The Effects of Product Recall Management on Customer Attitude: The Mediating Role of Brand Reputation

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Abstract: The increase of product-harm crisis recently might lead to a huge concern for the company in any size. Product recall is a kind of product-harm crisis that brings along the tremendous direct and indirect cost. In this case, it is prior to understand the customer attitude toward the problem and determine the reasonable customer response. This paper was built on the case of A1300 iPhone chargers. The research model observed the direct effect of Responsible recall management (RES), Opportunistic recall management (OPP) and Customer empathy (CEM) on Customer attitude (ATT). Moreover, the mediating effect of Brand reputation (BRA) on those relationship was considered. The data analysis of 227 responses supported the proposed model. The result revealed that the affection mostly comes from RES regarding indirect effect and from BRA as well as RES in terms of direct effect.

Keywords: brand reputation, customer attitude, product recall, product crisis management, Vietnam

I. INTRODUCTION

The fact is that every year, there is an increase in the number of product recall event. In 2009, Eurostat revealed that in 2008, there were 1,866 case, compared to 1,605 cases in 2007 and only 1,051 cases in 2006. Not only in European, in the US, the number of product recall event grew by 46% from 56 cases in 2013 to 80 cases in 2014. Regarding the situation in Vietnam, there are three reputable companies made the recall in 2014, namely: Toyota Vietnam with 42,770 cars, Abbott Vietnam with Similac Gain Plus Eye-Q milk powder, and Apple Inc. with A1300 charger of iPhone. Apart from the number of recall events, the negative impact that the companies have to experience is vast. In fact, one of the noticeable cases is Toyota in 2009. This company recalled its Yaris and immediately dealt with the loss of $3.1 billion. Some other cases for further references are Kraft in 1996, Sony and Dell in 2006, Mattel in 2007 and Bosch in 2014. The recall and its consequences now are the alert for the companies in any size all over the world.Because of the substantial impacts of the product recall, there appeared a number of research paper about this such as the research for figuring out the effective way to implement product recall (Schoeny, 1992; Smith et al., 1996), the research on product crisis management (Siomkos & Kurzbard, 1994), the researches on corporate responses and consumer perceptions (H. Murphy & M. Popa, 2012) or the research on perception factors and customer reaction (Jung, 2011). However, it seems there is lack of study about the customer attitude toward the product recall under the impact of perception about the brand of the company, especially in the background of developing countries like Vietnam. Thereby, this research was developed to fill in the gap and response to the most crucial concern "How to bring the customer attitude back to pre-crisis period?".

In June 2014, Apple Inc. announced the safety risk caused by the overheated iPhone charger (Apple, 2014). According to this announcement, the charger model A1300 of iPhone 3GS, iPhone 4, iPhone 4S distributed between September 2010 and September 2012 would be exchanged for a new ones at Apple Retail Store or Apple Authorized Service Provider. Besides that, the affected power adapter would be disposed of in an environmentally friendly way. The recall activity was carried out in 37 markets including Vietnam. Once the announcement was made, the stock value of Apple Inc. decreased by 1%. The reputation of the company which is famous for the quality and the highest share of smartphone market around the world (20%) alongside Samsung by the end of 2014. (Statista Inc., 2015) was threatened. Most of the available research are studied in the context of developed countries such as Canada, Italy, Greece, and Korea. Thus, there is likely to lack the studies in the developing countries, especially Vietnam. It might leads to the insufficient information about handling product crisis, typically product recall in the developing countries. For that reason, this research with the findings in the context of the developing countries would be expected to benefit the companies in those areas such as Vietnam. The findings from the research paper would also equip the company, in this sense is Apple Inc., with a snapshot about customer attitude toward the product crisis problem and suggestions on how to handle the product crisis well in the developing countries as Vietnam. Therefore, the following objectives were developed as directions to investigate the relationship among product recall, brand reputation and customer attitude: (1) to understand the customer attitude toward Apple Inc. after the product recall; (2) to measure the impact of the product recall on the customer attitude; and to suggest managerial implications to handle the product recall

II.   THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

Product crisis management

Product crisis management is an effort from the company to manage the product-harm crisis, which means customer and public communication about the crisis situation and the result of this is the customers' perception returning to the pre-crisis period. The right action will reduce the cost and recover the image quickly. Siomkos & Shrivastava (1993) claimed that customer attitude is the most influential indicator to determine an effective crisis management. Typically, Siomkos (1999) stated that the product crisis management is effective when the consumer approves of the organizational response and is persuaded that the product is safe again. Two research from Siomkