm crisis and brand equity. The aim of this study is to understand how product-harm crisis influences by simultaneously involving CSP as a moderator in a consumer-based level. An experimental study was conducted through an online questionnaire among 198 students in Finland. The questionnaire mainly assessed the consumers' attitudes towards CSP and brand before/after a fictional product-harm crisis. The results shows that the brand equity was negatively related to the product-harm crisis. And the extent level of crisis's severity was positively related to the loss of the brand equity; whereas, acknowledged blame was more useful to compensate the loss of brand equity in the low-severity crisis. CSP acted as a moderator role which could compensate the loss of brand equity caused by the product-harm crisis. Managerial implications are also offered for crisis managers, brand managers, and CSR managers.

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CONTENTS

1. INTRODUCTION	7
1.1 Study background.....	7
1.2 Research gaps, research questions, and research objectives	9
1.3 Exclusions and limitations	11
1.4 Research strategy and structure of the study	12
2. LITERATURE REVIEW	14
2.1. The concept of product-harm crisis.....	14
2.1.1 Definitions of product-harm crisis.....	14
2.1.2 Factors influencing product-harm crisis	15
2.2 The concept of CBBE	18
2.2.1 Firm-based brand equity and CBBE.....	19
2.2.2 Definitions of CBBE	19
2.2.3 Similar concepts to brand equity	20
2.2.4 Previous measurement approaches to CBBE	22
2.3. The concept of CSP.....	26
2.3.1 CSP, CSR, and CR	26
2.3.2 Previous measurement approaches to CSP.....	27
2.4 Analysis of previous approaches on the phenomena	30
2.4.1 Variables for measuring the impacts of crisis	30
2.4.2 Impacts of product-harm crisis on brand equity.....	31
2.4.3 Moderator roles	33
2.4.4 The impacts of CSR in product-harm crisis	34
2.4.5 The CSP and brand equity.....	35
3. RESEARCH FRAMEWORK	40
4. RESEARCH DESIGN AND METHODS.....	45
4.1. Research overview	45
4.2. Data collection methods	46
4.3. Data analysis methods.....	50
4.4. Reliability and validity	52
5. RESEARCH FINDINGS.....	54

5.1	Basic statistics conclusion.....	54
5.2	Factor analysis.....	62
5.3	GLM model about pre-crisis brand equity	64
5.4	Paired T-test: test hypothesis 1	65
5.5	Results of GLM procedure.....	66
5.4.1	Overall performance of GLM model.....	66
5.4.2	Test Hypothesis 2	68
5.4.3	Test Hypothesis H1a.....	70
5.4.4	Test Hypothesis H1b	71
5.4.4	The gender-based results	74
5.6	Summary of research findings	74
6.	DISCUSSIONS AND CONCLUSIONS.....	75
6.1	Discussions of key findings	75
6.1.1	Answering Research Question 1	75
6.1.2	Answering Sub-question 1a.....	77
6.1.3	Answering Sub-question 1b	78
6.1.4	Answering Research question 2	79
6.1.5	Unexpected results.....	81
6.2	Theoretical contributions	83
6.3	Practical implications	86
6.4	Limitations and future directions	87
	REFERENCES.....	89
	APPENDICES	94
	Appendix 1. Quantitative survey for the experimental study	94
	Appendix 2. Questionnaire Codebook for Data Analysis in SAS Software	96
	Appendix 3. Codes for data analysis in SAS software.....	97

LIST OF FIGURES

Figure 1. Measurement Framework of brand equity by Aaker. (Aaker, 1991)	23
Figure 2. Wood's Measurement Framework of CSP (Wood, 2010, 54)	28
Figure 3. The map of Pre-approaches related to the topic	39
Figure 4. Research Framework of this study	44
Figure 5. Main steps of Empirical Study	45
Figure 6. Frequencies of Crisis Scenarios.....	54
Figure 7. Fit Diagnostics for Δ BE (SAS Enterprise Guide, 2016)	67
Figure 8. LS-Means for severity*blame groups	73
Figure 9. Summary of empirical results.....	74

LIST OF TABLES

Table 1. The Definitions of brand equity	20
Table 2. Examples of impacts of organizational response on brand equity	32
Table 3. Scales and values of key variables	50
Table 4. Descriptive information about Gender and Education.....	55
Table 5. Descriptive statistics of each variable	56
Table 6. Correlation Matrix of measured variables	57
Table 7. Comparison between measured CSP and real CSP	60
Table 8. Fisher's Exact Test of gender and education	61
Table 9. Factor analysis results of CSP.....	62
Table 10. Model Fit Results for Pre Crisis.....	64
Table 11. Nature and significance of individual parameters' effects.....	65
Table 12. Paired T-test results.....	66
Table 13. Class Level Information for GLM model	66
Table 14. Overall GLM Model Fit for Δ BE.....	68
Table 15. Individual F-test for each parameters.....	69
Table 16. Nature and significance of individual parameter's effects.....	70
Table 17. Least Square Means	71
Table 18. Post Hoc test for the interaction effect between Severity and Blame	72

LIST OF ABBREVIATIONS

EPA – Environmental Protection Agency

CBBE – Consumer-Based Brand Equity

CSP – Corporate Social Performance

CSR – Corporate Social Responsibility

CR – Corporate Reputation

GLM – Generalized Linear Model

1. INTRODUCTION

There are four parts in this chapter, including the study background, research questions as well as research objectives, the delimitations as well as limitations, and the structure of this study.

1.1 Study background

There is an increasing amount of product-harm crisis in the past few decades, since the products are defective, unsafe or even harmful. (Sabrina et al. 2014) And the automotive industry is one of the highest visible industries in terms of recalling products. For instance, according to Wacket and Taylor (2016), the German automobile manufactures (such as Mercedes-Benz, Volkswagen, and Porsche) will recall 630000 diesel cars for repairing the emissions-test problem, which is spilled over by the Volkswagen's emissions-test cheating scandal.

Volkswagen's emissions scandal is the most famous example in the recent history of product recalls. Volkswagen's emissions scandal was exposed to the public in the year of 2015, which was accused of the car's defective device for cheating the carbon-dioxide emissions test by the Environmental Protection Agency (EPA) in US. It was admitted by Volkswagen to rigging emissions tests in the market; and there are 11 million involved cars in the world, including 8 million in Europe. As a result of cheating on the emissions test, the engines emitted over 40 times of the legal nitrogen oxide pollutants in US. (Hotten, 2015)

Another example from the automotive industry is known as Takata airbag recalls in the year of 2014. As a result, around 10 million cars are involved and affected due to defective airbags, which was warned by the National Highway Traffic Safety Administration (NHTSA). It was found out that there are at least 10 deaths and more than 100 injuries caused by the defective airbags. For other car owners, there is a potential risk of the inflators to explode leading to injuries or even deaths. The involved vehicle manufactures include BMW, Toyota, Honda, and General Motors and so on. (Safecar, 2016) And Volkswagen is also involved in this product recall event, which recalled 1.5 million vehicles in US. As can be seen, Volkswagen's emissions scandal is not the first-time product-harm crisis for the Volkswagen AG in its history. (CNN, 2015) It is believed that the above product recalls aren't the last ones, even though they might be among the most expensive recalls which strike the market.

Product recall is one of a firm's responses to a product-harm crisis, which can be defined as "a well-known event resulted from defective or even harmful products". (Dawar & Pillutla, 2000) There are also other response strategy to solve the product-harm crisis such as denial response, which was made by Volkswagen for being accused of modifying the defective software to other 100000 Porsche and Audi models. (BBC, 2015) In addition, the rate of defective products in automotive industry was found to be very high. According to the report from Handelsblatt (2016), there are 42 defective products related to the automotive industry compared to the 46 defective products in total. Therefore, it is very important and representative to take the automotive industry for the example for studying the product-harm crisis.

As a result of the product-harm crisis, it usually comes with negative impacts on the financial performances including the cost of product recalls, the decrease market share, or reduced sales revenue. (Davidson & Pillutla, 1992) Taking Volkswagen's emission scandal for instance, the firm has prepared €6.7 billion for the cost of recalling millions of vehicles; and the firm lost €2.52 billion in the third quarter in the year of 2015. (BBC, 2015) In addition, it always come with the negative publicity, which can constantly influence the viability of an organization. (Vassilikopoulou et al. 2008)

Thus, the product-harm crisis is on the list of corporates' biggest disasters, due to the negative damages to the corporate or negative publicity coming with the product-harm crisis. And the product-harm crisis could be a threat or opportunity for a firm, so the firm are always interesting in minimizing the impacts of a product-harm crisis and utilizing the product-harm crisis. What's more, the crisis management for dealing with the product-harm crisis is on the top-three list of the most important purchase influence following the product quality and issue management. (Dawar & Pillutla, 2000) Also, the impact of a product-harm crisis become more and more influential due to the high increasing speed of globalization. (Rea et al. 2014)

During the product-harm crisis, it is believed that the damage level of a firm's the intangible assets (e.g. the consumer's perception towards the brand) is the higher than the other costs such as the cost of the product recall. In addition, brand equity is a very important and valuable intangible assets for a firm; and it is very vulnerable during the crisis period. (Davidson & Worrell, 1992) Thus, it would be interesting and important to understand how the product-harm

crisis would influence brand equity. Furthermore, the Corporate Social Performance (CSP) is a hot concept associated with product-harm crisis and brand equity.

In addition, there are several tested impacts of CSR in a product-harm crisis, including limiting the negative effects of a crisis on purchase intention, positive changes on brand evaluation plus brand attitudes during a crisis, and a mediating role on relationship between brand evaluation and blame of a product-harm crisis. (Vassilikopoulou et al. 2009; Assiouras et al. 2013; Klein & Dawar, 2004) What's more, there are several tested positive impacts of CSR on brand equity in a direct and indirect way, including generating brand awareness, a stronger customer identification, building brand credibility, improving brand image, initiating brand-community sense, favorable evolution, a better customer satisfaction, raising brand feelings, and eliciting brand engagement. (Hoeffler & Kevin, 2002; Sen & Bhattacharya, 2001; Luo & Bhattacharya, 2006; Brown & Dacin, 1997) Therefore, it would be interesting and important to understand what CSR can contribute to the crisis management and brand management.

In terms of relevant importance for studying the three-concepts relationship in practice, managerial implications could be given to the CSR managers, brand manager, and crisis manager. Taking crisis manager for instance, it would be important and critical to manage a product-crisis in a long-term run by taking CSR strategy and brand strategy into consideration. In addition, by minimizing negative consequences of product-harm crisis on brand, the brand manager should consider which factors as the priority for the reconstruct an ideal brand strategy after the product-harm crisis.

1.2 Research gaps, research questions, and research objectives

There is a research gap in the scholar for investigating the influences of product-harm crisis from the marketing perspective: there are few researches using Consumer-Based Brand Equity (CBBE) as the outcome indicator of product-harm crisis. Rather than brand equity in the previous academic researches, the purchase intention is a main indicator for examining the outcome performance of a product-harm crisis. In addition, there are certain approaches for studying the relationship between product-harm crisis and brand equity, the product-harm crisis could decrease several factors directly related to brand equity such as consumer evaluation,

consumer expectation, and brand loyalty. (Rea et al. 2014; Cleeren et al. 2013; Dawar & Pillutla, 2000) Thus, based on the importance of product-harm crisis's impacts on brand equity and the research gaps, the first research question is generated as: "How a product-harm crisis would influence the CBBE?"

Furthermore, there is usually one single indicator to assess characterizing a product-harm crisis in the previous researches for studying the relationship between product-harm crisis and CBBE. Whereas, there are also few researches using a multi-factor to assess the product-harm crisis in a crisis-and-brand related studies. Thus, it is worthy to use a multi-factor to assess the product-harm crisis in this study. And severity and blame acknowledgement are two of the most important factors influencing product-harm crisis, so they are taken as the two dimensions of characterizing product-harm crisis. And there are two sub-research questions based on this two dimensional framework: "How the severity level of a product-harm crisis would affect the CBBE?" and "How a firm's response the blame of its product-harm crisis would affect the CBBE?"

In addition, in previous researches, there are certain researches investigating the connections between CSP and brand equity in general. However, in such a relation analysis between them, the financial perspective was usually utilized as the angle of measuring the brand equity. Plus, the research scope is the period after a product-harm crisis, which is a specific period rather than general time-related scope. Thus, it would be interesting to see what kind of role CSP could be for rebuilding the brand after the product-harm crisis. Thus, the second research problem is: "What is the role of CSP in the relation between product-harm crisis and CBBE?"

As a conclusion for the research problem, this study attempts to deal with two main research problems: "How a product-harm crisis would influence the CBBE" and "What is the role of CSP in the relation between the product-harm crisis and CBBE". And two sub-research questions of the first main research problem are formulated from the two-dimension framework of product-harm crisis (severity and blame): "How the severity level of a product-harm crisis would affect the CBBE?" and "How a firm's response the blame of its product-harm crisis would affect the CBBE?"

The purpose of the thesis is to assess the impacts of a product-harm crisis on CBBE; and in the research conceptual framework of this study, CSP (CSP) is regarded as a moderator in the crisis-brand-equity relationship. In order to study the impacts of product-harm crisis, the empirical study concentrates on consumers' attitudes towards brand before and after a product-harm crisis. And for assessing the CSP from a consumer's perspective, two real firms with different real CSR scores are evaluated based on consumers' general impression about the firms.

1.3 Exclusions and limitations

This study is a consumer-level research which concerns about the consumers' attitudes towards CSP and brand changes; whereas, this research can be done in a firm level for involving corporate reputation in order compare the impacts of product-harm crisis on brand equity across the product categories. Regarding the research question, overall brand equity are involved as the outcome indicators of product-harm crisis in the research problems; whereas, it can be divided into several sub-questions by involving the specific CBBE items with severity characteristics.

In terms of the delimitations of related variables, in this study, the characteristics of the product-harm crisis include severity and blame acknowledgment. Whereas, there are six tested factors of influencing the product harm crisis management, including company reputation, external effects (negative publicity), organizational response, time, severity, and the types of victims. Due to time limitation of implementing the empirical study, only two factors were chosen for reflecting the characters of product-harm crisis but certain factors (e.g. types of victims and negative publicity) are combined to indicate the severity. However, it would be better to identify the product-harm crisis in a more specified way (with more characteristics) instead of two dimensions. Regarding the variable "CBBE", Aaker (1991) conceptualized a four-item framework for indicating CBBE; whereas, brand awareness is not included in this study, since it will certainly increase in a bad way after the product-harm crisis, which always comes with negative publicity. In addition, a more detailed framework with ten-item brand equity can be chosen for assessing the CBBE. (Aaker, 1996)

Regarding the measurement framework for assessing CSP, Wood (1991) conceptualize the CSP with three dimensional framework, including outcomes as well as influences of performance,

social-responsiveness processes, and principles of CSR. In this study, the specific firms are chosen as the research target, so the public-responsibility principle is the chosen level for measuring the firm's responsibility. Whereas, there could be three levels for measuring the firm's responsibility, including institutional level, organizational level, and individual level. In addition, there could be three levels for measuring the firm's CSR outcomes, including institutional level, organizational level, and individual level. (Wood, 1991)

And the data were collected from an online survey, which secondary data from third party can be used as being more reliable. The research target group would be the students in Finland; and the respondents are mostly reached through personal contacts. The populations chosen as target group for this study cannot fully represent the public's opinions and insights. Regarding the design of survey, the survey only included the closed-ended Likert scale questions, without any open-ended questions, which might limit the willingness and responses to reflect respondents' ideas.

1.4 Research strategy and structure of the study

The research was conducted in a deductive approach, which starts with literature reviews for understanding previous theory about the three concepts "Product-harm Crisis, CBBE, CSP" and the main approaches for studying the connections among them. The literature review leads to create certain hypotheses, which are developed and tested empirically in this study. The tested hypotheses is about how the product-harm crisis affects CBBE and how CSP moderate the relation between product-harm crisis and CBBE. It is supposed that the product-harm crisis is negatively related to CBBE, which relation is moderated by the CSP.

The empirical test of the hypothesis is conducted through statistically quantitative methods and techniques. In terms of the data collection, the attitudes of consumers towards the brand the CSP is collected through a questionnaire. In order to measure the abstract concepts, the used conceptual frameworks include the CSP framework by Wood (2010) and CBBE framework by Aaker (1991). In terms of the data analysis, the paired T-test and General Linear Model (GLM) are conducted through SAS Enterprise Guide for testing the hypotheses.

The structure of the thesis is described as below:

Firstly, in the chapter 2, the literature review part analyzes the three concepts “Product-harm Crisis, CBBE, CSP” by introducing the definitions of three concepts, similar terms related to them, and the theoretical frameworks of them. After introducing the three concepts, the main approaches for studying the connections among them are stated and analyzed to find the research gap and create the hypotheses for answering the research problems.

Secondly, in the chapter 3, the research framework part introduces the process of generating hypotheses by concluding the previous main approaches the literature review part. And in this part, the proposed answers for the research questions are generated based on the previous literatures, including the impacts of product-harm crisis on CBBE and the moderating effect of CSP.

Thirdly, in the chapter 4, it states the research design and the related methods by taking an overview of the empirical research, introducing the methods of collecting data, introducing the methods of analyzing data, and analyzing the trustiness of the research. For the trustiness of the research, the reliability and validity are analyzed from the data collection techniques to data analysis results.

Fourthly, in the chapter 5, the key findings are illustrated as a result of data analysis, including basic statistics conclusion, factor analysis, and the results of hypotheses tests. In this part, based on the statistical performance, whether the hypotheses are accepted or rejected would be interpreted. Fifthly, in chapter 6, the detailed discussion of answering the research questions would be stated based on the key findings. In this part, the main contributions from both theoretical and empirical perspective would be discussed such as the new knowledge supported by the key findings, how the research gaps are filled, and expected as well as unexpected results compared to supposed hypotheses. Lastly, in chapter 7, the conclusion of the study would be made from four perspective, including theoretical contributions, practical implications for managers (e.g. brand managers, crisis managers, and CSR managers), limitations of the research, and the directions of future extension.

2. LITERATURE REVIEW

In this chapter, there are four main parts, including the concept of product-harm crisis, the concept of CBBE, the concept of CSP, and previous approaches to study the connections among the above three concepts.

2.1. The concept of product-harm crisis

In this part, there are two main parts, including the definitions of product-harm crisis and factors influencing product-harm crisis.

2.1.1 Definitions of product-harm crisis

The commonly accepted definition of Product-harm crisis is “a well-publicized event resulted from defective or even harmful products”. While the product-harm crisis occurs, the product’s life cycle would be suddenly terminated or broken, which cannot be avoided by the firm. Usually, a firm responds this type of crisis with a product recall event to deal with this issue. (Dawar & Pillutla, 2000, 215) The product-harm crisis is a type of corporate crisis in an unexpected way, which threatens the corporate’s stability, performance, and even viability. (Seeger et al. 1998) And there are certain causes for the product-harm crisis such as the bad quality, the negligence by manufacturers, or the product misuse by the customer. (Vassilikopoulou et al. 2009)

The frequency of product-harm crisis is increasing in the recent years, and it is believed that product-harm crisis would be a more influential in the more and more international business environments. (Meulenbergh et al. 2002) In addition, there are certain causes of the product-harm crisis’s increasing visibility, including the growth of products’ complexity, the increasing demands, stricter product-safety laws, and the growing usage of internet as well as social media. (Klein & Dawar, 2004)

The product-harm crisis is on the list of corporates’ biggest disasters, due to the negative damages to the corporate or negative publicity coming with the product-harm crisis. (Dawar & Pillutla, 2000, 215) In addition, during the product-harm crisis, it is believed that the damage level of a firm’s the intangible assets (e.g. the consumer’s perception towards the brand) is the higher than the other costs such as the product-recall cost. (Davidson & Worrell, 1992)

There are two main perspectives to understand the outcome and consequences of product-harm crisis, including financial and marketing-oriented perspective. From the financial perspective, apart from the cost of the product recall, there are certain negative effects of product-harm crisis to the assets of an organization such as market share, share prices, and sales revenue across the recalled products as well as other product categories. (Davidson & Pillutla, 1992)

In terms of the impacts of product-harm crisis to marketing effectiveness, there are certain crucial outcomes experienced by the firm: “a growing cross sensitivity to competitors’ marketing, a loss in the effectiveness of own marketing instruments, a reduced impacts of marketing instruments on other sales, and a reduced sales of related products.” (Harald et al. 2007)

2.1.2 Factors influencing product-harm crisis

In order to limit the negative damage to the corporate, the related scholars have studied a lot for the factors which should be considered for a good crisis management. There are six commonly accepted factors influencing the outcome performance of product-harm crisis in the previous literature, including company reputation, external effects, organizational response, time, severity, and the types of victims. (Vassilikopoulou et al. 2009; Siomkos, & Kurzbard, 1994; Coombs, 2014)

Firstly, the company reputation is an important strategic resource for a firm during the crisis management due to the minimal effect of product-harm crisis on a firm with good reputation. Thus, the halo effect of the Corporate Reputation can protect the organization during the product-harm crisis. CSR is a key concept linked with corporate reputation as CSR equips corporate reputation with plenty of benefits by participating in the social activities. (Siomkos & Kurzbard, 1994, 31)

Secondly, external effects stands for the public media’s press towards the product-harm crisis, which could be negative or positive. And usually, the negative news of assessing the harmful product speak louder than the positive news. Thus, it is also known as negative publicity, which accounts for the extent of reporting the product-harm crisis by media. (Lin et al. 2011) Thirdly, organizational response is defined as the way how a firm react to a product-harm crisis, which

is also known as the response strategy. There are certain common types of organizational responses, including involuntary recall, denial response, super effort, and voluntary recall.

The concept “denial response” stands for the fact that the firm disconfirmed the responsibility of the product-harm crisis. The concept “involuntary recall” accounts for the fact that the firm is forced to recall the products by the government. The concept “voluntary recall” stands for the fact that the harmful products are voluntarily recalled by the firm. The concept “Super Effort” means that the products are instantly recalled by the firm in addition to a well compensation for the customers and broadcast the possible danger of the harmful products. (Siomkos & Kurzbard, 1994, 32)

Blame is a particular important concept related to organizational responses, since blame plays an important role of marketing communication during the product-harm crisis. The consumers like to track and search for the attributions for a blame. In addition, the negative word of mouth effects could be resulted from the anger of consumers, which might be triggered by a wrong decision of blame the product-harm crisis. (Cleeren et al. 2013, 61)

Blame stands for the fact that the corporate acknowledge the related responsibility of product-harm crisis. There are two conditions related to blame by a firm during product-harm crisis: the company acknowledge the blame for the responsibility of the crisis in the recall announcement; or the company acknowledge the blame in the other channels such as the surrounding publicity. In the former situation, the firm realize that the blame must be acknowledged; conversely, the firm realize that the blame must not be acknowledged. The above response strategies can be categorized into two groups: acknowledged blame (voluntary recall and super effort) and non-acknowledged blame (denial response and involuntary recall). (Cleeren et al. 2013, 66)

Fourthly, the concept “Time” stands for the duration length between the date of a crisis and the date of responding by consumers. It is highly concerned that the time length how long a firm’s reputation would suffer from a crisis; and usually, the time length of suffering is highly connected with the crisis’s severity. In terms of time’s influence, consumers seems to forget the

impacts of product-harm crisis while time passes through, especially in the condition that the firm is highly socially responsible. (Vassilikopoulou et al. 2009)

Fifthly, in different contexts of crisis extent level, the importance of those four factors varies – there are two most important factors (external effects and corporate reputation) in the low-severity crisis; and organizational response and time are useful in the other conditions. (Vassilikopoulou et al. 2009) The crisis extent level stands for the level of the crisis's seriousness, which is also known as the severity of the crisis. The two levels of crisis extent were created for evaluating the crisis severity, including minor with trivial damage and severe crises. (Coombs, 1998)

There are two types of identical damages resulted from the crisis, including damages to people and damages to the environment. The former accounts for the injured people or death of people caused by the crisis; and the latter stands for the harms to the environments from different aspects such as the ecosystem of human and animals, wildlife, natural resources, and so on and so forth. (Zyglidopoulos, 2011, 420)

Therefore, based on two perspectives of identifying crisis's damages, there are two aspects of evaluating the crisis severity meaning the extent level of a damage being harmful to human being and environment. For instance, in the case of 1984 Bhopal chemical leak, the harm of a crisis to human life is verified that there are over 2500 death and 200000 injured people. In the case of Exxon Valdez crisis in 1989, the harm of this oil spill crisis to the environment is verified by the over-2500-mile polluted beaches and the death of 36000 birds due to the spill of 11 million gallons of oil. (Zyglidopoulos, 2011, 420-421)

The crisis extent level could be measured by the deaths of victims such as animals or human beings, the amount and degree of injuries, or or the degree of harm to the environment. (Vassilikopoulou et al. 2009) Those different attributes can be used for describing the crisis situation. In addition, the crisis situation is one of the four key areas which should be tested for an emerging issue threatening the corporate brand's reputation. (Greyser, 2009, 592)

The seriousness of the product harm varies from the amount of affected consumers. For instance, the crisis extent level of one thousand victims would be higher than that of ten victims. What's more, the crisis of extent level would also vary from different degree of injuries. For example, the pork crisis leading to the death of people has a higher crisis extent level than that leading to a diarrhea. (Greysen, 2009, 592)

Lastly, the reactions to the crisis might vary from different people who has different extent level of ties to the victims that may affect audience's response. And it is believed that the potentiality of being critical of evaluating a crisis also depends on the extent level of ties of the victims to the center of a crisis. For instance, it is supported that students who pay dramatically attention and time on their home university have very different extent level of being critically responding to the negative news of their home university, compared to students from other universities. (Isaacson, 2012, 47-48)

Usually, there are two types of victims resulted from the crisis, including actual victims and potential victims. Actual victims are the stakeholders who are actually harmed by the crisis; whereas, the potential victims are the stakeholders who have the potentiality of being harmed by the crisis. For instance, there are threats to the health of workers and people living nearby, which are caused by a chemical release. (Coombs, 2014)

While there are actual or potential victims caused by the product-harm crisis, the response strategy should be victim-centered approach, which carry the messages mainly focusing on the victims and the assistance to help the victims. And it is believed that victim-centered response limits the damages to the corporate reputation by addressing concerns to the victims about the public safety and welfare. (Coombs, 2014)

2.2 The concept of CBBE

In this part, there are four sections related to CBBE (CBBE), including comparison between firm-based brand equity and CBBE, definitions of CBBE, concepts related to CBBE such as brand identity and brand image, and previous measurement approaches of CBBE.

2.2.1 Firm-based brand equity and CBBE

Brands are major assets to a firm. As an essential concept related to brand, the popularity of the concept “brand equity” is increasing in the marketing scholar areas. In the early 1980s, the concept of brand equity was born, which started to be popular subject of the marketing-related academic research. And the advertising practitioners started to be widely interested in using it for measuring the marketing performance by focusing on short-term run. (Barwise, 1993)

In order to study the concept in the previous studies, brand equity could be viewed from two distinct aspects including financial perspective and customer-based perspective. Each perspective has different focus and locus in the history of literature. (Fayrene & Lee, 2011) Basically, from a firm-based perspective, the financial consequences of a brand equity could be evaluated by treating the firm as a whole target.

From a financial perspective, the brand equity was defined as “a brand brings the possibility of creating further economic earnings with added economic values”. (Srivastava et al. 1998) Certain financial techniques are used to investigate the brand equity for reflecting the economic outcome of a brand’s additional value. For instance, the financial-based brand equity was measured as the brand value divided by the total assets. (Hui-Ming, 2010)

From a customer-based perspective, brand equity is a measure of consumers’ behavior or consumers’ beliefs, which concerns more about the customer’s response towards the brand name. For instance, the extent to pay a premium price would be an indicator for testing the consumers’ behavioral brand equity. (Aaker, 1991) The concentration of this study will be limited to CBBE due to the purpose of this research, which mainly examines the individual customer’s responses toward the brand.

2.2.2 Definitions of CBBE

The different approaches of defining the CBBE are illustrated in this part. Brand equity is hard to define with a high complexity. There are plenty of ways of defining the concept “brand equity”, as can be noticed from Winters’s statement: “ten people would have ten (maybe 11)

ways of defining brand equity” (Winter, 1991, 70) As concluded in Table 1, there are different definitions of brand equity which are commonly used in the past academic literatures.

Table 1.The Definitions of brand equity

Author	Definitions of the Concept
Farquhar	Brand equity can be defined as three added value of a brand attached to a product, including better brand attitude of influencing purchase intention, better brand evaluation, and a long-term relationship with consumers due to constant brand image. (Farquhar, 1990)
Aaker	Brand equity can be defined as “intangible assets and liabilities which added or reduced value of a brand attached to a product or service”. (Aaker, 1991)
Keller	Brand equity can be defined as the influences of brand related memories on consumers’ response to the brand-related marketing activities, which occurs when the consumers are strongly associated and familiar with the brand. (Keller, 1993)
Lassar et al	Brand equity can be defined as “a brand name attached with the enhanced perception towards a product’s desirable quality and usefulness”. (Lassar et al. 1995)
Aaker	Brand equity can be defined as the combinations of ten items including “brand personality, brand awareness, market share, price premium, loyalty, leadership, perceived value, organizational associations, perceived quality, and distribution indices”. (Aaker, 1996)
Erdem &Swait	Brand equity can be defined as the long-term returns to a firm related to brand signaling and consumer reaction. (Erdem & Swait, 1998)
Vázquez et al	Brand equity can be defined as “Assumptions of the functional and symbolic utilities attached with a brand by customers” (Vázquez et al. 2002)
Ambler	Brand equity can be defined as “the previous marketing investment leading to the potential economic outcome”. (Ambler, 2004)

As shown in Table 1, the concept brand equity could be defined as different ways based on different research aim. In addition, the conceptual researches regarding CBBE mainly occurred during the period from the early 1990s to the mid-1990s.

2.2.3 Similar concepts to brand equity

There several concepts which are similar to brand equity, including brand identity, brand images, brand attitudes, and brand equity. Brand Identity refers to identify a firm by creating a brand salience with distinguished products, which deal with the question “who is the organization”. The brand has its unique characteristics including brand vision, brand culture, brand personality,

and brand relationship. There are mental and functional associations between the brand and brand identity, including the shape of Coca Cola bottle, the Swoosh logo of Nike, and blue trademark color of Pepsi, and the tagline “Think Different” of Apple Corporate. Those elements are associated with the brand to differentiate a brand from competitors, which make consumers recognize the corporate by. And certain promises also come with the brand identity to be perceived by the consumers. (Kotler & Keller, 2012, 271)

Brand Image is defined as “perceived impression related attached to a brand in customers’ memory resulted from brand associations”, which constitutes Brand Equity together with brand awareness in Keller’s two-dimensional model of brand equity. And there are three types of brand association based on the level including brand attributes, consumer benefits, and brand attitudes. In order to have a positive brand image, it is critical to increase the advantages of brand associations, the favorability of brand associations, and the singularity of brand associations. (Kotler & Keller, 2012, 273)

Brand attributes can be defined as the descriptive features for characterizing a brand, which means the fact that how a consumer assume a product or a service should be. Brand attributes can be divided into product-related attributes and non-product-related attributes. Product-related attributes are the internal aspects of a product or a service, which consist of the content of a service or the tangible ingredients of a product. Non-product-related attributes can be categorized into four types including price, appearance information of a product such as packaging information, user imagery for specifying what kinds of people use the product, and usage imagery for specifying location and time to use the product or service. (Kotler & Keller, 2012, 271)

Consumer benefits are the individual values of a consumer attached to a product’s attributes, which motivation can be divided into symbolic benefits, experiential benefits, and functional benefits. Symbolic benefits resulted from the needs of being socially visible, personal expression, and express self-esteem. Experiential benefits are the feelings of using a product for satisfying experiential needs such as sensory pleasure. Functional benefits are the basic motivations attach to a product such as security and physiological needs. (Kotler & Keller, 2012, 273)

Brand Attitudes can be defined how customers overall evaluate a brand, which is the basis of consumer behavior, which is strongly tied with brand choice. And customer belief can be used for evaluating Brand Attitudes based on two fundamental aspects which are customer beliefs on brand attributes and brand benefits as the highlights of a product or a service. (Kotler & Keller, 2012, 274)

The brand impressions remembered in the consumer's mind is associated with Brand awareness, which identify the organization with brand salience and leads to a brand image constituting brand attributes, consumer benefits, and brand attitudes. In the end, the positive brand attitude results in the preference of a brand, which leads to brand loyalty. (Kotler & Keller, 2012, 275)

2.2.4 Previous measurement approaches to CBBE

There are two streams of the researches in terms of conceptualizing CBBE for measuring including information economics and cognitive psychology. In addition, those two streams are regarded as complementary for each other. (Christodoulides & Chernatony, 2010, 51)

In the information-economics aspect of conceptualizing CBBE, Erdem and Swait are the classical representative for regarding brand equity as the returns to a corporate related to brand signaling to consumers. In addition, it is required to the transmission of the specific characteristics regarding the brand by the means of the brand signals. (Erdem & Swait, 1998)

The dominant stream in the recent years focus on the cognitive psychology, which regards the memory structure as the concentration. In the cognitive psychology, Aaker is one of the two key contributors in this area together with Keller. Whereas, Keller conceptualized brand equity with two items "brand awareness" and "brand image" by concentrating on the impacts of brand knowledge which are more or less covered and overlapped with Aaker's model. (Christodoulides & Chernatony, 2010, 50)

Due to the dominate position in the type of cognitive psychological researches, the four dimensional framework conceptualized by Aaker was chosen to measure the CBBE. In addition, there are certain advantages of conceptualizing brand equity based on this conceptual

framework. For instance, it is very practical and well-tested that different specific elements could be identified for improving brand value in the marketing activities. (Aaker, 1996)

As shown in Figure 1, Aaker (1991) conceptualized the brand equity framework with four items including perceived quality, brand loyalty, brand associations, and brand awareness. In this model, all the elements are identified and evaluated as they are tightly linked to the consumer perception for pursuing a better brand value. Hereinafter, the four dimensions of brand equity are illustrated as a detailed description for the measurement.

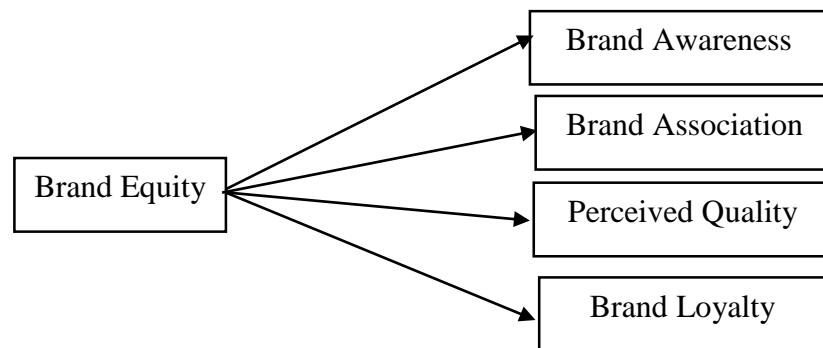


Figure 1. Measurement Framework of brand equity by Aaker. (Aaker, 1991)

Firstly, Brand Awareness is identified the highlight of the brand remembered by the consumer, as it is an essential factor of affecting the purchase intention to customers. In addition, brand awareness take a strategic influential role of the consumer's purchase process by making the product as a salience attached to the brand. (Keller, 1993)

There are different extents of brand awareness in different contexts, including brand dominance, brand knowledge, recognition, recall, and brand opinion. For instance, Brand Dominance means that the unique and only brand is recalled to the customers. Brand Knowledge stands for the fact that the customers know the meaning of the brand. (Aaker, 1996, 114-115) The recognition extent of brand awareness is essential and influential for the niche brands. And the brand recognition stated the brand awareness of the existing brands, which means that the brands are already remembered in consumers' minds before the brands are mentioned in the measurement researches. (Percy & Rossiter, 1992) However, recall is more useful and powerful for the famous brands. In a survey, brand knowledge and brand opinion are more commonly used rather than recall questions. (Aaker, 1996, 114-115)

Secondly, in terms of the Brand Association, as known as brand image in Keller's two dimensional framework, it stands for the foundation of consumer's purchase decision and that of brand loyalty. Brand Association can be defined as all brand-related things in one consumer's memory such as images, beliefs, thoughts, perceptions, beliefs, feelings, attitudes, and experiences. (Kotler & Keller, 2006, 188)

According to Aaker (1996), there are three different aspects for measuring Brand Association, including the brand-as-organization perspective, the brand-as-product perspective, and the brand-as-person perspective. The focus of brand-as-product aspect is the proposing added value of a brand, which involves the functional benefits of branded products. The indicator "Value" related to the brand states the success of the brand across product categories instead of the functional benefits to a specific product. (Aaker, 1996, 111) The focus of brand-as-person perspective is brand personality, which stands for the differentiated characteristics of a brand. As assumed in this perspective, a brand has its own personality for making a differentiated statement to the consumers as a user of the brand. It offers the emotional and self-identified benefits to consumers for relating to the brands, and there is a special connection and differentiation between the brand and customers in the visible social setting. (Aaker, 1996, 112)

The focus of brand-as-organization perspective is the associated elements of the organization - people, values, and programs - attached to the brand, which regard the organization as a whole to investigate the brand association. And this perspective is also known as organizational association. (Aaker, 1996, 113) Organizational association is helpful while the brands are similar to each other in terms of attributes, which are crucial for showing the customers that the organization is more than a combinations of products or services. In addition, this perspective is quite useful to test brand association for improving the organization visibility. For instance, Ronald McDonald House Charities is a good example for showing that MacDonald as an organization is not just interested in fast food but also willing to improve corporate brand visibility in the public. (Aaker, 1996, 113)

What's more, organizational associations are usually important foundation for the differentiated labels such as concerning customers, pursuing high-quality products, and being community oriented. Moreover, corporate brand usually ties with corporate social responsibility from this

perspective since the public is willing to understand how brands return back to the society. Thus, the firm have recognized and understood how those two items can be added values or negative effects. (Blumenthal & Bergstrom, 2003)

Thirdly, in terms of the Perceived Quality, it stands for the overall judgment regarding a product's excellence or superiority based on consumers' recognition as well as expectation. Whereas, perceived quality is different from objective quality, which stands for observed quality for physical products such as the CPU of a laptop. (Zeithaml, 1988) Perceived quality can be influenced by extrinsic attributes and intrinsic attributes. Extrinsic attributes are dependent on other things or contexts or relationships such as the brand name or the packaging information. Intrinsic attributes are tangible elements within a product such as a color of a car, which is independent on other things or contexts. (Zeithaml, 1988)

Lastly, Brand Loyalty can be defined as the level of how a customer is attached to a brand, which is the central part of this brand equity model. It can be used to test companies' loyalty by finding out whether consumers prefer to firm's products compared to the alternative competitors. According to Aaker (1991), a high brand loyalty leads to "a latent period for reacting competitors, a gatekeeper to come in, a shield protecting against harmful price war, and a price-premium foundation". And there are two possible indicators for measuring the brand loyalty including user satisfaction and price premium.

Price premium stands for how much a customer want to pay for the brand compared to an alternative, which is the best single indicator for measuring brand equity. This indicator can be used for segmenting the markets into three types of customers including loyal customers, brand switchers, and non-customers. In addition, the price premium of a brand could be minus compared to a higher-priced brand. (Aaker, 1996, 107)

Customer satisfaction tests the user experience of using the products; and it is useful for the customers who have already used the branded products. And the last use experience is usually investigated in terms of the focus of time frame. In addition, in the service-related business, this indicator is a powerful measurement element due to its cumulative effects of the use experience. (Aaker, 1996, 108)

2.3. The concept of CSP

In this part, there are two main sections related to CSP, including comparison among three similar concepts (CSP, CSR and CR) and previous measurement approaches to CSP.

2.3.1 CSP, CSR, and CR

The concept CSP (CSP) has been studied for around 51 years in the literatures related to social sciences, which usually mentioned together with its sister term “CSR”. The classical definition of CSP is how an organization configure the following elements to interact with the larger environment: “CSR policies, CSR programs, CSR-related outcomes, social responsiveness processes, and CSR principles, which are associated with the relationship between the firm and society.” (Wood, 1991, 693) In addition, the larger environment in the above texts means the political, economic, social, legal, cultural, and natural environments. CSP examines the harms and benefits resulting from the interactions between the larger environment and organization. (Wood, 2010)

It is believed that business and society are interconnected instead of two isolated parts like two separate close systems. Thus, in this interconnected system, the business entity is expected to do something in an appropriate manner resulting in a good outcome to the society, which is the social obligation of a firm. (Wood, 1991, 695) CSR can be defined as the corporate’s activities and position to fulfill the social obligation. (Klein & Niraj, 2004, 204) In order to distinguish CSR and CSP, it is believed that CSR is the positive part of CSP, which would have positive effect on the brand-related terms due to its halo effect. Whereas, there are corporate social irresponsibility or negative components of CSP due to the misconduct of social responsibility, which can be checked and assessed from a consumer’s perspective. (Huber et al. 2011)

It was supported that CSR has a halo effect on consumer’s perception or judgement towards not just the new product but also the consumers’ attributions such as the brand evaluation. (Klein & Niraj, 2004) It means that the CSR actions by the firm might affect and spill over consumers’ evaluation towards other unrelated things such as the brand evaluation, which they have few information about. The halo effect means that the relationship between judgement regarding one type and feeling towards other category are either connected or highly correlated. (Cooper,

1981, 218) As an example of the CSR halo effect, there are three added values of CSR from a customer perspective. Firstly, the investment on CSR send the customers a signal that the product is high qualified. Secondly, the customers treat the spending on the product of a firm with a good CSR score as an indirect donation. Lastly, customers become more aware of the company as the firm broadcasts the CSR activities in order to lead a more well-known halo effect. (The Economist, 2015)

Corporate reputation is also usually linked to and affected by the CSP. It is tested that a good CSP can lead to a positive corporate reputation among different stakeholders such as public stakeholders and financial stakeholders. It means that a good CSP can result in not just a good financial reputation but also a good public reputation. (Wang & Beren, 2015)

2.3.2 Previous measurement approaches to CSP

Based on the definition, the task of measuring CSP is to assess the degree of configuring the different components of CSP such as the principles, processes, and outcomes. There are two commonly accepted measurement framework namely Carroll's three dimensional framework and Wood's structural CSP model.

Basically, the foundation of Carroll's model is four hierarchies of CSR including legal, discretionary, economic, and ethical responsibility. And the four hierarchies are integrated with several social issues (e.g. environmental issues) as the second dimension of his model. Lastly, the methods of responding to the social issues are the third dimension of the model, including reaction, defense, accommodating, and probation. (Carroll, 1979)

However, Wood extended Carroll's CSP model to a structural framework, because Carroll ignored the complexity of the firm's social role and its effects on other social players. It is believed that there are certain consequences for the members (stakeholders, society, and the firm) in the system, which result from the actions by the firm. And the consequences for the firm is the CSP. (Wood, 2010, 53) According to the framework by Wood (1991) as shown in Figure 2, the measurement elements of CSP would be divided into three categories, including principles of CSR (public responsibility, managerial discretion, and legitimacy), processes of social responsiveness (issues management, stakeholder management, and environmental

scanning), and outcomes of CSP (effects on social systems and institutions, effects on the natural and physical environments, and effects on people and organizations). (Wood, 1991)

Firstly, as shown within the yellow box in Figure 2, there are three levels of principles of CSR, which include public responsibility, managerial discretion, and legitimacy from the highest level to the lowest level in order.

Principles of Corporate Social Responsibility	Processes of Social Responsiveness	Outcomes & Impacts of Performance
<ul style="list-style-type: none"> • Legitimacy: Institutional Principles • Public Responsibility: Organizational Principles • Managerial Discretion: Individual Principles 	<ul style="list-style-type: none"> • Environmental Scanning: Information about Environment • Stakeholder Management: Active engagement with stakeholders • Issues Management: Solve social or political issues 	<ul style="list-style-type: none"> • Effects on people and organizations • Effects on the natural and physical environments • Effects on social systems and institutions

Figure 2. Wood's Measurement Framework of CSP (Wood, 2010, 54)

Legitimacy is the institutional principle of all firms' corporate social responsibility by treating all firms as a whole standing in the society. In this level, the principle's core focus on the obligations and sanctions of any firm in the interconnected relationship with the society. It is believed that the society empower the organizations, and the firms are expected to behave appropriately for having the power. The expectation of the whole economic institutions is specified by the principle of legitimacy, which also recognize the interconnected relationship between the society and the corporates. (Wood, 1991, 695-696)

The public-responsibility principle is the organizational principle of corporate social responsibility by treating a firm as a particular entity surrounded in a detailed environment such as economic environment. In this level, the principle's core focus on the behavioral parameters of a firm in the interconnected relationship with the environment. It is believed that a firm should be responsible for first-tier and second-tier problems resulting from its status and actions of

presenting in the society. (Wood, 1991, 696-698) Managerial discretion is the expected obligation of managers who are moral actors in the firms. In this level, the principle's core is the managers' personalities, the choice of exercises acting for social responsibility, and the opportunities to be social responsible in the firms. The managers are expected to be moral and lead to a social responsible firm. (Wood, 1991, 698-699)

Secondly, social responsiveness processes is defined as the ability of a firm to react to social problems. As shown within the green box in Figure 2, there are three elements of processes of social responsiveness, which contains issues management, stakeholder management, and environmental scanning. (Wood, 1991, 703-704) Issues Management specifies the procedures of the way how a firm respond to the changing condition. For instance, the process of solving social or political issues could be one type of the response to the changing condition. Issues Management There are external and internal process for planning the solutions and developing related policies to solve the problems. And Issues Management is tightly connected with crisis management in previous corporate-behaviors researches. (Wood, 1991, 705-706) Stakeholder Management accounts for a good relationship with different stakeholders' through active engagement by fulfilling their demands. There are several stakeholder management tools such as public affairs office, community relations programs, and customer service stores. In addition, in order to have a more diffuse halo effects of firm's social responsibility, the newsletter is commonly used to broadcast the related information to the stakeholders. (Wood, 1991, 704-705)

Environmental Scanning stands for the behavior of obtaining the information about the larger environments such as the social, economic, political, and technological environments. The firm need to show their care about the different environments in the same degree of importance, which means that the firm should treat social environment and political environment the same as the other two. (Wood, 1991, 704) In addition, it is believed that a responsive firm for the society should have the above three elements of social responsiveness: the firm should keep eyes on and analyze the environment; the firm should meet the demands of different stakeholders for a good relationship; the firm should monitor, assess, analyze, and solve a social or political problems. (Wood, 1991, 703)

Lastly, as shown within the blue box in Figure 2, there are three different outcomes of corporate performance, including effects on people as well as corporates, impacts on environments, and impacts on society as well as organizations. It is believed that the firm's CSP and its outcomes are resulted from the action done by the firm and employees. (Wood, 2010, 54)

There are four aspects for evaluating the effects of CSR on different parties, including economic perspective, legal perspective, ethical perspective, and discretionary perspective. And according to Carroll's four hierarchy, in terms of the economic effects, a firm should fulfill its economic responsibility as an institution, which stands for being a profitable company. In terms of legal responsibility, a firm should follow the laws. In terms of ethical perspective, a firm should follow the social ethical guidelines. In terms of discretionary responsibility, a firm should be a well-being social actor and improve the quality of the society. (Carroll, 1979)

2.4 Analysis of previous approaches on the phenomena

In this part, there are five previous approaches for studying the connections among product-harm crisis, CBBE, and CSP. The five previous approaches include the variables for measuring the impacts of product-harm crisis, the influences of product-harm crisis on CBBE, moderator role of the relation between product-harm crisis and brand equity, the impacts of CSR in product-harm crisis, and the relation between CSP and brand equity.

2.4.1 Variables for measuring the impacts of crisis

In the previous literatures, there are four main indicators for measuring the outcomes of product-harm crisis, including purchase intention, customer perception, financial outcomes, and brand equity.

Most of the literatures regard purchase intention as the outcome of a product-harm crisis to assess its impact. For instance, Klein and Dawar (2004) studied the role of CSR in a product-harm crisis by evaluating purchase intention as the outcome indicator of the product-harm crisis affected by the CSR importance. And the term purchase intention was treated as the outcome of a product-harm crisis, which affected by the brand trust and consumers' affective identification in another study. (Lin at al. 2011) And there are also several previous studies evaluating the impacts of product-harm crisis on purchase intention. (Assiouras et al. 2013; Cleeren at al. 2013;

Cleeren et al. 2007) Rea, Wang, and Stoner (2014) tested how brand equity affects the product-harm crisis by using customer perception as the indicator for the outcome of the product-harm crisis. In this study, two laptop brands were investigated to find out the reaction of consumers towards the firm by comparing the results of high brand-equity firm and low one in product-harm crisis.

And also some financial indicators are also used as the outcomes of the product-harm crisis such as market share, stock prices, and sales revenue. For instance, In order to understand how the equity holders react to the product recall announcement, there is one study using security prices as the indicator of evaluating the changes after the crisis. It shows that there is a significant change of security prices responding to the crisis lasting two months, which leads to huge losses to the firm such as a big decrease to the sales. (Pruitt & Peterson, 1986)

Brand equity is the least used indicator for assessing the outcome of product-harm crisis. There are few studies directly using brand equity as the indicator for assessing the influences of product-harm crisis. The well-known authors on this approach is Dawar and Pillutla (2000) who investigated how product-harm crisis affects brand equity; and they found out the moderator as customer expectation for influencing the relationship between the firm's response and firm's brand equity.

2.4.2 Impacts of product-harm crisis on brand equity

The previous researches of assessing the relationship between product-harm crisis and brand equity is mostly one-way-directional, which assess either the impacts of product-harm crisis on brand equity or the impacts of brand equity on product-harm crisis. Taking an example for the latter relationship, it is tested that there is a negative consumer perception towards no matter the brand equity is high or low; however, the firm with high brand equity would have a less negative effect than that with low brand equity. (Rea et al. 2014)

In this study, the former relationship is mainly tested, and the literatures about the impacts of product-harm crisis on brand equity would be stated as below. In the previous literatures, most of the studies measure the product-harm crisis with one single factor such as the corporate's response. It is widely accepted that corporate's response strategy to the product-harm crisis has

a primary influence the customer's faith, which would consequently affect the brand equity. (Aaker, 1991) As shown in Table 2, there are certain literatures assessing the organizational response as a key factor influencing the impact of product-harm crisis on brand equity.

Table 2. Examples of impacts of organizational response on brand equity

Authors	Unit of analysis	Research method	Results
Siomkos & Mlliaris (1992)	384 students	Experimental study	A super effort responding to the crisis leads to a higher brand equity, which prove the firm to be more honest and concerned.
Dawar& Pillutla (1997)	171 respondents	Two Experimental studies	Compared to a firm with an unambiguous response, the firm with an ambiguous response would have a negative influence on the brand equity. A firm with an ambiguous response would have a lower brand equity than that with a no-crisis control condition.
Dawar& Pillutla (2000)	218 coffee buyers in Europe	Telephone interview and two laboratory experiments	Brand awareness might increase among the loyal users compared to the other-brand users after the crisis. The negative impacts of crisis on brand equity would be seriously high, while enterprise's response is either ambiguous or disconfirmed. Whereas, the post-crisis brand would be the same as pre-crisis, if the response is unambiguous.
Hegner, Beldad, Heghuis (2014)	187 people living in Netherland	Experimental study	The ways of organizational response affect brand equity. The denial and no-response have a negative impact on brand equity, especially on the brand loyalty. Whereas, there are certain methods of responding resulting in a higher post-crisis brand loyalty, including diminishing, rebuilding, and bolstering response strategy.

However, there are also few researches using a multi-factors to assess the product-harm crisis in a crisis-and-brand related studies. For instance, negative publicity and blame response strategy are used as the characteristics of a product-harm crisis in one research. And the study examines the effects of advertising and pricing strategies on customer behaviors (e.g. brand share) by comparing the changes before crisis and after crisis. It shows that there would be no damage to the brand if the firm acknowledge the blame of the crisis. In addition, it is believed that the firm should increase the spending on advertising while the extent level of negative publicity is high. (Cleeren et al. 2013) Another example is for negative publicity and time, which are together used as the multi-characteristics of crisis for assessing the impact on brand equity.

As a result, customers attached with a high brand loyalty seems to be less sensitive to the negative publicity for the brand's crisis. And there is a significant negative connection between negative publicity and time, which indicate that the time will make customers forget the negative information due to the product experience. Whereas, brand advertising from a firm seems be effective for the high-brand-equity firm in a crisis rather than the low one. In addition, the term brand familiarity is proven to dramatically negatively influence the outcomes of the crisis as well. (Clreeren et al. 2008)

2.4.3 Moderator roles

In the previous literature, there are moderator role affecting the relationship between product-harm crisis and brand equity, including Firm Reputation, Consumer Expectation, and Pre-crisis brand trust. (Dawar& Pillutla, 1997; Dawar& Pillutla, 2000; Hegner et al. 2014)

Firstly, the connection between corporate's response strategy and its impacts on brand equity is moderated by the corporate reputation. To be more specific, there would be negative damages to a firm's brand equity, if the firm with no prior reputation among the public act to the crisis with an ambiguous response. However, the brand equity might increase with a great support for the brand (e.g. advertising the response after the crisis) during the product-harm crisis, if the firm has a high reputation. In addition, it is believed by the authors that the crisis is both an opportunity and a threat to the firm, which depends on where the firm put the role of the brand because the crisis generates great potential brand awareness. (Dawar& Pillutla, 1997)

Secondly, the authors apply the expectation and evidence framework to test the moderating effect of consumer expectation, which would affect the relationship between firm's response and the brand equity. It is supported that there would be a significant different impacts of crisis's response on brand equity if the customer's pre-crisis expectation is different. To be more specific, a strong positive expectation might ensure the safe of the brand equity under the harm of the product-harm crisis. No matter the response strategy is an unambiguous response or ambiguous response, the loss of the brand equity for a firm with a strong consumer expectation would be smaller than that with a weak consumer expectation. For instance, there will be less loss of brand equity with an unambiguous support response and strong positive expectation,

compared to that with an unambiguous support response and a weak expectation. (Dawar & Pillutla, 2000)

However, in the weak expectation condition, the baseline of the negative impacts on brand equity is shown. In details, the negative impacts of crisis on brand equity would be seriously high, while enterprise's response is either ambiguous or disconfirmed. Whereas, the post-crisis brand would be the same as pre-crisis, if the response is unambiguous. All in all, it is believed by the authors that firm's responses would not be enough to estimate the crisis's impacts on brand equity, but the customers' expectation would play a key role of moderating the impacts. (Dawar & Pillutla, 2000)

Lastly, the study showed that pre-crisis brand trust can be treated as a shield to weaken the negative impacts of product-harm crisis on the brand equity. To be more specific, the high pre-crisis brand trust can maintain all four brand-equity items in a higher level than the low-brand-trust firm's brand equity. It means that brand trust can protect the brand equity during and even after the product-harm crisis. Therefore, it is believed that the enterprise should invest a lot to increase its brand trust for a quicker recovery and less negative consequence from the product-harm crisis. (Hegner et al. 2014)

2.4.4 The impacts of CSR in product-harm crisis

There are several impacts of CSR on the results of a product-harm crisis, which are proven in the previous studies as stated in the following part. In a product-harm crisis, the consistent CSR manners (environmental protection and fairly treating the minorities) could limit and weaken the negative effects of a product recall such as the purchase intention. And firms can use CSR as a strategic tool to manage effectively the crisis for minimizing the harmful consequences. (Vassilikopoulou et al. 2009, 67) What's more, it is verified by an experimental study that CSR can affect positively the blame attribution of a crisis and brand evaluation but CSR cannot change the consumer's perception about the danger. In addition, CSR can positively affect customers' attitudes and reaction for the brand in general. To be more specific, customers would rate the brand higher after the CSR information is shown compared to the condition that CSR information is not presented. (Assiouras et al. 2013)

In addition, it is empirically supported that a negative CSR has a bigger influence on the outcome of the product-harm crisis such as the brand evaluation and product attributions, And CSR has a bigger effects on brand evaluation than the influence of economic elements (e.g. product attributes) on brand evaluation. In addition, CSR acts as a mediating role in relation between brand evaluation and blame of a product-harm crisis. And this “halo” effect spill over the judgement about the blame, which consequently affect the judgment about the firm’s brand. The prior CSR perception can affect stably the blame for the product-harm crisis to a lesser extent. Lastly, customer’s attitude to CSR play a key role of this mediating effect: all consumers care about the blame while the CSR is negative; however, only those who have a strong care about CSR would care about the blame when the CSR is positive. (Klein & Dawar, 2004)

Lastly, there is a strong moderating effect of CSR affecting the relation between the negative publicity of a product-harm crisis and post-crisis affective identification. This moderating effect of CSR is empirically tested by 477 working professionals through a field survey in Taiwan. It is suggested that the buffering effect of CSR lead to a vulnerably damaged connection and negative publicity and the affective identification of consumers if the CSR is low. Whereas, if the CSR is high, the negative publicity would less damage the affective identification (the company image in the consumers’ mindset). (Lin et al. 2011)

2.4.5 The CSP and brand equity

There are certain approaches to investigate the relation between CSP and Brand Equity. Firstly, the financial perspective is the main angle to investigate the connection between CSP and brand equity, which aims to understand how the financial performances are related to CSP and brand equity. Usually, the brand value is an important indicator for evaluating the brand equity as an angle of assessing a firm’s a financial performance. For instance, the financial-based brand equity equals to the brand value divided by the total assets. As a two-way-approach research, the two-way relationship between CSP and financial-based brand equity is empirically assessed by using secondary data of several global brands. As a result, prior CSP leads to a higher brand equity; whereas, financial-based brand equity can positively affect financial-based brand equity only when the firm size is very large. (Hui-Ming, 2010)

And the positive effects of CSP on a small firm's brand equity can be larger than that on a large firm's brand equity. (Hui-Ming, 2010) In a conclusion, the CSP initiatives usually have long-term influences on the financial-based brand equity (e.g. brand value). CSR initiatives and investments have a positive effects on financial-based brand equity, which is moderated by the firm size - the bigger size of a firm, the bigger impacts of CSR on brand equity. (Hui-Ming, 2010; Melo & Galan, 2010) The differences in CSR perception and the changes brand equity is strongly positively moderated by marketing capabilities, which is an indicator of the firm's financial performance.(Nguyen & Oyotode, 2015)

Secondly, there are certain approaches of investigating the impacts of CSP on brand equity, including the six means of corporate societal marketing for building a higher brand equity, promoting effects of CSR initiatives on brand equity, and indirect impacts of CSR programs on brand equity. There are six means of CSR for building a better brand equity through corporate societal marketing, including leading to brand engagement, building brand-community atmosphere, creating brand awareness, improving brand image, raising brand senses, and building brand credibility. (Hoeffler & Kevin, 2002) Corporate societal marketing can be defined as " its objective of marketing initiatives have any chance related to related to social welfare by allocating the resources of a firm or its partners". (Drumwright & Murphy, 2001, 164)

In terms of leading to brand engagement, consumers start to be willing to spend time and resources (e.g. money and energy) on the brand and brand-related activities, which indicate the increasing brand loyalty. As an example of eliciting brand engagement resulted from CSR activities, the strategic volunteerism enables consumers to act as volunteers for working together with employees as the brand's representatives. In terms of building brand-community atmosphere, three main identifications with a brand community can be given the consumers including moral responsibilities, rituals as well as convention, and a share consciousness. The relationship between the consumers and the brand would be enhanced by those senses resulted from CSR activities, which leads to a different judgements and feelings towards the brands and the people involving in a brand community. (Hoeffler & Kevin, 2002)

In terms of creating brand awareness, it is suggested that the CSR activities should enhance the brand's recognition for building brand awareness by creating the connection between brand and product attributes. In terms of improving brand image, there are two types of brand association enhanced by corporate societal marketing programs for having a stronger favorable brand differentiation including user profiles and brand personality. In addition, CSR activities could lead to a positive image of brand-related consumers that they are kind and generous by doing nice things, which can be stated as the imagery association with the user profiles. (Hoeffler & Kevin, 2002)

In terms of raising brand senses, there are two types of positive brand feelings successfully applied to CSR activities, including social approval and self-respect. As a result of CSR activities, social approval enhance the users' favorable user imagery for the brand while CSR activities create external symbols or signal affiliations to other consumers on users' appearance or behaviors. As an internal reflection on CSR activities, self-respects from consumers would be created while consumers feel better about themselves for feeling the participation in the program. (Hoeffler & Kevin, 2002) In terms of building brand credibility, there are three factors for describing brand credibility resulted from CSR activities, including expertise, trustworthiness, and likability. Those three factors are all positively affected by CSR activities, since consumers assume that the firm care more about consumers being more dependable and more likely "doing the right things" as the firm spends more money on CSR activities. (Hoeffler & Kevin, 2002)

In terms of CSR steps' advertising effects on brand equity, there are two types of effects, including statistical promoting effect and convincing advertising effect. The statistical advertising effect defines the direct influence of CSR initiatives on brand equity. There is a positive persuasive advertising effect, which is indirect positive influence of CSR initiative on brand equity through customer satisfaction. (Hsu, 2012) It is also supported that a significant positive impact of CSR on brand equity and customer perception; and brand equity mediate the relation between the other concepts. (Staudt et al. 2014)

In addition, there are several indirect impacts of CSR initiatives on brand equity, including a preferred brand evaluation, a stronger customer identification, and a better customer satisfaction.

(Brown and Dacin, 1997; Luo and Bhattacharya, 2006; Sen and Bhattacharya, 2001) It is found that CSR associations can affect product evaluations through the impacts of CSR on corporate brand evaluation. To be more specific, a negative CSR would be harmful for overall product evaluation through a decrease corporate brand evaluation; whereas positive CSR associations would positively influence overall product evaluation. (Brown and Dacin, 1997)

As a strategic return on CSR activities, a stronger customer identification would appear resulting from the increase CSR awareness among stakeholders. It is proven that individuals who have a closer connection with the firm, would be more aware of the CSR initiatives compared to other stakeholders. And it is suggested that a common instrument should be used to enhance the customer identification for all stakeholders' shared attitudes and mind-sets towards the brand. (Sen & Bhattacharya, 2001) It is empirically tested that, in general, CSR initiatives can result in a better user satisfaction, which mediate the relation between CSR and firm performance. Whereas, a firm with low innovativeness capability could have a converse condition: CSR initiatives results in a decrease customer satisfaction. (Luo & Bhattacharya, 2006)

Lastly, the specific connections between the elements of CSR and that of brand equity is empirically tested. Ethical CSR is found tightly connected with higher brand equity. As a key driver of brand equity, brand ethics are strongly associated with the development of brand equity, which leads to a better corporate reputation resulting a more ethical brand as a return. And ethical CSR is highly recommended to concentrate on building a firm's social competency, which would result in a more loyal consumers and better brand equity. (Luu, 2012) In addition, it is found that CSR halo effect cannot offset the negative results related to the brands such as low perceived brand quality. (Tingchi Liu et al. 2014) As a conclusion, it is shown in Figure 3 (in the next page) that the map with previous approaches to the relations among product-harm crisis, CSP and brand equity.

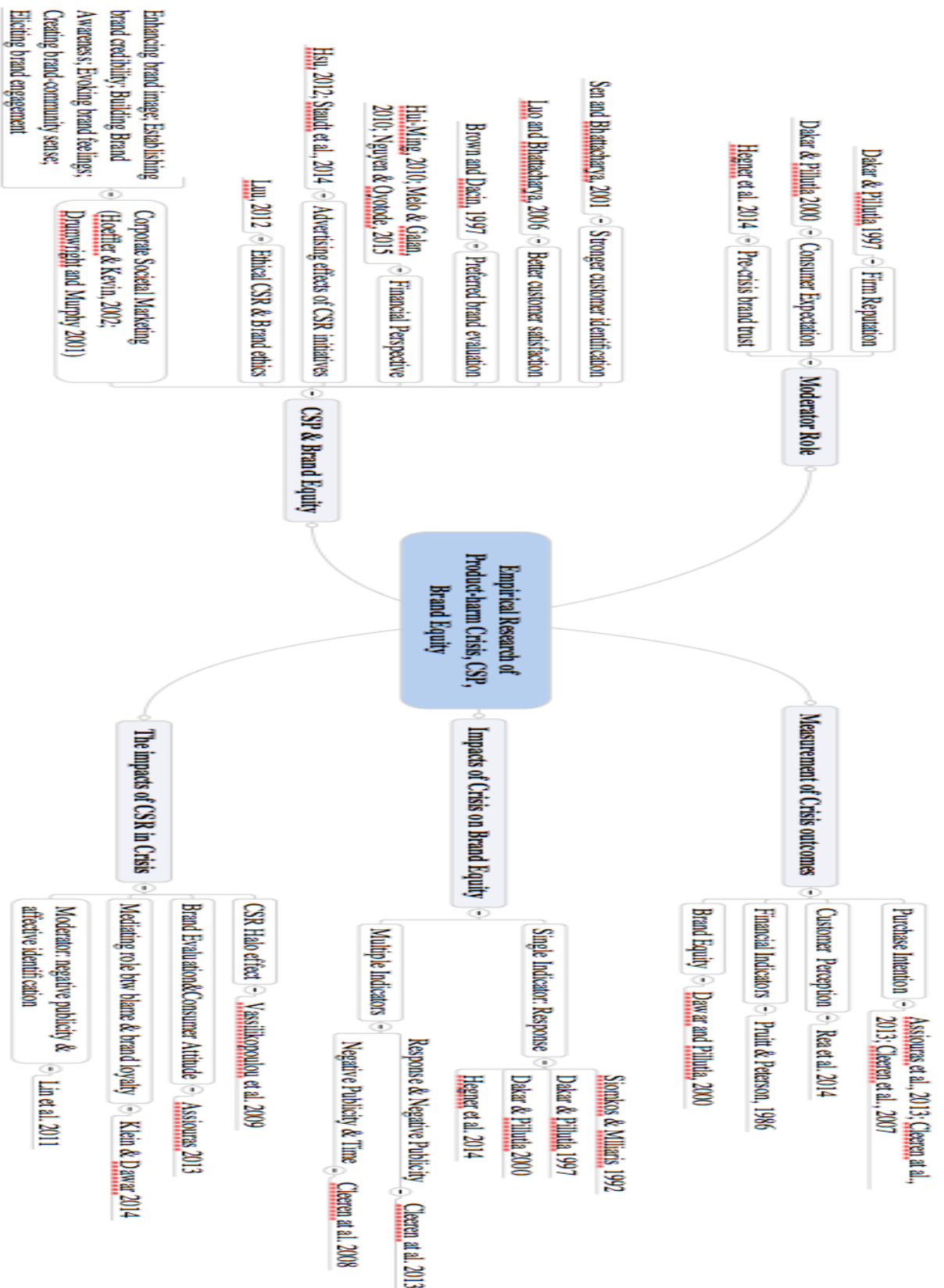


Figure 3. The map of Pre-approaches related to the topic

3. RESEARCH FRAMEWORK

As one of the biggest disaster for a firm, the concept “product-harm crisis” become a hot topic to study in the marketing scholar in the recent years. The classical way of defining the concept product-harm crisis is “a well-known event resulted from defective or even harmful products”. In order to understand how it would affect a firm’s performance, there are certain popular chosen indicators of assessing the outcomes in the previous researches such as purchase intention and financial-based brand equity.

However, there are few researches using CBBE as the outcome indicator of product-harm crisis. In this study, in order to understand the impacts of product-harm crisis on a firm in a consumer-level, the concept “CBBE” is chosen as the outcome indicator of product-harm crisis.

According to the previous approaches to the relationship between product-harm crisis and brand equity, the product-harm crisis could decrease several factors related to brand equity including consumer evaluation, consumer expectation as well as consumer perception, company credibility, brand loyalty, attitude towards the brand and so on. (Rea et al. 2014; Cleeren et al. 2013; Dawar & Pillutla, 2000)

On the one hand, it is believed that consumer evaluation and expectation towards the brand are weaken by the product-harm crisis, which would further negatively affect the brand equity. On the other hand, product-harm crisis could lead to a partial loss of brand equity such as decrease company credibility, decrease brand attitudes and decrease brand loyalty, which are the direct relative elements of brand equity. To put it in another angle, there are indirectly and directly impacts of products-harm crisis on brand equity in a negative way.

Therefore, taking those negative effects of crisis on brand equity into consideration, it could be assumed that product-harm crisis would negatively affect the brand equity. Thus, the hypothesis 1 can be formulated in the following way:

Hypothesis 1: There is negative relationship between Product-harm crisis and Brand Equity.

In the previous studies, there are six commonly accepted factors of influencing the product harm crisis management, including company reputation, external effects (negative publicity), organizational response, time, severity, and the types of victims. In order to solve the first research problem “How a product-harm crisis would influence the CBBE”, the previous researches usually use one single indicator to assess characterizing a product-harm crisis. And the most common used indicator is organizational response. (Siomkos & Mlliaris, 1992; Dawar & Pillutla, 2000; Hegner et al. 2014)

However, there are also few researches using a multi-factors to assess the product-harm crisis in a crisis-and-brand related studies. In this study, there are two chosen indicators of characterizing a product-harm crisis (severity level and blame acknowledgement) in order to understand the impacts of a product-harm crisis’s relative elements on brand equity. Because the purpose of this study is to test the impact of product-harm crisis on the brand equity from a consumer’s perspective, the study should focus on the condition of harm itself rather than external effects or factors. In addition, it is important and controllable for a firm to know the effects of the action how a firm response to the product-harm crisis for overcoming it.

According to the previous approach to test the relationship between severity level and brand equity, it is supported that different severity levels of crisis could affect the relative elements of brand equity to different level. Taking consumers’ reactions and attitudes for instance, it is found that high-level severity would lead to a less favorable evaluations among consumers compared to low-severity condition. (Vassilikopoulou et al. 2009, 67) In addition, the severity level would affect the way how a firm response to the blame of the crisis. (Kelly & Campbell, 1997)

Therefore, taking those decrease negative effects of severity level on brand equity into consideration, it can be assumed that if the firm with high severity PH crisis would have a lower brand equity than the firm with low severity. Thus, the hypothesis 1b can be formulated in the following way:

Hypothesis 1a: *The high-severity crisis leads to a bigger loss of brand equity than the low-severity crisis.*

According to the previous approach to test the relationship between blame acknowledgement and brand equity, it is supported that different types of blame acknowledgement would lead to different impacts on relative elements of brand equity. For instance, brand's market share would be not negatively affected if the blame must be acknowledged; whereas, it would be negatively affected if the blame must not be acknowledged. (Cleeren et al. 2013) Also, as the type of blame which must not be acknowledged, the denial and no-response have a negative impact on brand equity, especially on the brand loyalty. (Hegner et al. 2014) In addition, the negative effect of crisis on brand equity would be seriously high, while enterprise's response is either ambiguous or disconfirmed. And compared to a firm with an unambiguous response, an ambiguous response would lead to a negative changes of the brand equity. (Dawar & Pillutla, 2000)

Therefore, as a conclusion, in the condition that blame must be acknowledged, the relative elements of brand equity would be positively affected; on the converse, the relative elements of brand equity would be negatively influenced by the blame acknowledgment during the product-harm crisis. Therefore, taking those negative effects of blame acknowledgment on brand equity into consideration, it could be assumed that blame acknowledgment can protect brand equity during the product-harm crisis. Thus, the hypothesis 1b can be formulated as below:

Hypothesis 1b: The blame acknowledgement of product-harm crisis is positively related to the brand equity.

It is believed that a firm's response alone is not enough to predict the impacts of product-harm crisis on brand equity; and there are certain tested moderators of influencing the relation between product-harm crisis and brand equity in the previous researches, including firm reputation, consumer expectation, and pre-crisis brand trust. As the first moderator, prior firm reputation is tested to protect the brand equity from the harm of the crisis. (Dawar & Pillutla, 1997) And it is believed that consumers' expectation is a key moderator as the consumers search the firm's response information which match to the expectation in their mind-set. (Dawar & Pillutla, 2000) Lastly, the pre-crisis brand trust can act as a moderator to weaken the negative influence of product-harm crisis on the brand equity.

Furthermore, those three moderators are all directly connected to CSP. In details, it is tested that a good CSP could lead to a good firm reputation among different stakeholders. (Wang & Beren, 2015) And there is a halo effect of CSR on customers' expectation, which specify the spill-over effect of CSR on consumer's expectation. In addition, CSR programs could enhance brand image and evoke brand feelings, which would indirectly affect the pre-crisis brand trust among consumers. (Hui-Ming, 2010) Thus, it is proven that CSP could indirectly affect the relation between product-harm crisis and brand equity through the tested moderators (firm reputation, consumer expectation, and pre-crisis brand trust).

In addition, there are several tested impacts of CSR in a product-harm crisis, including limiting the negative effects of a crisis on purchase intention, positive effects on brand evaluation plus brand attitudes during a crisis, and a mediating role on relationship between brand evaluation and blame of a product-harm crisis. (Vassilikopoulou et al. 2009; Assiouras et al. 2013; Klein & Dawar, 2004)

What's more, there are several tested positive impacts of CSR on brand equity in a direct and indirect way, including a stronger customer identification, building brand awareness, enhancing brand image, leading to brand engagement, building brand-community atmosphere, creating brand awareness, improving brand image, raising brand senses, and building brand credibility. (Hoeffler & Kevin, 2002; Sen & Bhattacharya, 2001; Luo & Bhattacharya, 2006; Brown & Dacin, 1997)

As a conclusion of the relation among CSP, product-harm crisis, and brand equity, it can be assumed that CSP could positively affect the relation between product-harm crisis and brand equity. It means that a firm with a high CSP could obtain a less loss of brand equity due to a product-harm crisis compared to the firm with a low CSP. Thus, the hypothesis 2 can be formulated as below:

Hypothesis 2: The higher level of CSP, the lower impacts of product-harm crisis on brand equity

As a conclusion, based on the theory and previous empirical research on the phenomena, this study develops certain hypotheses, which are summarized and shown in the research conceptual framework in Figure 4.

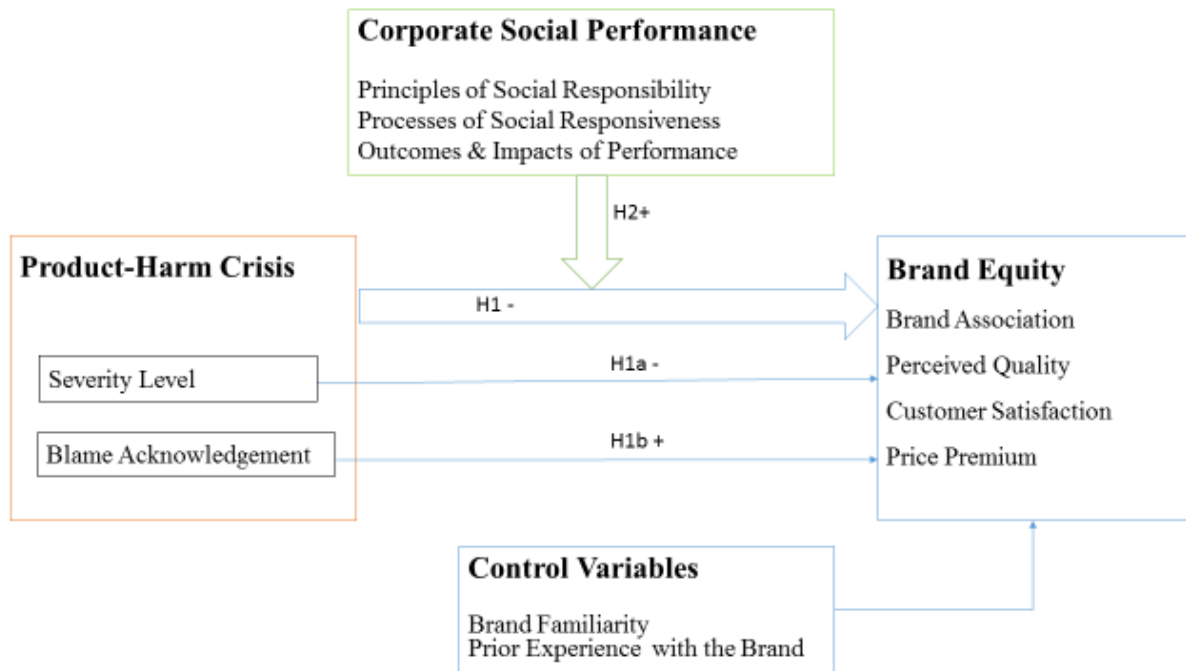


Figure 4. Research Framework of this study

All in all, the following hypotheses are empirically tested in the empirical part:

Firstly, the study investigate how product-harm crisis can affect brand equity. And it is supposed that product-harm crisis has a negative correlation with brand equity, which stands for the hypothesis that the value of pre-crisis brand equity is higher than that of post-crisis brand equity. (H1)

Secondly, as two sub-hypotheses generated from the first hypothesis H1, it is assumed that blame acknowledgement of product-harm crisis would positively related to the brand equity; and the high-severity crisis leads to a bigger loss of brand equity than the low-severity crisis. (H1a, b)

Lastly, the hypotheses about the moderating role of CSP in the relation between product-harm crisis and brand equity is tested. (H2)

4. RESEARCH DESIGN AND METHODS

In this chapter, there are four main parts, including empirical research overview, data collection methods, data analysis methods, and reliability as well validity.

4.1. Research overview

The aim of the thesis is to investigate the impacts of a product-harm crisis on CBBE by simultaneously involving CSP (CSP) as a moderator. In order to study the impacts of product-harm crisis, the focus of this empirical research is the consumers' attitudes towards brand before and after a product-harm crisis. To be specific, the results of this empirical study should find out the causal links between a change in the characteristics of a product-harm crisis and a change in the brand equity. In addition, the results should also find out the role of CSP played in the causal links between a product-harm crisis and brand equity. As shown in Figure 5, the main procedures of this empirical study are conducted in order to obtain the above mentioned results.

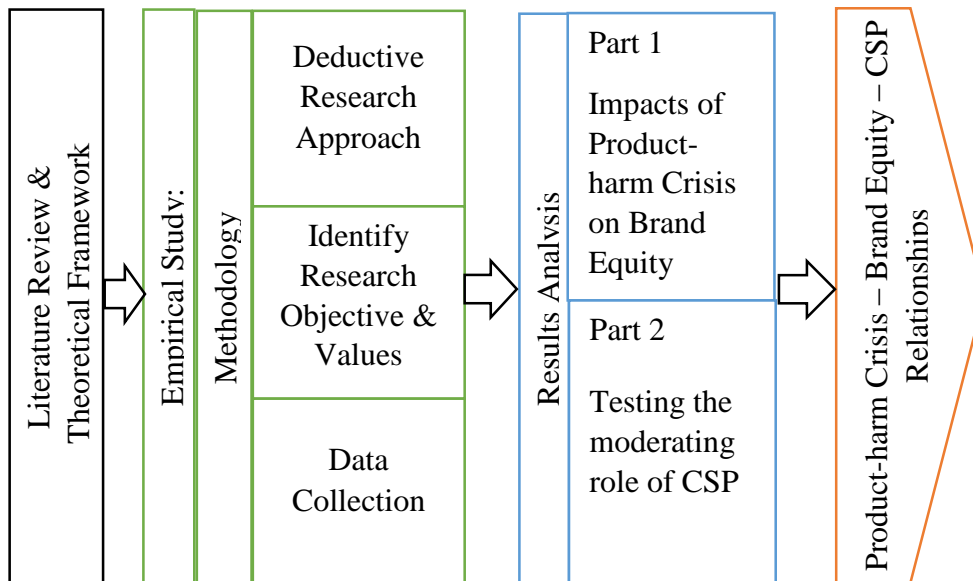


Figure 5.Main steps of Empirical Study

In this study, the quantitative research method is chosen as the research methodology, which is determined by the research questions and research aims. The research questions investigate the relationships among product-harm crisis, brand equity, and CSP, including “How the product-harm crisis can affect the CBBE” and “How CSP would affect the relationship between the

product-harm crisis and CBBE”. In order to answer the above research questions about the relationships among the three variables, the data related to the three variables should be collected and analyzed through quantitative methods.

As a deductive approach, this research starts with literature reviews for understanding previous theory about the three concepts and the connections among them, which leads to create certain hypotheses as stated in the conceptual framework part. The hypotheses include: Hypothesis 1a “The high-severity crisis leads to a bigger loss of CBBE than the low-severity crisis”; Hypothesis 1b “the blame acknowledgement of product-harm crisis is positively related to the brand equity”; Hypothesis 2 “The higher level of CSP, the lower impacts of product-harm crisis on CBBE”. In order to test the hypotheses, an experimental study was conducted to collect the related data. Experiment is a research form for studying the causal links between variables; for instance, the aim of an experimental study could be investigate whether a change in an independent variable leads to a change in another dependent variable. (Saunders et al. 2009, 142)

4.2. Data collection methods

For this study, four different imaginary crisis scenarios were created based on two characteristics of a crisis “crisis extent level (severity)” and “blame acknowledgement”. The four scenarios includes the blame of a high-severity crisis acknowledged by a firm, the blame of a high-severity crisis unacknowledged by a firm, the blame of a low-severity crisis acknowledged by a firm, and the blame of a low-severity crisis unacknowledged by a firm. Research respondents were randomly selected to one of the four fictional crisis scenarios.

The experimental study was conducted through the students in the universities and polytechnics in Finland. The online surveys are mainly distributed to students in Finnish higher-education institutions through Facebook contacts and Facebook open group; in addition, initial Facebook contacts were asked to refer the surveys to additional respondents for snowballing sampling. In the end, there are 198 respondents, including 69 Finns and 129 international students. And the survey was designed during the period from 23.3.2016 to 6.4.2016; and it was put into Qualtrics online platform as online questionnaire in the date of 7.4.2016. The duration period of collecting data is 18 days from 7.4.2016 to 24.4.2016.

The data of the experimental study is collected through two questionnaires – one for BMW and the other for Ford – that show consumers' response to the CSP, the brand, and the product-harm crisis. The contents of two questionnaires are almost the same except that the company name is different. It includes the CSP dimensions, pre-crisis brand equity, product-harm crisis descriptions, post-crisis brand equity, and background information. There are five sections in the survey, which is designed for the empirical study, including:

1. The first part includes CSP measurement questions, which is based on the measurement framework of CSP conceptualized by Wood (2010);
2. The second part includes pre-crisis CBBE measurement questions, which is formed according to the measurement framework of CBBE conceptualized by Aaker (1991);
3. The third part describes the product-harm crisis conditions, which is based on two dimensions “crisis extent level (severity)” and “blame acknowledgement” conceptualized by Coombs (1998) and Cleeren et al.(2013) correspondingly;
4. The fourth part includes post-crisis CBBE measurement questions, which is based on the measurement framework of CBBE conceptualized by Aaker (1991);
5. The last part includes the background information such as gender, education background, brand familiarity, and the prior experience with the brand.

The quantitative survey is schematically shown in Appendix 1 in the end of the papers. Hereinafter, the measurement techniques for above variables are stated based on different theories. There are two control variables related to brand including brand familiarity, and prior experience to the brand, which have strong influences on brand-equity evaluation. (Rea et al. 2014) In terms of measuring the brand familiarity, five-point Likert Scale is used to test the level of familiarity with one item from consumers' perspective. According to Vagias (2006), five-point Likert Scale for the level of familiarity from 5 to 1 could refer to extremely familiar, moderately familiar, somewhat familiar, Slightly Familiar, and not at all familiar correspondingly. In terms of measuring the prior experience to the brand, a multiple-choice question is used to investigate whether the respondent own or owned a BMW/Ford car.

There are two variables for identifying demographic characteristics such as gender and education, which are used to test the randomization for the crisis. (Hegner et al. 2014) In order

to conclude the education background of the respondents, a multiple-choice question is used, which consists of “Middle School”, “High School” “Bachelor”, “Master or above”.

The three abstract concepts (product-harm crisis, CSP and CBBE) are operationalized in order to evaluate and measure in a quantitative way. And different scales are used for transferring the abstract concepts to empirical values. As stated in the literature review part, there are several characteristics for identifying a product-harm crisis, including external effects, organizational response, time, severity, and the types of victims. Because the aim of this study is to test the effects of product-harm crisis on the brand equity from a consumer’s perspective, the measurement should focus on the condition of harm itself. In addition, the empirical implications are related to the question how should firm react the product-harm crisis for overcoming it.

Therefore, in order to identify the product-harm crisis in this study, there are two selected crisis characteristics, including the crisis extent levels (severity) and the blame acknowledgement. Coombs (1998) used two levels of crisis severity to describe the extent level including minor with trivial damage and severe crises. In this study, high and low severity are the two values of distinguishing the crisis severity. As a high severity, certain elements are included in the imaginary car rear-end collision scenarios including accidental product-harm crisis, victim location closing to the respondents, serious damages to the people “the death of 20 people and big traffic chaos”, serious harm to the environment “polluted air and water” and (Coombs, 2007) As a low severity, the car seat belts were not equipped resulting in a nobody-was-hurt result.

Acknowledged blame and unacknowledged blame are used to stand for the two types of organizational response. (Cleeren et al. 2013, 61) For an acknowledged blame, super-effort organizational response was used to describe the firm’s response, which has several elements including instantly product recall, compensations to the victims “life-time 30% discounts or 20000 euros/victim”, and efforts to save the environment “half a million euros for cleaning the polluted environments” . In this study, in order to state unacknowledged blame, the negative publicity was combined with organizational responses to describe and compare the firm’s reaction. In details, the firm did not acknowledge the responsibility with a denial response.

However, as a comparison, there are certain negative publicities stating that the firm should take the responsibility for the accidents or negligence.

The CBBE is measured by four items based on the framework about CBBE conceptualized by Aaker (1991), including brand association, customer satisfaction, price premium, and perceived quality. Five-point Likert Scale is used to test the level of agreement on three statements representing brand association, perceived quality, and customer satisfaction correspondingly. According to Vagias (2006), five-point Likert Scale for the level of agreement from 5 to 1 could refer to strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree correspondingly.

In terms of brand association, the statement for scaling the consumers' feeling towards the organizations is "Ford/BMW is an organization I would trust". In terms of perceived quality, the statement for scaling the brand's perceived quality compared to alternatives is "The quality of Ford/BMW cars is extremely high". In terms of customer satisfaction (brand loyalty), the statement for scaling the user experience of using the products is "I would recommend Ford cars to my friends". In order to understand how much values attached to the brand, the measurement method of price premium is a single-choice question, which aim to ask respondent whether would pay more or same money to buy a BMW/Ford car with the same quality and attributes.

Wood (1991) conceptualize the CSP with three dimensional framework, including social responsiveness processes, CSR principles, and CSR outcomes. In this study, the specific firms are chosen as the research target, so the public responsibility principle in an organizational level is the chosen variable for measuring the firm's responsibility. The social responsiveness processes includes issues management, stakeholder management, and environmental scanning ability. And as this study focus on the organizational level, according to the sample CSR principles made by Wood (1991), the measurement criteria for evaluating the outcomes of CSR in an organizational level could be evaluated from economic, legal, ethical, and discretionary perspectives. In this study, there are eight items for evaluating CSP, including public responsibility, environmental scanning, stakeholder management, issues management, economic outcome, legal outcome, ethical outcome, discretionary outcome. And five-point Likert Scale is used to test the level of agreement on eight statements representing eight items.

In a conclusion, the measurement scales and values of the three abstract concepts “product-harm crisis, CBBE, and CSP” are shown in Table 3.

Table 3. Scales and values of key variables

Variables	Elements	Scale/Value	References
Product-Harm Crisis	Severity Level	High, low	Coombs (1998) Coombs (2007)
	Blame Acknowledgement	Yes, NO	Cleeren et al. (2013)
CBBE	Brand association	5-point Likert scale	Aaker (1991)
	Perceived quality	5-point Likert scale	
	Customer satisfaction	5-point Likert scale	
	Price premium	High, Low	
CSP	Public responsibility	5-point Likert scale	Wood (2010)
	Environmental scanning	5-point Likert scale	
	Stakeholder management	5-point Likert scale	
	Issues management	5-point Likert scale	
	Economic outcome	5-point Likert scale	
	Legal outcome	5-point Likert scale	
	Ethical outcome	5-point Likert scale	
	Discretionary outcome	5-point Likert scale	

4.3. Data analysis methods

The observed data was analyzed with the aid of SAS Software Enterprise Version, which is developed by SAS Institute Incorporation. There is a code book in order to transform the observed data to numerical data, which can be used and analyzed in SAS software. And the coding process strictly followed the four-step coding procedures. (Saunders et al. 2009, 385 – 391) The codebook is attached in the Appendix 2 in the end of this paper. And the related codes for each data analysis in SAS software is shown in Appendix 3. Hereinafter, this part is divided into three main sections including the analysis methods of basic statistics conclusion, factor analysis method, and the analysis methods of testing the hypothesis.

There certain techniques used in order to conclude the observed variables’ basic statistics and interconnections, including frequencies, percentage, mean, maximum values, minimum values, standard deviation, and correlation analysis. In order to collect the descriptive information, one-way frequencies is used for counting the amount of four crisis –scenario cases. As a result for the percentage analysis, there are two main percentages, including the male-to-female rate for testing the sampling across gender and the rate of low education to high education for testing

sampling across education. As a result for the mean analysis, there are two main means to be analyzed, including overall level of all respondents' brand familiarity and that of prior experience to experience. As a result for the standard deviation analysis, it is used to analyze the uncertainty of the experimental study and the sample data. Lastly, the range of observed variable values can be seen from comparing the minimum and maximum values.

In terms of the correlation analysis, it is used to analyze the weight and path of connections among the variables as well as checking the correlations of CSP items for factor analysis. For the correlation analysis, there are several observed variables, including eight items of CSP, four items of Brand Equity before as well as after crisis, severity, and prior experience to brand. In terms of factor analysis, it is potential to reflect eight CSP items with a reduced amount of hidden variables. The factor analysis is used to find potential structures from the set of eight CSP items by reducing the amount of variables. Since it is worth to group the sub-variables from one framework as the inter-items might strongly correlate with each other, the inter-dependence of variables is considered for the further analysis such as the regression analysis. (Child, 2006)

Regarding the factor analysis method, the principal component factor analysis is used in this study. And there are certain important steps for proceeding, including checking assumptions, selecting extraction methods, deciding the number of factors, selecting rotation method. Taking checking assumptions for instance, the MSA is computed with Kaiser's measure of sampling adequacy; and it is needed that the inter-items correlation should be smaller than the original one. (SAS, 2016) Generalized Linear Model (GLM) for regression analysis is used to analyze the pre-crisis condition, including classification variables (car type, gender, education background, familiarity, and prior experience to the brand) and independent variables (new variables of CSP from factor analysis) for assessing their effects on the dependent variables "pre-crisis brand equity".

In terms of testing the hypotheses, T-test and Generalized Linear Model (GLM) for regression analysis are mainly used in this study. In order to test the Hypothesis 1 "*The Product-harm crisis negatively affects Brand Equity*", the paired T-test is used by comparing the mean of pre-crisis brand equity and that of post-crisis brand equity. For numerical variables, in order to estimate the value from a dependent variable from independent variables, the regression analysis would

be conducted by calculating a regression equation. (Saunders et al. 2009, 462) In this study, the GLM procedure is conducted through SAS with the least squares method to fit GLM in order to testing Hypothesis 2 “*The higher level of CSP, the lower impacts of product-harm crisis on CBBE*”, the Hypothesis 1a “*The high-severity crisis leads to a bigger loss of brand equity than the low-severity crisis*”, and the Hypothesis 1b “*The blame acknowledgement of product-harm crisis to a less loss of CBBE than the blame unacknowledged crisis*”.

To be more specific, the dependent variable is the changes of brand equity between before and after crisis. The quantitative variables include CSP new items from factor analysis and amiability. And the classification variables include severity, blame, and prior experience to the brand, education, gender, and car type. And interaction effects between blame and severity would be added due to the created form of four crisis scenarios. In terms of sums of squares, Type III would be used for the unbalanced data and design. And in terms of the effects to estimate, the Post hoc-tests would be added to the classification variables and interaction group; and the Bonferroni is used as the adjustment method for comparison.

4.4. Reliability and validity

The reliability states to the extent that the research can create constant research results by using appropriate data collection and data analysis methods. Usually, the reliability measurement results should answer three main questions, including “Will the measures have the same results in other contexts? Will other researchers have the similar measurement results? Is there any transparency for the data analysis process?”(Saunders et al. 2009, 156) In addition, the reliability measurement can be done from three aspects, including possible unreliability, reliability test, and reliability enhancement. (De Vaus, 2002)

Firstly, in order to diminish the possible unreliability of the survey, it is important to double check the questionnaire before formally sending it to the respondents. The pilot testing technique can increase a survey’s usability and reliability. There are certain specific aims of implementing a pilot testing, including checking the formats on a phone as well as a computer, finding out the length of answering time, checking the randomization setting, checking the validity of the questions, and ensuring the effective instructions. (Saunders et al. 2009, 412) In

this empirical study, the surveys was sent to seven persons for implementing a pilot testing. As a result, there several informants reporting certain errors such as grammars errors and selection choices errors. In the end, the survey was modified and double checked and evaluated with no error. Also, there are six responses with missing values and one response with extreme values, which are deleted from the first scanning. Besides, the impact of extreme values was checked with 5% trimmed mean, which stands for the mean value without the peak 5% and bottom 5% cases.

Secondly, in this study, reliability tests include Cronbach exact Alpha tests for the variables. In addition, in order to control the halo effects of the real CSR impressions on consumers' mindset towards the brands, it is needed to choose two case firms with different CSR scores in the real world as a comparison. Two companies "BMW" and "Ford" are chosen as the case firms of the experimental study, which are chosen based on the CSR score. According to the Global CSR Rep Trak ranking, BMW has the second highest CSR score with 73.36 points out of 100 points, and Ford has the lowest CSR scores among the list with 65.12 points. (Reputation Institute, 2015) Lastly, in order to increase the reliability, factor analysis is conducted to reduce the strongly correlated variables in the CSP framework. In addition, certain questions about the brand equity is adapted from Aaker's (1996) research paper.

Validity, "the valid level of a measurement" stands for the extent to which the measurement questions measure the values which the research intends to assess. There are three evaluation methods for the validity, including criterion validity, content validity, and construct validity. (De Vaus, 2002) In this study, in order to test the validity of the randomization for distributing the four crisis scenarios, the fisher's exact test was conducted across the gender and education. In addition, a proficient professor with hundreds of published academic papers was consulted for two times in order to confirm that the questions can collect the intended measurement data. What's more, the pilot testing technique was also used to confirm the validity by sending survey samples to seven persons for checking their reflections about the questions. Lastly, in order to check the validation, the data was split into two random samples for re-conducting the factor analysis. As a result, after rerunning the extraction methods and rotation methods, the factor models are the same, which indicate a high validity of the data.

5. RESEARCH FINDINGS

In this chapter, there are four main parts, including basic statistics conclusion, factor analysis, paired t-test, and results of GLM procedure.

5.1 Basic statistics conclusion

Before implementing the regression analysis, the groups with missing values are filtered out; and some groups with extreme points are excluded as invalid observations, which might have an impact on results. As a result, seven groups of measurement variables are sorted out, there are 191 valid observations, which can be used for conducting the regression analysis.

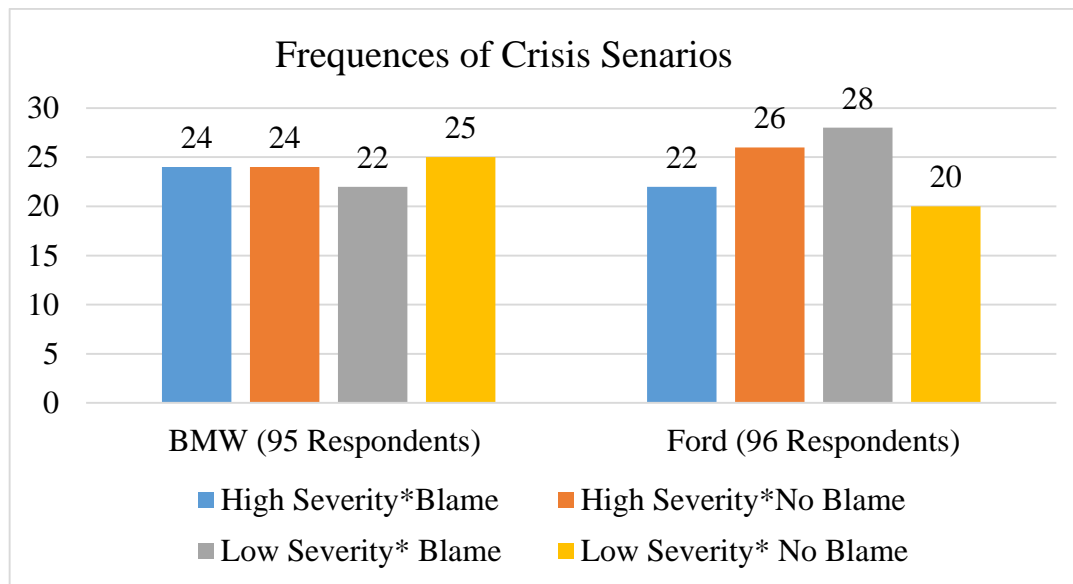


Figure 6. Frequencies of Crisis Scenarios

As shown in Figure 6, among the 191 valid observations, there are 95 respondents and 96 respondents for answering BMW-related and Ford-related surveys. Among 95 respondents of BMW, there are 24 cases for the high-severity crisis with a blame acknowledgment; and there are 24 cases for the high-severity crisis with an unacknowledged blame. In addition, in the BMW sample, there are 22 cases for the low-severity crisis with a blame acknowledgment; and there are 25 cases for the low-severity crisis with an unacknowledged blame.

For the Ford sample, there 22 cases, 26 cases, 28 cases, and 20 cases for the high-severity crisis with a blame acknowledgment, the high-severity crisis with an unacknowledged blame, the

low-severity crisis with a blame acknowledgment, and the low-severity crisis with a blame acknowledgment correspondingly. Therefore, all the crisis scenarios have at least 20 cases, which indicates that there are enough cases for the dependent variables in the regression analysis. So the sample size is good enough to conduct the regression analysis.

As shown in Table 4, in terms of the demographic characteristics, there are 105 male respondents and 86 female respondents, which accounts for the ratio of male to female is about 55: 45. (Statistics Finland, 2014, 25) This rate does not comply with that rate in the overall Finnish universities, which ratio of male students to female students is 48:52.

Table 4. Descriptive information about Gender and Education

Variable	Value	Frequency	Percentage
Gender	Male	105	54.97%
	Female	86	45.03%
Education	Low	72	37.70%
	High	119	62.30%

In addition, there are 119 respondents with/studying a bachelor degree and 72 respondents with/studying a master degree, which accounts for the rate of bachelor students to master students is 38: 62. This rate somehow comply with that rate in the overall Finnish universities sample, which rate of bachelor students to master students is 45: 55. (Statistics Finland, 2015, 31)

As shown in Table 5, there are certain observed descriptive statistics of each variable for the whole 119-observation sample, including mean, maximum values, minimum values, and standard deviation. As shown in Table 5, the two control variables are brand familiarity and prior experience to brand, which mean values are 2.80 and 0.21. For the mean of brand familiarity with 2.80, it stands for the fact that overall respondents are somewhat familiar with the brand. There are 21% of the overall respondents who has prior experience to the brand.

It stands for the truth that most of the respondents have never used the BMW or Ford car in their life, which means that most of them do not have prior user experience to the brand. In such a way, on the one hand, this condition is somehow good for observing the respondents' attitudes towards the impacts of product-harm crisis, since a good prior experience to the brand could

reduce the negative effects of crisis in consumers' mind-set. On the other hand, however, it would affect the reliability of evaluating brand equity as well as CSP, since the brand familiar has a big influences on the brand-related evaluation. (Rea et al. 2014)

Table 5. Descriptive statistics of each variable

Variables	Mean	Std.Dev.	Min	Max
Public Responsibility	3.43	0.78	1.00	5.00
Environmental Scanning	3.17	0.72	1.00	5.00
Stakeholder Management	3.51	0.59	2.00	5.00
Issues management	3.62	0.74	1.00	5.00
Economic Outcome	3.37	0.93	1.00	5.00
Legal Outcome	3.63	0.65	2.00	5.00
Ethical Outcome	3.63	0.68	2.00	5.00
Discretionary Outcome	3.18	0.60	2.00	5.00
Overall CSP	3.44	0.39	2.13	4.50
Pre-Crisis Brand Association	3.68	0.81	1.00	5.00
Pre-Crisis Perceived Quality	3.54	0.87	1.00	5.00
Pre-Crisis Customer Satisfaction	3.41	0.95	1.00	5.00
Pre-Crisis Premium Price	2.91	1.50	1.00	5.00
Overall Pre-Crisis Brand Equity	3.38	0.72	1.50	5.00
Post-Crisis Brand Association	3.14	0.92	1.00	5.00
Post-Crisis Perceived Quality	2.90	0.93	1.00	5.00
Post-Crisis Customer Satisfaction	2.93	0.99	1.00	5.00
Post-Crisis Premium Price	2.44	1.50	1.00	5.00
Overall Post-Crisis Brand Equity	2.85	0.81	1.00	5.00
Brand Familiarity	2.80	0.98	1.00	5.00
Prior Experience to Brand	0.21	0.41	0.00	1.00

Comparing the mean of overall post-crisis CBBE (2.85) and that of overall pre-crisis CBBE (3.38), the brand equity decreased after the respondents see the description of the product-harm crisis conditions. It means that there are some negative influences of the product-harm crisis on the brand equity. In details, the biggest affected item of brand equity is perceived quality, which mean drops from 3.54 to 2.90 with a dropping rate -18.08%.

Table 6 shows the Spearman correlation matrix of the measured variables.

Table 6. Correlation Matrix of measured variables

	9	8	7	6	5	4	3	2	1	Variables
									1	1.Public Responsibility
								1	.365*	2.Environmental
							1	0.139	.349*	3.Stakeholder
						1	0.354	0.165	.374*	4.Issues management
					1	-.021	-	0.105	.158*	5.Economic Outcome
					0.137	.346**	.312*	0.167	.310*	6.Legal Outcome
			1	0.334**	0.025	.367**	.262*	0.146	.181*	7.Ethical Outcome
		1	0.273*	0.101	0.073	.109	.146*	0.164	.228*	8.Discretionary
		0.180*	0.241*	0.283**	0.184*	.245*	.268*	0.220	.302*	9.Pre Brand
	0.349**	0.078	0.190*	0.219*	-0.059*	.319**	0.160	0.017	.184*	10.Pre Perceived
	0.472**	0.077	0.231*	0.242*	0.053	.301**	0.171	0.162	.279*	11.Pre User
	0.222*	0.094	0.292**	0.042	-0.242*	.294**	0.180	-	0.034	12.Pre Premium Price
	0.255*	0.244*	0.162*	0.180*	0.042	.268*	0.202	0.073	.216*	13.Post Brand
	0.210*	0.215*	0.208*	0.248*	-0.079	.380**	0.261	0.013	.233*	14.Post Perceived
	0.264*	0.178*	0.240*	0.257*	-0.005	.391**	0.212	0.064	.187*	15.Post User
	0.160*	0.192*	0.267*	0.143*	-0.238*	.340**	0.222	-	.095	16.Post Premium Price
	0.077	0.022	0.182*	0.178*	-0.001	.154*	0.182	0.050	.101	17.Brand Familiarity
	-0.051	0.049	0.090	0.176*	-0.014	-0.011	-	-	-.028	18.Prior Experience

Variables	17	16	15	14	13	12	11	10
1.Public Responsibility								
2.Environmental Scanning								
3.Stakeholder Management								
4.Issues management								
5.Economic Outcome								
6.Legal Outcome								
7.Ethical Outcome								
8.Discretionary Outcome								
9.Pre Brand Association								
10.Pre Perceived Quality								1
11.Pre User Satisfaction							1	.563*
12.Pre Premium Price						1	.295*	.186*
13.Post Brand Association					1	.023	.296*	.273*
14.Post Perceived Quality				1	.646**	.130	.431*	.555*
15.Post User Satisfaction			1	.761*	.714**	.152*	.535*	.416*
16.Post Premium Price		1	.514*	.445*	.389**	.749*	.258*	.208*
17.Brand Familiarity	1	.226*	.258*	.228*	.118	.151*	.234*	.201*
18.Prior Experience to Brand	.486**	0.086	.073	.020	-.02672	.001	0.015	.022

**=Correlation is strong at the 0.001 level; *=Correlation is strong at the 0.05 level

As shown in Table 6, the positive correlation coefficient stands for that the relation between two variables are positively correlated; and the negative correlation coefficient stands for that the relation between two variables are negatively correlated. There are certain significantly correlated variables.

In the CSP framework, all the eight CSP inter-items are mostly significantly correlated with each other. For instance, the firm's public responsibility is significantly connected with other seven CSP items at the 0.001 significance level, which is expected to be correct relationships because public responsibility stands for overall CSP consisting of other seven items. However, the economic outcome seems to have a negative connection with stakeholder management and issue management, which means that a better economic outcome leads to a worse ability of stakeholder management and issue management. And each CSP variable is correlated with at least one other variable with a high correlation coefficient bigger than 0.3; thus, it is needed to implement a factor analysis.

Within the Brand Equity framework, in both before and after the crisis condition, the correlation between perceived quality and customer satisfaction are significant, which correlation coefficients are 0.563 ($p < 0.001$) for pre-crisis condition and 0.761 ($p < 0.001$) for post-crisis condition. It means that higher perceived quality would lead to a better customer satisfaction, which is a solid logic in customers' mind set no matter before or after the product-harm crisis. It was not a surprise to find out that the perceived quality and customer satisfaction are strongly connected to each other.

Last but not the least, with a correlation coefficients 0.486 at significance level 0.001, there is a strong correlation between brand familiarity and the prior experience to the brand. The customers who own or owned the car are more sensitive and familiar towards the information about their brands. And based on the expectation and evidence framework, they tend to search for the information which meet their expectation based on their knowledge from previous experience. (Dawar & Pillutla, 2000)

As shown in Table 7, in order to see the comparison between measured CSP and real CSP, there is a conclusion of descriptive information about the CSP items as well as overall CSP for BMW sample and Ford Sample.

Table 7. Comparison between measured CSP and real CSP

CSP Variables	Car	Mean	Std.Dev.	Min	Max	Pr > t
Public Responsibility	BMW	3.46	0.86	1.00	5.00	0.5548
	Ford	3.39	0.70			
Environmental Scanning	BMW	3.14	0.74	1.00	5.00	0.6267
	Ford	3.20	0.69			
Stakeholder Management	BMW	3.65	0.615	2.00	5.00	0.0010**
	Ford	3.38	0.57			
Issues management	BMW	3.86	0.77	1.00	5.00	<.0001***
	Ford	3.38	0.64			
Economic Outcome	BMW	3.00	0.93	1.00	5.00	<.0001***
	Ford	3.74	0.76			
Legal Outcome	BMW	3.67	0.66	2.00	5.00	0.3391
	Ford	3.58	0.63			
Ethical Outcome	BMW	3.84	0.70	2.00	5.00	<.0001***
	Ford	3.42	0.57		4.00	
Discretionary Outcome	BMW	3.23	0.66	2.00	5.00	0.2704
	Ford	3.13	0.54		4.00	
Overall CSP	BMW	3.48	0.44	2.38	4.50	0.0097**
	Ford	3.40	0.33	2.13	4.25	

Note: *=p<0.1; **=p<0.05; ***=p<0.001

As a result of T-test, the p value is less than 0.05 which stands for the fact that the means of the two samples are not same. In addition, the mean of BMW's CSP (3.48) is bigger than Ford's (3.40). Thus, the tested overall CSP score of BMW is bigger than that of Ford, which complies with the comparison of real CSP scores between BMW (73.36) and Ford (65.12). In addition, the uncertainty of BMW sample is bigger than Ford Sample, since the standard deviation of the former (0.44) is bigger than that of the latter (0.33). To be more specific, most of BMW's CSP elements are better than Ford's except for economic outcome and environmental scanning, which also complies the real situation. Taking pre-tax profit as an example of the economic outcome, Ford had a breakthrough in the year of 2015 \$10.8B. (Ford, 2016) Whereas, with \$10.21 billion pretax earnings, BMW's bet profit decreased from \$1.91 billion to €1.74 billion in the second quarter of 2015. (Geiger, 2015)

In order to test the reliability of distributing surveys and the randomization of four crisis scenarios, the results of Fisher's exact test are shown in Table 8. As shown in Table 8, the variables "gender" and "education" are classified to male-female groups and low-high groups.

Table 8. Fisher's Exact Test of gender and education

Variables	Car			Crisis Scenarios			
	BMW	Ford	P		Low Severity	High Severity	P
Male	46	59	*.08	Unacknowledged Blame	20	26	0.43
				Acknowledged Blame	31	28	
Female	49	37		Unacknowledged Blame	25	24	
				Acknowledged Blame	19	18	
Low Education	40	32	0.23	Unacknowledged Blame	15	15	0,76
				Acknowledged Blame	23	19	
High Education	55	64		Unacknowledged Blame	30	35	
				Unacknowledged Blame	27	27	

*=p<0.1; **=p<0.05; ***=p<0.001

In terms of distributing BMW and Ford samples, the p-value of car-gender Fisher's test is 0.0816, which is less than 0.1. It stands for the fact that car and gender is slightly and statistically related to car. Thus, the reliability of distributing surveys across gender is slightly low. Whereas, the p-value of education-gender Fisher's test is 0.23, which is bigger than 0.1. It stands for the fact that car and education is not statistically related to car. Thus, distributing BMW and Ford surveys across gender is successful; the reliability is high in this way.

In terms of the randomization of distributing the four crisis scenarios, the p-value of crisis-gender Fisher's test is 0.4323, which is bigger than 0.1. And the p-value of crisis-education Fisher's test is 0,7634, which is high and bigger than 0.1. These results suggest that there is not a statistically strong correlation between gender/education and crisis scenarios. There were no significant differences among the 191 respondents with different demographic characteristics, in terms of the fact how the four experimental conditions were randomly assigned to them. Thus, the random distribution of the 191 respondents was successful according to their gender and education background, which are the demographic characteristics. In a conclusion, the reliability of distributing two surveys across different gender and education background is good; and the

randomization of four crisis scenarios across different gender and education background is successful.

5.2 Factor analysis

As shown in Table 6 in page 60, each CSP variable is correlated with at least one other variable with a high correlation coefficient (bigger than 0.3); thus, it is needed to implement a factor analysis. The range of CSP inter-item correlation is from -0.041 to 0.365; and the range of CSP partial correlation is from -0.127 to 0.349. As another result for checking the assumptions, the overall MSA is 0.716, which is bigger than 0.5. It indicates that there are 71.6% of partial correlations for all variables together, which are smaller than the original correlation. It indicates that most of individual variables can be grouped with a reduced correlated inter-item factor model. Therefore, it is good and acceptable to implement a factor analysis.

Table 9.Factor analysis results of CSP

CSP Items	Rotated loading pattern			Communality	MSA
	Factor 1	Factor 2	Factor 3		
Public Responsibility		0.682		0.70	0.66
Environmental Scanning		0.735		0.58	0.69
Stakeholder Management	0.725			0.54	0.79
Issues management	0.732			0.57	0.73
Economic Outcome		0.615		0.65	0.59
Ethical Outcome			0.688	0.66	0.69
Discretionary Outcome			0.724	0.53	0.72
Elgenvalue	2.52	1.14	1.02		
Cum%	0.32	0.46	0.58		
Cronbach Alpha	0.63	0.65	0.66		

In terms of the factor extraction method, MINEIGEN criterion is used in this study, which indicates that only the variables with eigenvalues bigger than 1 would be retained in the factor model. As a result shown in Table 9, based on MINEIGEN criterion, three factors are retained for the factor model, which eigenvalues are 2.52, 1.14, and 1.02 correspondingly. And the cumulative portion shows that Factor 1, Factor 2, and Factor 3 explains together 58% of the total variance. Thus, three factors will be retained by the MINEIGEN criterion.

And in terms of the rotation method, Orthogonal Varimax is used in this study. As a result shown in Table 9, the varimax-rotated factor loadings (patterns) between two items (Stakeholder

Management and Issues management) and Factor 1 is 0.725 are bigger than 0.5. It indicates that those two items are so strongly correlated to Factor 1 that Stakeholder Management and Issues Management should be grouped into a new variable. According to Joseph (2008), it can be grouped to a new variable “Business Ethics”. By integrating business ethics with crisis management, Joseph (2014) stated that the organization and leaders’ reaction to crisis is very important for solving a crisis, which a turning point for better or worse. For Factor 2, the varimax-rotated factor loadings between three items (Public Responsibility, Environmental Scanning, and Economic Outcome) and Factor 2 are 0.682, 0.735, and 0.615, which are bigger than 0.5. It indicates that those three items are so strongly correlated to Factor 2 that Public Responsibility, Environmental Scanning, and Economic Outcome should be grouped into a new variable. According to the conceptual framework by Wood (1991), it can be grouped to a new variable “Social Issue Management”, which describe the ability of solving social problem.

For Factor 3, the varimax-rotated factor loadings between two items (Ethical Outcome and Discretionary Outcome) and Factor 3 are 0.688 and 0.724, which are bigger than 0.5. It indicates that those two items are so strongly correlated to Factor 3 that Ethical Outcome and Discretionary Outcome should be grouped into a new variable. According to Sena (2013), it can be grouped to a new variable “Contribution to Common Good”, which describe the share of benefits given from a firm to the society. As one exception of eight CSP items, Legal Outcome is excluded from the new factor model, since the varimax-rotated factor loadings between it and three Factors are lower than 0.5.

In terms of final communality shown in Table 9, the final communalities of all variables (except for Legal Outcome) are bigger than 0.50. It indicate that over half of the variables’ (in the new factor model) variance is accounted for. And in order to conduct the reliability analysis, since certain variables’ variances are wide, the standardized Cronbach Alpha is used to estimate the reliability of the new groups of variables. Cronbach Coefficient Alpha values for Factor 1 (0.63), Factor 2 (0.65), and Factor 3 (0.66) are shown in Table 9, which indicate the reliability of the data are questionable. In a conclusion for CSP factor analysis, three new variables “Business Ethics, Social Issue Management, Contribution to Common Good” were created for the

regression analysis by computing the mean of the grouped items. For instance, the value of Business Ethics is equal to the mean of Stakeholder Management and Issues management.

5.3 GLM model about pre-crisis brand equity

There is one GLM model for analyzing the pre-crisis condition, including classification variables (car type, gender, education background, familiarity, and prior experience to the brand) and independent variables (business ethics, social issue management, and contributions to common good) for assessing their effects on the dependent variables “pre-crisis brand equity”. As a result shown in Table 10, the total degrees of freedom with 190 is correct; thus, the data was correctly read for GLM procedure. And the F-value is 10.39 with a p-value less than 0.001. Therefore, the overall F test is significant, which indicate that the significance of predictors can be further proceeded in order to analyze the difference by assessing the individual tests for each effect.

Table 10.Model Fit Results for Pre Crisis

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	38.614	3.510	10.39	<.0001
Error	179	60.481	0.337		
Corrected Total	190	99.095			
R-Square	Coeff Var	Root MSE	Pre Brand Equity Mean		
0.3896	17.179	0.581	3.383		

As can be seen from Table 11, gender ($F=3.33$, $p= 0.069$) doesn't have a significant influence on pre-crisis CBBE; whereas, car type ($F=31.27$, $p<0.0001$) has a significant effect on brand equity before the crisis. In addition, in the BMW sample with an estimate value 0.571, there is a bigger connection between the car and the brand equity than that in Ford sample. Regarding the post hoc test results for car type, the difference between BMW and Ford is significant at significance level $p<.0001$. The LS-mean for BMW (3.6379) is bigger than that for Ford is 3.065, which indicate the BMW's brand equity is bigger than Ford's before the product-harm crisis. In addition, Business Ethics ($F=9.08$, $p=0.003$) still has a strong positive influence on CBBE compared to its significant effects on the changes of brand equity. What's more, the estimate of Business Ethics is 0.277, which stands for the fact that this CSP element is positively influencing

the pre-crisis brand equity in such a way: three units of Business Ethics contribute to a unit of brand equity.

Table 11. Nature and significance of individual parameters' effects

Source	DF	Type III SS	Mean Square	F Value	Pr > F
CSP_BE	1	3.068	3.068	9.08	0.003
SIM	1	0.734	0.734	2.17	0.142
CG	1	1.031	1.031	3.05	0.082
Car	1	10.565	10.565	31.27	<.0001
Gender	1	1.125	1.125	3.33	0.069
Education	1	0.301	0.301	0.89	0.346
Familiarity	4	1.739	0.434	1.29	0.276
Experience	1	0.225	0.225	0.67	0.415
Parameter	Estimate		Standard Error	t Value	Pr > t
Intercept	1.316	B	0.460	2.86	0.004
CSP_BE	0.277		0.092	3.01	0.003
SIM	0.127		0.086	1.47	0.142
CG	0.165		0.094	1.75	0.082
Car 1	0.571	B	0.102	5.59	<.0001
Car 2	0.000	B	.	.	.
Gender 1	0.164	B	0.089	1.82	0.069
Gender 2	0.000	B	.	.	.
Education 0	-0.085	B	0.091	-0.94	0.346
Education 1	0.000	B	.	.	.
Familiarity 1	-0.628	B	0.286	-2.19	0.029
Familiarity 2	-0.339	B	0.242	-1.40	0.162
Familiarity 3	-0.334	B	0.227	-1.47	0.143
Familiarity 4	-0.295	B	0.224	-1.32	0.189
Familiarity 5	0.000	B	.	.	.
Experience 0	0.105	B	0.129	0.82	0.415
Experience 1	0.000	B	.	.	.

5.4 Paired T-test: test hypothesis 1

As a result of paired T-test shown in Table 12, the paired t-test assessed the differences between the post-crisis and pre-crisis variables such as overall brand equity, brand association, user satisfaction, perceived quality, and Premium Price. For testing hypothesis 1 “*The Product-harm crisis negatively affects Brand Equity*”, the p-value of overall brand equity is less than 0.0001. Thus, the null hypothesis “*The average difference in post-crisis brand equity and pre-crisis*

brand equity is 0” is rejected, which indicate that means of the pre-crisis brand equity and post-crisis brand equity are not same.

Table 12. Paired T-test results

Variable	N	Mean of Changes	Std Dev	Min	Max	Pr> t
Overall Brand Equity	191	- 0.531	0.88	- 3.25	3.50	<.0001
Brand Association	191	- 0.535	1.21	-4.00	3.00	<.0001
Perceived Quality	191	-0.639	0.950	-4.00	3.00	<.0001
User Satisfaction	191	-0.482	1.036	-4.00	2.00	<.0001
Premium Price	191	-0.467	1.113	-4.00	3.00	<.0001

In addition, the mean of post-crisis brand equity minus the mean of pre-crisis brand equity is - 0.531, which stands for the fact that the post BE is less than pre BE with an average difference - 0.531. Thus, the brand equity decreased after the product-harm crisis happened. Therefore, Hypothesis 1 is accepted: “*The Product-harm crisis negatively affects Brand Equity*”. In order to compare the negative impacts of crisis on the brand-equity elements, it is also shown in Table 10 that the biggest loss among them belongs to perceived quality with the highest mean value of changes (-0.639). And it is even lower than the average value of brand equity. Thus, it can be assumed that perceived quality has the biggest damages due to the product-harm crisis, which resulted from defective or harmful products directly related to the product quality.

5.5 Results of GLM procedure

The GLM model have the classification variables (such as Blame and Severity) and independent variables (business ethics, social issue management, and contributions to common good) for assessing their effects on the dependent variables “changes of brand equity”.

5.4.1 Overall performance of GLM model

And as shown in Table 13, the classification variables include car type, severity level, blame condition, gender, education background, familiarity, and prior experience to the brand. And the level for each variable can be referred to the amount of each possible values. For instance, there are 5 levels for the familiarity predictor with the values from 1 to 5.

Table 13. Class Level Information for GLM model

Class	Levels	Values	Class	Levels	Values
Car	2	1 2	Education	2	0 1

Severity	2	0 1	Familiarity	5	1 2 3 4 5
Blame	2	0 1	Experience	2	0 1
Gender	2	1 2			

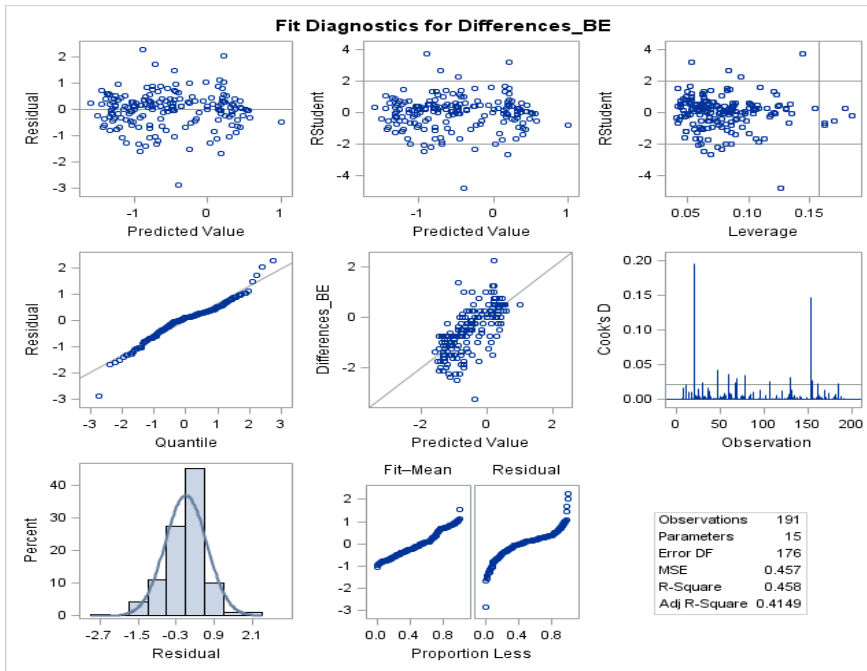


Figure 7. Fit Diagnostics for ΔBE (SAS Enterprise Guide, 2016)

As a result of checking the assumptions for proceeding the GLM procedures, there are certain regression diagnostics. Firstly, there are enough observations in each group with over 20 cases in each group. In addition, the errors/residuals are normally distributed. As a result of Homoscedasticity of variance, the error variance is less than 4, which indicate a constant covariance is in okay condition. There are few outlier observations as shown in Figure 7, which indicates that there is no case with large residual.

The degrees of freedom can be used for checking the correction of the GLM model and the fact that the data was correctly used and read. As can be seen in Table 14, the model degrees of freedom (DF) for 13 main effects with 1 interaction are 14, which can be used for checking the modeled data. And the corrected total degrees of freedom are 190, which are always one less than the amount of cases (191 cases) used in the regression analysis. Thus, the data was correctly read for GLM procedure.

Table 14. Overall GLM Model Fit for Δ BE

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	14	67.968	4.854	10.62	<.0001
Error	176	80.428	0.456		
Corrected Total	190	148.397			
R-Square	Coeff Var	Root MSE	Δ BE Mean		
0.458	-127.365	0.676	-0.531		

As a result of F-test for assessing the model fit, the F value is 10.62 with p-value <.0001, which is smaller than 0.05. Therefore, the overall F test is significant, which stands for the fact that the means for 14 cells are different and the predictors have significant impacts on the changes of brand equity. Thus, the significance of predictors can be further proceeded in order to analyze the difference by assessing the individual tests for each effect.

In addition, the R-Square is 0.458, which states that the GLM model accounts for 45.80% of the variation in the changes between pre-crisis and post-crisis brand equity, which seems to have enough useful dependent variables contributing the variability of the GLM model. In the Table 1, there are also other index listed, including the coefficient of variation (Coeff Var: -127.365), Mean Square for Error (Root MSE: 0.676), and the mean of the changes of brand equity (Δ BE Mean: -0.531). The coefficient of variation (-127.365) equals to Root MSE (0.676) divided by Δ BE Mean (-0.531), which stands for the amount of variation in the outcome variable. What's more, there is a two-dimensional chart showing the observed cases by predicted linear relationship in order to show the model fit condition in center of Figure 7.

5.4.2 Test Hypothesis 2

The Hypothesis 2 “*The higher level of CSP, the lower impacts of product-harm crisis on brand equity*” was tested by checking the results of F-test, estimate, and t-test. The significance of all individual predictors is shown in Table 15 as a result of Type III of estimable functions of parameters. According to the significance level at 5%, the interaction between Severity and Blame is not significant, since the F value is 2.18 with p-value 0.141. It indicates that the effect of Severity is not based on the condition of Blame. Therefore, the individual tests for Severity and Blame is valid. And the F value of Severity is 87.96 with a p-value less than 0.0001, which indicate that the severity's influence on the change of CBBE is strong.

In addition, the F value of Blame is 24.24 with a p-value less than 0.001, which indicate that the effect of Blame on the loss of brand equity is significant at the significance level 0.001. This condition also applies to Gender parameter: the F value of Gender is 4.82 with a p-value 0.029, which indicate that the effect of Gender on the change of brand equity is significant at the significance level 0.05.

Table 15. Individual F-test for each parameters

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Business Ethics	1	2.256	2.256	4.94	0.027
Social Issue Management	1	0.485	0.485	1.06	0.304
Contribution to Common Good	1	0.691	0.691	1.51	0.220
Car	1	0.022	0.022	0.05	0.825
Severity	1	40.194	40.194	87.96	<.0001
Blame	1	11.078	11.078	24.24	<.0001
Gender	1	2.201	2.201	4.82	0.029
Education	1	0.147	0.147	0.32	0.571
Familiarity	4	1.636	0.409	0.90	0.468
Experience	1	0.006	0.006	0.01	0.906
Severity*Blame	1	0.996	0.996	2.18	0.141

Among the three new variables of CSP model, Business Ethics is the only parameter which has a significant effect on the changes of brand equity, since its F value of Blame is 4.94 with a p-value 0.027. This indicate that only predictors “Blame, Severity, Business Ethics, and Gender” have significant effects on the changes between pre-crisis and post-crisis brand equity. Whereas, there is no significant effect of all other parameters (such as Social Issue Management, Common Good, Familiarity, Car, Education, and Experience) on the changes of CBBE.

As a result of T-test shown in Table 16, there are four parameters with p-value less than 0.05 for T-test, which indicates that the mean of brand-equity’s changes is significantly different among those three groups. The four parameters are Business ethics ($t = 2.22$, $p = 0.027$), low Severity ($t = 7.63$, $p < 0.0001$) compared to high severity, Unacknowledged Blame ($t = -2.49$, $p = 0.013$) compared to Acknowledged Blame, and Male ($t = 2.20$, $p = 0.029$). In the Table 16, the parameter with a letter ”B” stands for the fact that the cell matrix is singular and over-parameterized leading to an infinite solutions; and a generalized inverse was used to solve the normal equations.

Table 16. Nature and significance of individual parameter's effects

Parameter	Estimate		Standard Error	t Value	Pr > t
Intercept	-1.995	B	0.556	-3.59	0.000
Business Ethics	0.239		0.108	2.22	0.027
Social Issue Management	-0.105		0.102	-1.03	0.304
Contribution to Common Good	0.135		0.110	1.23	0.220
BMW	-0.026	B	0.120	-0.22	0.825
Ford	0.000	B	.	.	.
Low Severity	1.084	B	0.142	7.63	<.0001
High Severity	0.000	B	.	.	.
Unacknowledged Blame	-0.350	B	0.141	-2.49	0.013
Acknowledged Blame	0.000	B	.	.	.
Male	0.231	B	0.105	2.20	0.029
Female	0.000	B	.	.	.
Education Low	0.061	B	0.107	0.57	0.571
Education High	0.000	B	.	.	.
Familiarity 1	0.264	B	0.336	0.79	0.433
Familiarity 2	0.042	B	0.285	0.15	0.883
Familiarity 3	0.019	B	0.267	0.07	0.942
Familiarity 4	0.240	B	0.263	0.91	0.361
Familiarity 5	0.000	B	.	.	.
Experience No	-0.018	B	0.153	-0.12	0.906
Experience YES	0.000	B	.	.	.
High Severity*No Blame	-0.298	B	0.201	-1.48	0.141
High Severity*Blame	0.000	B	.	.	.
Low Severity*No Blame	0.000	B	.	.	.
Low Severity*Blame	0.000	B	.	.	.

As can be seen from Table 16, for Business Ethics, the estimate is 0.239. Thus, in order to compensate the 1 unit loss of brand equity, there should have 4 units of Business Ethics, which is one new item in CSP. It indicates that the brand-equity changes is positively affected by the level of business ethics (CSP elements). Thus, the higher level of CSP, the higher brand-equity changes in a positive way, which stands for the fact that the lower impacts of product-harm crisis on CBBE. Thus, the Hypothesis 2 “*The higher level of CSP, the lower impacts of product-harm crisis on CBBE*” is accepted.

5.4.3 Test Hypothesis H1a

The hypothesis 1a “*The high-severity crisis leads to a bigger loss of brand equity than the low-severity crisis*” is tested by checking the result of post hoc test as below. For Low Severity, the

estimate is 1.084 compared to that of high Severity at 0. It indicates that the low-severity contribute one positive unit for the increase of brand equity, which is bigger than zero unit of brand-equity growth in the high-severity crisis. Thus, the loss of brand equity in the high-severity crisis is bigger than that in the low-severity crisis.

Table 17. Least Square Means

Severity	Δ Brand Equity LSMEAN	Pr > t
Low Severity	-0.032	<.0001
High Severity	-0.967	
No Blame	-0.749	<.0001
Blame	-0.249	
BMW	-0.512	0.825
Ford	-0.486	
Male	-0.384	0.029
Female	-0.615	
Education Low	-0.468	0.571
Education High	-0.530	
Have Experience	-0.508	0.906
No Experience	-0.490	

As a result of the post hoc test, the significances of group differences are shown in Table 17. There are significant differences among three comparative groups, including low severity versus high severity, unacknowledged blame versus acknowledged blame, and male versus female. As can be seen from Table 17, the p-value for the severity group is less than 0.05, which indicates that there is a huge difference among those two groups. To be more specified, the high severity with a lower average mean of the brand-equity changes (-0.967) than the low severity's (-0.032). Therefore, Hypothesis 1a is accepted: "*The high-severity crisis leads to a bigger loss of brand equity than the low-severity crisis*". In addition, considering the LSMEAN values of them, it can be seen that the high-severity crisis could constantly and significantly damage the brand equity compared to the loss of brand equity is very low in the low-severity crisis.

5.4.4 Test Hypothesis H1b

The hypothesis 1b "*The blame acknowledgement of product-harm crisis to a less loss of brand equity than the blame unacknowledged crisis*" is tested by checking the result of post hoc test as below. The estimate of Unacknowledged Blame is -0.350 compared to that of Acknowledged Blame at 0. It indicates that the bigger value of Unacknowledged Blame, the smaller value of

brand-equity changes; thus, the loss of brand equity is negatively connected to Unacknowledged Blame. For instance, the Unacknowledged Blame contributes over one third of one unit loss of brand equity, which is smaller than zero unit of brand-equity growth in the Acknowledged Blame condition. As can be seen from Table 17, the p-value for the blame group is less than 0.05, which indicates that there is a huge difference among those two blame groups. To be more specified, the Unacknowledged Blame with a lower average mean of the brand-equity changes (-0.749) than the Acknowledged Blame's (-0.249).

Therefore, Hypothesis 1b is accepted: “*The blame acknowledgement of product-harm crisis to a less loss of brand equity than the blame unacknowledged crisis*”. In addition, it was proven that the differences between high-severity and low-severity effects is around 1, which is twice as big as that among blame groups (0.5) on brand equity. Thus, in terms of the brand-equity loss, there is a more distinct situation considering severity compared to blame. Thus, severity should be considered as a priority and more important factor compared to blame.

Based on a crisis-scenario measurement, Table 18 show the results about the interaction effect between severity and blame. As a result of the t-test for comparing the differences between each two crisis, the p-values for group 3 and group 4 are bigger than 0.05, which indicate that those two groups do not have significant differences. Whereas, other groups have significant differences with a p-value less than 0.05.

Table 18. Post Hoc test for the interaction effect between Severity and Blame

Severity	Blame	Δ Brand Equity LSMEAN	LSMEAN Number	
Low	NO	-0.355	1	
Low	YES	0.292	2	
High	NO	-1.142	3	
High	YES	-0.792	4	
Least Squares Means for effect Severity*Blame Pr > t for H0: LSMean(i)=LSMean(j)				
i/j	1	2	3	4
1		<.0001	<.0001	0.0190
2	<.0001		<.0001	<.0001
3	<.0001	<.0001		0.0833
4	0.0190	<.0001	0.0833	

As can be seen from Table 18, the least square means (LSMEAN) for four crisis (low severity with unacknowledged blame, low severity with acknowledged blame, high severity with unacknowledged blame, and high severity with acknowledged blame) are -0.355, 0.292, -1.142, and -0.792. According to this, the means plot for them are created in Figure 8.

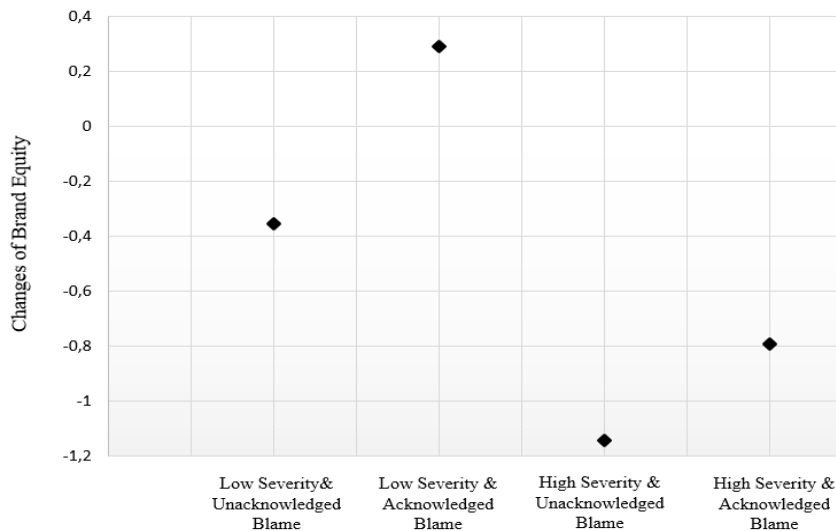


Figure 8. LS-Means for severity*blame groups

As can be seen from the Figure 8, the LS-Means of high-severity groups are lower than that of low-severity groups, which LS-Means of four crisis are more correlated to the severity rather than blame. It indicates that high severity has bigger impact on brand equity over low severity. In addition, the LS-Means of blame-taken groups are higher than that of blame-untaken groups. It indicates that blame-taken has bigger positive impact on brand equity over blame-untaken. As can be seen from Figure 8, for low- severity crisis with acknowledged blame, the mean value (0.292) which is a positive value, which indicates that the brand equity would increase in this condition. Compared to overall negative influences of product-harm crisis on brand equity, this crisis scenario is the best condition which improves the brand equity rather than having a loss.

Whereas, the change of brand equity in the high severity with unacknowledged blame condition has the most negative value, which indicates that this crisis condition has the biggest negative impact on brand equity. The difference between low severity with unacknowledged blame crisis and low severity with acknowledged blame crisis is 0.647, which is two times as big as that between other two crisis scenarios with high severity (0.35). It indicates that in low-severity

crisis, the acknowledged blame makes bigger sense and have impacts on the changes of brand equity compared to that in the high-severity crisis.

5.4.4 The gender-based results

And regarding the gender groups with a significant difference, the estimate of male group is 0.231 compared to that of female group at 0. It indicates that the male group contribute one fifth positive unit for the increase of brand equity, which is bigger than zero unit of brand-equity growth in the high-severity crisis. Thus, the loss of brand equity in the female group is bigger than that in the male group. The females reacted stronger to the crisis with a bigger change for brand equity compared to males. Comparing the changes between pre-crisis and post-crisis brand equity, the means of changes among the female group (-0.615) is smaller than that among male group (-0.384), which indicates that the females are more sensitive to the crisis compared to the males.

5.6 Summary of research findings

In a conclusion, the hypothesis are tested as accepted assumption as shown in Figure 9. Thus, the product-harm crisis negatively affects the brand equity. The higher severity level would lead to a bigger loss of brand equity than the lower severity; and the blame acknowledgement would lead to a less loss of brand equity than blame-untaken responses. And CSP acts as a moderator role which protect brand equity against crisis. Plus, the females are more sensitive to the crisis than males.

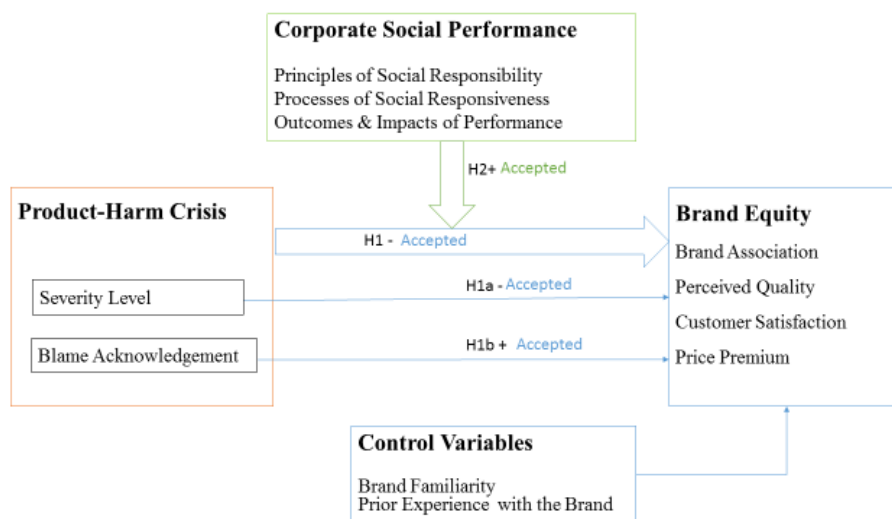


Figure 9. Summary of empirical results

6. DISCUSSIONS AND CONCLUSIONS

6.1 Discussions of key findings

The aim of this study is to investigate the impacts of a product-harm crisis on CBBE by simultaneously involving CSP as a moderator in a consumer-based level. And accordingly, this study attempts to deal with two main research problems: “How a product-harm crisis would influence the” and “What is the role of CSP in the relationship between the product-harm crisis and CBBE”. And two sub-research questions of the first main research problem are formulated based on the two-dimension framework of product-harm crisis (severity and blame): “How the severity level of a product-harm crisis would affect the CBBE?” and “How a firm’s response to the blame of its product-harm crisis would affect the CBBE?” And according to previous research findings, the research questions and sub-questions are answered in the following paragraphs.

6.1.1 Answering Research Question 1

The Research Question 1 is: “How a product-harm crisis would influence the CBBE?” In order to answer the first research question, the hypothesis 1 “*The Product-harm crisis negatively affects Brand Equity*” is tested as an accepted assumption. According to the two paired t-test for comparing the means between pre-crisis brand equity and post-crisis brand equity, it is proven that the brand equity is negatively linked to the product-harm crisis. And the indicator for the brand equity is the mean of the four brand-equity items, including brand association, perceived quality, user satisfaction, and premium price. As a result of the detailed analysis for four brand-equity elements, they all decrease as a negative impacts of the product-harm crisis. And the perceived quality has the biggest damages compared to other three elements.

In particular, taking the terminology of Aaker (1996) into consideration, the assets and liabilities of a brand would decrease due to the product-harm crisis; and the value attached to the brand name and symbol would reduce after the product-harm crisis. In terms of the specific elements, the decrease brand association in a product-harm crisis means that consumer would have a relative bad and harmful memory about the brand-related things such as brand images, brand attitudes, and perceptions towards the brand. To put it in the brand-as-organization perspective,

it is not just the defective product's brand would be negatively affected but also the whole elements of the organization such as the people, the values, and the programs, which are attached to the brand. In terms of the reduced perceived quality, the customers might recognize and expect the brand with a relative poor quality product - no matter its intrinsic attributes nor its extrinsic attributes. As two elements indicating brand loyalty, the decrease price premium and user satisfaction would lead to a reduced brand loyalty, which means that the level of a customer attached to the brand would be lower compared to the condition before the crisis. After the product-harm crisis, there is a relative higher possibility for loyal customers to transfer to the alternatives. Since perceived quality could have the biggest damages among the four brand-equity elements, the firm should pay more attention to it such as setting it as the first priority to save the brand equity.

The research result about the overall brand-equity reduction is an expected results, since there are certain previous literatures, which have proven the similar results in different research contexts and samples. (Rea et al. 2014; Cleeren et al. 2013; Dawar & Pillutla, 2000) The reasons why the brand equity is negatively related to the product-harm crisis are concluded as below.

According to the previous studies, the product-harm crisis always comes with negative publicity, which could decrease several factors related to brand equity including consumer evaluation, consumer expectation as well as consumer perception, company credibility, brand loyalty, attitude towards the brand and so on. (Rea et al. 2014; Cleeren et al. 2013; Dawar & Pillutla, 2000) It is not hard to understand the negative outcomes of the product-harm crisis. For instance, the angry customers would extend the negative publicity with the spread of bad word-of-mouth communication to other customers, which would hurt the brand.

What's more, on the one hand, it is believed that consumer evaluation and expectation towards the brand are weakened by the product-harm crisis, which would further negatively affect the brand equity. On the other hand, product-harm crisis could lead to a partial loss of brand equity such as decrease company credibility, decrease brand attitudes and decrease brand loyalty, which are the direct relative elements of brand equity. To put it in another angle, there are indirectly and directly impacts of products-harm crisis on brand equity in a negative way.

6.1.2 Answering Sub-question 1a

The Sub-question 1a is: “Sub-question 1a: How the severity level of a product-harm crisis would affect the CBBE?” In order to solve the first sub-research problem, the hypothesis 1a “*The high-severity crisis leads to a bigger loss of brand equity than the low-severity crisis*” is tested as an accepted assumption. According to the post hoc test in GLM model for comparing the Least Square means between high and low severity groups, it is proven that the loss of brand equity in the high-severity crisis is bigger than that in the low-severity crisis. In addition, it was proven that the high-severity crisis could constantly and significantly damage the brand equity compared to the loss of brand equity is very low in the low-severity crisis. And the indicators for severity include accidental product-harm crisis, victim location closing to the respondents, serious damages to the people.

The implication from the answers for this sub-question could state that customers react more seriously with a stronger attitudes in a high-severity crisis than that in a low-severity crisis. For the firm, it might suffer a bigger loss of brand equity in the high-severity crisis than that in low-severity crisis. In particular, taking the terminology of Aaker (1996) into consideration, the decrease of a brand’s assets and liabilities would be bigger in the high-severity crisis than that in low-severity crisis; and the value attached to the brand name and symbol would reduce more in the high-severity crisis. Thus, the firm should take it more seriously and allocate more resources such as time and human resources to compensate the loss of brand equity in the high-severity crisis than that in low-severity crisis.

According to the previous approach to test the relationship between severity level and brand equity, it is supported that different severity levels of crisis could affect the relative elements of brand equity to different level. Taking consumers’ reactions and attitudes for instance, it is found that high-level severity would lead to a less favorable evaluations among consumers compared to low-severity condition. (Vassilikopoulou et al. 2009, 67)

In addition, according the expectation and evidence framework, the prior expectation towards the firm’s responses in the high-severity crisis is stronger than that in the low-severity crisis. (Dawar & Pillutla, 2000). Thus, there is a higher possibility of disappointing the customers with wrong responses to the crisis in the high severity crisis. Furthermore, the limitations of enduring

the harms due to the crisis would be over and cross the bottom line in a high severity crisis. For instance, certain customers who really cares about the environment and are close to the crisis would react extremely seriously if the crisis was really harmful to the environment with an irreparable condition, which is over the bottom line that the loss cannot be compensated by any physical items.

6.1.3 Answering Sub-question 1b

The Sub-question 1a is: “*How a firm’s response the blame of its product-harm crisis would affect the CBBE?*” In order to answer the second sub-research question, the hypothesis 1b “*The blame acknowledgement of product-harm crisis to a less loss of CBBE than the blame unacknowledged crisis*” is tested as an accepted assumption. According to the post hoc test in GLM model for comparing the Least Square means of brand-equity changes between high and low severity groups, it is proven that the loss of brand equity in the crisis with unacknowledged blame is bigger than that with acknowledged blame. In addition, the loss of brand equity is strongly and negatively connected to unacknowledged blame. It means that unacknowledged blame would lead to a bigger loss of a brand’s assets and liabilities compared to an acknowledged blame.

This indicates that acknowledging blame is recommended as the response to the negative publicity rather than not acknowledging blame. To be specific, acknowledging blame can be done through two types of response strategies, including voluntary recall and super effort. Whereas, unacknowledged blame (such as denial response, involuntary recall, or no-comment response) would lead to a bigger negative impact on brand equity, which are not recommended as a whole benefits.

According to the previous approach to test the relationship between blame acknowledgement and brand equity, it is supported that different types of blame acknowledgement would lead to different impacts on relative elements of brand equity. For instance, brand’s market share would be not negatively affected if the blame must be acknowledged; whereas, it would be negatively affected if the blame must not be acknowledged. In addition, it is believed that certain problems related to brand equity would become more pronounced while the brand was blamed. For instance, the loss of market position would be tough to compensate and recovery, which reflects

the customers' decreasing belief towards the brand. Furthermore, the customer become more sensitive to the price during the product-harm crisis while the brand is to blame. Thus, it would be difficult to save the price premium, which would somehow reduce the brand equity. (Cleeren et al. 2013)

Also, as the type of blame which must not be acknowledged, the denial and no-response have a negative impact on brand equity, especially on the brand loyalty. It is believed that the blame attribution would result in a negative word-of-mouth advertising effect and customers' anger towards the firm. To be more specific, no-comment responding strategy would hurt the brand, since keeping silent about the blame would be treated as irresponsible firm who is lack of cares and concerns about its brand; or customers might thought the firm try to cover or hide something behind the crisis. In terms of a denial response, it would not make any sense since customers treat it as a deceptive way to avoid troubles. In addition, the customers' expectation about the firm's response is the cold-but-hard truth that the firm should take either full or partial responsibility of the product-harm crisis. Thus, it would be better for a firm to acknowledge the blame in order to meet the customers' expectation. (Hegner et al. 2014)

Last not but the least, the negative impacts of crisis on brand equity would be seriously high, while enterprise's response is either ambiguous or disconfirmed. And compared to a firm with an unambiguous response, an ambiguous response would lead to a negative outcome of the brand equity. (Dawar & Pillutla, 2000) Therefore, as a conclusion, in the condition that blame must be acknowledged, the loss of brand equity would be reduced compared to the blame is not acknowledged during the product-harm crisis.

6.1.4 Answering Research question 2

The *Research Question 2* is: “*What is the role of CSP in the relationship between the product-harm crisis and CBBE?*” In order to answer the second research question, the hypothesis 2 “*The higher level of CSP, the lower impacts of product-harm crisis on brand equity*” is tested as an accepted assumption. According to the result of GLM procedure, it is proven that the loss of brand equity is negatively affected by the level of business ethics (ethical part of CSP elements). It means that the ethical CSP could compensate the loss of brand equity resulted from the product-harm crisis. In addition, in order to compensate the 1 unit loss of brand equity, there

should have 4 units of Business Ethics. Thus, in order to minimize the loss of brand equity, the firm should maximize the level of Business Ethics.

Regarding the logic of the protection (moderator) role of ethical CSP, certain previous research could be used for explaining this finding. There are certain tested moderators of influencing the relation between product-harm crisis and brand equity in the previous researches, including firm reputation, consumer expectation, and pre-crisis brand trust. In addition, those three variables are connected with CSP.

As the first moderator, prior firm reputation is tested to have a protection role for the brand equity against the harm of the crisis. Whereas, the firm without prior firm reputation would suffer a bigger damage to the brand equity from the product-harm crisis. The above findings are based on the fact that the customers' expectation of firm's response is based on the firm's reputation. To put it in other angle, customers attempt to give more trusts in the firm with good prior firm reputation than that with no prior firm reputation. In addition, customers attempt not to pass the negative word-of-mouth or express less extent of anger for the firm with good firm reputation. (Dawar & Pillutla, 1997) Furthermore, it is tested that a good CSP could lead to a good firm reputation among different stakeholders. (Wang & Beren, 2015) Thus, in such a way, a good CSP leading to a good reputation can indirectly protect the brand equity from the harm of the crisis.

As the second moderator, it is believed that the customer expectation moderate the impacts of product-harm crisis on brand equity regardless of what type of the firm's response strategy is. In addition, the higher expectation of consumers leads to a higher brand equity as the consumers search the firm's response information which match to the expectation in their mind-set . Also, it was also found that customers' judgement about the firm's response is strongly affected by the firm's reputation and customer's beliefs. Customers' beliefs about the firm's behavior are constructed according to the previous experience about the firm's previous behavior. (Dawar & Pillutla, 2000) And there is a halo effect of CSR on consumer's expectation, which specify the spill-over effect of CSR on consumer's expectation. Thus, with the halo effect on consumer expectation, CSR would spill over the impacts of product-harm crisis on brand equity.

As the third moderator, the pre-crisis brand trust can act as a shield to weaken the negative effect of product-harm crisis on the brand equity. In addition, a trusted brand with a good firm reputation could recover faster and experience less harms from the product-harm crisis, which benefit from the buffering effect of the pre-crisis brand trust. (Hegner et al. 2014) Furthermore, CSR programs could establish brand credibility, which would directly enhance the pre-crisis brand trust among consumers. (Hui-Ming, 2010) Thus, CSR could moderate the impacts of product-harm crisis on brand equity through the brand trust.

In addition, there are several tested impacts of CSR in a product-harm crisis, including limiting the negative effects of a crisis on purchase intention, positive influences on brand evaluation plus brand attitudes during a crisis, and a mediating role on relationship between brand evaluation and blame of a product-harm crisis. (Vassilikopoulou et al. 2009; Assiouras et al. 2013; Klein & Dawar, 2004) Thus, as a conclusion, it can be assumed that there is a positive impacts of CSR on the outcome of product-harm crisis. To reflect on this research, CSR would positively affect CBBE, which is the outcome indicator of product-harm crisis.

What's more, there are several tested positive impacts of CSR on brand equity in a direct and indirect way, including a stronger customer identification, leading to brand engagement, building brand-community atmosphere, creating brand awareness, improving brand image, raising brand senses, and building brand credibility, favorable evolution, a better customer satisfaction, and eliciting brand engagement. (Hoeffler & Kevin, 2002; Sen & Bhattacharya, 2001; Luo & Bhattacharya, 2006; Brown & Dacin, 1997) All in all, the moderator role of CSP has been tested and explained with previous literatures, which can protect the CBBE during the product-harm crisis.

6.1.5 Unexpected results

There are certain unexpected findings, including crisis-scenario-based findings, gender-related finding, and surprises about brand familiarity as well as prior experience to the brand compared to previous literatures.

Firstly, in terms of the crisis- scenario-based finding, the LS-Means of blame-taken groups are higher than that of blame-untaken groups, which indicates that blame-taken has bigger positive

impact on brand equity over blame-untaken. In addition, the difference between unacknowledged blame and acknowledged blame crises in the low-severity groups is bigger than that in the high-severity groups, which indicates that the acknowledged blame in low-severity crisis makes bigger sense and have impacts on the changes of brand equity compared to that in the high-severity crisis. To put it in another angle, blame acknowledgement is a more important factor positively influencing brand equity in the crisis with low-extent severity than that with high-extent severity. Thus, the firm would better acknowledge the blame in the low-extent severity, which would have a better outcome than that in the high-severity crisis.

According to the previous researches, the organizational response is an important factor of determining consumers' attitudes and insights towards a firm in a product-harm crisis. It is proven that the blame-taken response (super effort and voluntary recall) would lead to a positive consumers' attitudes and insights compared to the negative opinion in the blame-untaken (denial and forced recall) crisis cases. (Vassilikopoulou et al. 2008) Thus, blame acknowledgement would have a relative lower loss of brand equity compared to the condition with unacknowledged blame.

Regarding the logic behind the better outcome of blame acknowledgement in the low-extent severity, there is an important conceptual framework called expectation and evidence framework. The customer weight the danger of the defective product and interpret the responsiveness based on the prior expectation. In addition, according the expectation and evidence framework, the prior expectation towards the firm's responses in the high-severity crisis is stronger than that in the low-severity crisis. (Dawar & Pillutla, 2000) Furthermore, the severity level would affect the way how a firm response to the blame of the crisis. (Kelly & Campbell, 1997) Thus, the gap between expectation and satisfaction from the firm's blame-taken response would be bigger in the low severity compared to that in the high severity crisis.

Regarding the increase brand equity in the low-severity crisis with acknowledged blame, it indicates that the blame-taken response strategy in the low-severity crisis would lead to a positive outcome of a product-harm crisis. In particular, taking the terminology of Aaker (1996) into consideration, the assets and liabilities of a brand would increase due to the product-harm crisis; and the value attached to the brand name and symbol would grow after the product-harm

crisis. Thus, the firm definitely should acknowledge the blame in the low-severity crisis in order to have a higher brand equity. According to the previous studies, it was found out that the firm with a super effort would lead to a positive insight from consumers towards a firm who would purchase a new product after the product-harm crisis. (Vassilikopoulou et al. 2008) Therefore, the increase brand equity in this condition can be explained by this positive opinion resulted from blame-taken response, which is combined with better results in low-severity crisis explained in the expectation-evidence framework.

Secondly, in terms of the gender-related findings, the changes between pre-crisis and post-crisis brand equity among the females is bigger than that among males, which indicates that females are more sensitive to the product-harm crisis than males. Whereas, there is no significant difference between females' and males' opinions towards the pre-crisis brand equity. Thus, the firm should be more careful while deal with females' defective products. The reason why the females are more sensitive to the crisis is because females have a higher likelihood of feeling personal vulnerable to negative outcomes than males due to some biological plus sociological factors, which is known as the concept "personal vulnerability". In addition, it was also found that the females are more prefer to blame the firm rather customers in a product-harm crisis compared to males. (Kardes et al. 2015)

Lastly, it was surprise found out that the two control variables "Brand familiarity" and "Prior experience to the brand" don't have significant impacts on the changes between pre-crisis and post-crisis brand equity. Whereas, brand familiarity was proven that it can protect the brand equity as a buffer against the product-harm crisis. (Cleeren et al. 2008) Furthermore, it was proven that the prior experience to the brand can affect how customers react to a product-harm crisis. In addition, the positive prior user experience would lead to protection role for reducing the negative impacts of the product-harm crisis. (Rea et al. 2014) The reason behind this difference might be the average low brand familiarity and low prior experience to the brand, which would affect the judgement about the brand equity somehow.

6.2 Theoretical contributions

There are certain implications for impacts of product-harm crisis on brand equity from this study. This study refines the previous literatures about the impacts of organizational responses in a product-harm crisis. For instance, this study has specified the scope of the super-effort effect: the blame-taken response strategy in the low-severity crisis would lead to a positive outcome of a product-harm crisis. According to the previous studies, it was found out that the firm with a super effort would lead to a positive insight from consumers towards a firm who would purchase a new product after the product-harm crisis. (Vassilikopoulou et al. 2008) Comparing to the above proven argument, this positive opinion would happen only in the low severity condition, which exclude positive insight from consumers in the high severity extent.

In addition, this study found out in what condition the blame acknowledgement would have a bigger effect. It is proven in this study that blame acknowledgement is a more important factor positively influencing brand equity in the crisis with low-extent severity than that with high-extent severity. Whereas, the previous research has studied the combination of negative publicity and blame acknowledgment but not involving the crisis severity. (Cleeren et al. 2013)

Rather than brand equity in the previous academic researches, the purchase intention is a main indicator for examining the outcome performance of a product-harm crisis. This study contributes the measurement method of the crisis's outcome with brand-equity from a consumer's perspective. (Rea et al. 2014; Cleeren et al. 2013; Dawar & Pillutla, 2000) And this research found out: *the product-harm crisis negatively affects CBBE*. What's more, compared to the fact that previous research mainly used single factor, this study enhance the crisis-and-brand related studies with a multi-factor method for characterizing product-harm crisis (severity and blame acknowledgment). (Assiouras et al. 2013, Pruitt & Peterson, 1986, Cleeren at al. 2013, Cleeren et al. 2007) And this research found out: *“The high-severity crisis leads to a bigger loss of brand equity than the low-severity crisis”* and *“The blame acknowledgement of product-harm crisis to a less loss of brand equity than the blame unacknowledged crisis”*.

There are certain implications for research on moderating role in a product-harm crisis from this study. This study has found and proven that CSP may play a moderator role in the relationship between product-harm crisis and CBBE, which explain the reason why the former variable affect the latter variable. Except CSP, there are certain tested moderators of influencing the

relation between product-harm crisis and brand equity in the previous researches, including firm reputation, consumer expectation, and pre-crisis brand trust. Thus, this studies complement the study about moderating role in a product-harm crisis. In details, it is proven that a higher CSP can lead to a smaller loss of CBBE in a product-harm crisis.

Furthermore, there is a theoretical contribution of this study to the interactions among CSP, CBBE, and product harm crisis by generating a three-way relationship. On the one hand, in terms of studying the relationship between CSR and product harm crisis, the majority of previous researches involved CSR as the factor influencing the impacts of product-harm crisis. (Vassilikopoulou et al. 2009; Assiouras et al. 2013; Klein & Dawar, 2004) On the other hand, in terms of studying the relationship between CSR and CBBE, the majority of previous researches tested positive effects of CSR on brand equity. Thus, this study offers additional knowledge to the relationships among three variables by combining the interactions among them: the extent level of CSP explain why the changes of brand equity in a product-harm crisis is different.

This study also contributes to the measurement method of CSP. The majority of previous researches used either secondary data from third party or CSP scores reported by firm. (Hui-Ming, 2010; Melo & Galan, 2010) This study gave an example how the CSP can be evaluated and measured from a consumer's perspective. In addition, in this study, the secondary data about CSP from third party was compared with tested CSP data.

Last but not the least, this study also involves personal vulnerability in the factors influencing the impact of product-harm crisis on brand equity. It is proven that the reason why the females are more sensitive to the crisis is because females have a higher likelihood of feeling personal vulnerable to negative outcomes than males due to some biological plus sociological factors, which is known as the concept "personal vulnerability". (Kardes et al. 2015) There are six commonly accepted factors influencing the outcome performance of product-harm crisis in the previous literature, including company reputation, external effects, organizational response, time, severity, and the types of victims. (Vassilikopoulou et al. 2009; Siomkos & Kurzbard, 1994; Coombs, 2014) Thus, this study has extended the factors influencing the impact of product-harm crisis with personal vulnerability.

6.3 Practical implications

The results of this study stated that a product-harm crisis leads a negative impact on CBBE in general; and CSP is a moderator of determining the effect level on brand equity. This experimental study suggests the practical implications as below.

Firstly, CSR managers should build and maintain the CSP in a high level. A high level of CSP are built with a cumulative transactions and actions through contained periods, which are expensive and takes time. However, it was proven that a higher CSP can lead to a lower loss of CBBE in a product-harm crisis. Whereas, the product-harm crisis is a sudden event where negative publicity can happen and extend in a very short time. Thus, when a firm with a low level of CSP, it would be so late to build a high level of CSP, which would lead to a big loss of brand equity. However, in terms of a firm with a high CSP, the loss of brand equity might be compensated to a smaller loss or even be enhanced after the crisis. From a financial perspective to maintain the CSP in a high level, the investment cost of maintaining the CSP in a high level can be compared to its returns in order to see whether it deserves to do so or not. However, in this context, the returns of CSP are not limited to a product-harm crisis including the compensation to brand equity and other benefits such as a good firm reputation.

Secondly, the crisis managers should acknowledge the blame in a low-severity crisis. The product-harm crisis not always comes with a negative influence on brand equity: it was proven that the firm would better acknowledge the blame in the low-extent severity, which would have a better outcome than that in the high-severity crisis. Thus, it can be a threat but also can be an opportunity for a firm; however, the result might vary from cases to cases depending on the extent level of crisis's severity and organizational response strategy. In addition, brand manager can take advantage of this effect by advertising the super effort responses and customers' positive opinions after the crisis.

Thirdly, considering the two factors of product-harm crisis, the firm can minimize the negative consequences on brand equity. For instance, the acknowledged blame would have bigger effects on brand equity compared to unacknowledged blame in the low-severity crisis than that in the high-severity crisis. In addition, it was tested that the high-severity crisis would lead to a bigger

loss of brand equity than the low-severity crisis, which suggests that crisis managers need to allocate more resources on minimizing the negative consequences. Moreover, the customers expect the firm to acknowledge the blame with apologies, product recalls, and super-effort responses rather than denying the responsibility or even do nothing.

Lastly, it was proven that females are more sensitive to the product-harm crisis and more prefer to blame the firm rather customers in a product-harm crisis compared to males. Thus, the firm should be more careful while deal with females' defective products. For instance, certain product categories are more often used by females segments, which would have a worse consequences than other products. Thus, the product-harm crisis related to those product categories would lead to a bigger loss of brand equity, which need to a bigger effort and time for compensating.

6.4 Limitations and future directions

There are certain limitations of this research which generate future approaches in order to extend related researches, including a limited number of measurement variables, limited research generalizability, and a limited method of self-reported data collection. Firstly, there is a limited amount of variables in the conceptual research model which are used for characterizing the product-harm crisis and assessing the CBBE as well as CSP. Thus, the future research might be extended by taking more variables into consideration, which are not covered by this study.

Taking the product-harm crisis for instance, except for severity and blame acknowledgment in this study, there are also other factors which influence the product-harm crisis, including external effects (negative publicity), time, and the types of victims. Taking the effect of time for instance, due to the longitudinal effects, the different time periods between the observation data and the date of the product-harm crisis (such as one month, one year, or three years) could have a different impact on brand equity. In addition, blame acknowledgment is used as an elements of reflecting the organizational response; whereas, there are also other types of organizational responses which have been studied in the scholar such as involuntary recall, denial response, voluntary recall, and super effort. Furthermore, based on this future research extension, the

importance of different factors influencing CBBE could be studied by conducting a conjoint analysis.

Taking the CBBE for instance, Aaker extended its conceptual framework from four items in the year of 1991 to ten items in 1996. Thus, the future research can include other variables such as perceived value, brand personality, leadership measures, market share, and distribution indices. Taking CSP for instance, there would be more precise variables if the target sample has a larger scope such as involving more stakeholders (such as the media, investors, and regulators) in the study. For instance, if the managers from the case firms can be accessed, the insights about the principle of managerial discretion could be added to the CSP measurement framework. Or if the leader from the case firm can be accessed, the social legitimacy could be assessed in an institutional level as a combination with public responsibility and managerial discretion.

Secondly, the research generalizability is another major limitation of this study. Since this study is an experimental research which was conducted in a fictional laboratory settings, the results cannot be generalized to external factors and settings. Thus, the future research could consider a real product-harm crisis as the case to study. What's more, the target sample in this study also limit the research generalizability. Because the respondents were reached through personal contacts, the results have certain limitation for reflecting the open public's insights. In addition, the average brand familiarity is low which could affect the real judgement about the CSP and brand equity. Thus, the target sample of future research could be more focused on more knowledgeable populations such as case firms' car users.

Lastly, since the data was collected through a self-conducted questionnaire with closed-ended Likert scale questions, the willingness of reflecting respondents' insights about the phenomena was limited. Thus, the open questions could be added; or interviews could be conducted for the future study with potential insights.

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APPENDICES

Appendix 1. Quantitative survey for the experimental study

To which degree do you agree with the following statements 1-11, 13-15?

(1= Strongly disagree, 2=Disagree, 3=Neither agree or disagree, 4=Agree, 5=Strongly agree)

1. BMW/Ford is a socially responsible company.
2. BMW/Ford cares about the environment.
3. BMW/Ford treats its employees well.
4. BMW/Ford has an excellent customer service.
5. The BMW/Ford car's price is reasonable.
6. BMW/Ford complies with relevant laws.
7. BMW/Ford offers excellent product information in order to ensure user safety.
8. BMW/Ford invests a lot in the charities for dealing with social problems such as climate changes.
9. BMW/Ford is an organization I would trust.
10. The quality of BMW/Ford is extremely high.
11. I would recommend BMW/ Ford cars to my friends.
12. If the car had the same quality and attributes, I would _____

(For BMW respondents, 5= Pay more money to buy a BMW car instead of a Ford car, 3= pay the same amount of money for the car, 1 = Pay more money to buy a Ford car instead of a BMW car; For Ford respondents, 1= Pay more money to buy a BMW car instead of a Ford car, 3= pay the same amount of money for the car, 5 = Pay more money to buy a Ford car instead of a BMW car)

Four Product-harm Crisis-Scenarios, which was randomly selected for the respondents

High Severity* Acknowledged Blame

During the Easter holiday, A **BMW M4/Ford Mustand** caught fire in a rear-end collision on the bridge near Hakaniemi in Helsinki. The fire led to a big explosion and a traffic chaos in the end, which resulted in the **death of 20 people and polluted water & air** nearby. The **BMW Corporate** **admitted the responsibility** immediately that it was caused by a structural design problem leading to the fuels spilled from the fuel tank filler neck. The firm **recalled** all the same series for avoiding other potential crisis; and the company informs the way of returning the defective product. In addition, the firm compensated the victims' families with **200,000 euro/victims**. The firm also donated **half a million** for cleaning the

polluted water&air. The recalled cars users are compensated with **life-time 30% discounts** of automotive parts.

High Severity* Unacknowledged Blame

During the Easter holiday, A **BMW M4/Ford Mustand** caught fire in a rear-end collision on the bridge near Hakaniemi in Helsinki. The fire led to a big explosion and a traffic chaos in the end, which resulted in the **death of 20 people and polluted water & air** nearby. The **BMW Corporate** stated that it was just one single independent event which has nothing to do with other cars and the firm. However, there are some **rumors** from the social media: “it is not one-time thing --- thousands of BMW M4 have the same issues, which is caused by the structural design problems leading to the fuels spilled from the fuel tank filler neck.”

Low Severity* Acknowledged Blame

It was reported that several **BMW M4/Ford Mustand** cars are not equipped with back seat belts. So far, **nobody was hurt** due to this potential risk. The **BMW Corporate** **admitted the responsibility** that the problem was caused by the manufacturer’s negligence. Even though nobody hurts, the firm called back all reported cars for solving the issues. The recalled cars users are compensated with life-time 30% discounts of automotive parts as well maintenance service.

Low Severity* Unacknowledged Blame

It was reported that several **BMW M4** cars are not equipped with back seat belts. So far, **nobody was hurt** due to this potential risk. After discussing with the seat belt sub-contractor, since nobody hurts, the firm would **not recall** the cars. However, some **news** stated that: “The **BMW** firm should take the responsibility. Because it is the manufacturer’s negligence that thousands of other cars are either not equipped with seat belts, which might potentially lead to people’s death in a car accident.”

13. BMW/Ford is an organization I would trust.
14. The quality of BMW/Ford is extremely high.
15. I would recommend a BMW/ Ford car to my friends.
16. If the car has the same quality and attributes, I would _____ (Choose one) (Same as Q12)
17. You are a ___? (1=Male 2= Female)
18. You have or study in __ degree? (1=Middle School 2=High School 3=Bachelor 4= Master/above)
19. You are _____ with the BMW/Ford brand. (1 = not at all familiar, 2= slightly familiar, 3= somewhat familiar , 4= moderately familiar, 5= extremely familiar)
20. Which following statements can correctly describe your current condition? (1= You have a BMW/Ford car OR You had a BMW/Ford car, 0= You have/had car(s) from other brands OR You don’t have a car)

Appendix 2. Questionnaire Codebook for Data Analysis in SAS Software

Question	Names	Variables	Coding Instructions
1	CSP_1	Public Responsibility	1 = Strongly disagree 2 = Disagree 3 = Neither agree or disagree 4 = Agree 5 = Strongly agree
2	CSP_2	Environmental Scanning	
3	CSP_3	Stakeholder Management	
4	CSP_4	Issues management	
5	CSP_5	Economic Outcome	
6	CSP_6	Legal Outcome	
7	CSP_7	Ethical Outcome	
8	CSP_8	Discretionary Outcome	
9	Pre_BE_1	Pre-crisis Brand Association	
10	Pre_BE_2	Pre-crisis Perceived Quality	
11	Pre_BE_3	Pre-crisis Customer Satisfaction	
12	Pre_BE_4	Pre-crisis Premium Price	For BMW respondents, 5= BMW is higher, 3= the same, 1 = Ford is higher; For Ford respondents, 1= BMW is higher, 3= the same, 5 = Ford is higher.
13	Post_BE_1	Pre-crisis Brand Association	1 = Strongly disagree, 2 = Disagree, 3 = Neither agree or disagree, 4 = Agree, 5 = Strongly agree
14	Post_BE_2	Pre-crisis Perceived Quality	
15	Post_BE_3	Pre-crisis Customer Satisfaction	
16	Post_BE_4	Pre-crisis Premium Price	For BMW respondents, 5= BMW is higher, 3= the same, 1 = Ford is higher; For Ford respondents, 1= BMW is higher, 3= the same, 5 = Ford is higher.
17	Gender	The respondents' gender	1=Male, 2= Female
18	Education	The respondents' education level	1= Master or above, 0= others
19	Familiarity	Brand Familiarity	1 = Not at all familiar, 2 = Slightly familiar, 3 = Somewhat familiar, 4 = Very familiar, 5 = Extremely familiar
20	Experience	Prior Experience to the brands	1= YES, 0= NO
	Car	Sampling Group	1 = BMW, 2= Ford
	Severity	the Crisis-Severity level	1= High, 2= Low
	Blame	Blame is acknowledged or not	1 = YES, 0= NO
	CSP_BE	Business Ethics from factor analysis	CSP_BE value = $(CSP_3+CSP_4)/2$
	CSP_SIM	Social Issue Management from factor analysis	CSP_BE value = $(CSP_1+CSP_2+CSP5)/3$
	CSP_CG	Contribution to Common Good from factor analysis	CSP_CG value = $(CSP_7+CSP_8)/2$

Appendix 3. Codes for data analysis in SAS software

*/*Factor Analysis for CSP items*/*

```
PROC FACTOR DATA=mvem.data1 METHOD=principal SCREE ROTATE=varimax S C;
VAR CSP_1 -- CSP_8;
RUN;
```

*/*Cronbach Coefficient Alpha for Factor 2*/*

```
PROC CORR DATA = mvem.data1 ALPHA NOMISS;
VAR CSP_1 CSP_2 CSP_5;
RUN;
QUIT;
```

*/*Paired T-test for post-crisis and pre-crisis brand equity*/*

```
PROC TTEST
  DATA = mvem.data1
  PLOTS=NONE
  ALPHA=0.05
  H0 =0
  CI = EQUAL;
  PAIRED Post_BE*Pre_BE ;
RUN;
QUIT;
```

*/*Two Sample T-test for Severity */*

```
PROC TTEST
  DATA = mvem.data1
  PLOTS=NONE
  ALPHA=0.05
  H0 =0
  CI = EQUAL;
  CLASS Severity;
  VAR Differences_BE;
RUN;
QUIT;
```

/ MANOVA (GLM Model for Δ BE)*/*

```
ODS GRAPHICS ON;
PROC GLM DATA=mvem.data1
  PLOTS(ONLY)= all;
  CLASS Car Severity Blame Gender Education Familiarity Experience;
  MODEL Differences_BE=          CSP_BE SIM CG Car Severity Blame Gender Education Familiarity
  Experience Severity*Blame
  /
  SS1
  SS3
  SOLUTION
  SINGULAR=1E-07;
  LSMEANS Car Severity Blame Gender Education Familiarity Experience Severity*Blame / PDIF
ADJUST=BON;
RUN;
QUIT;
```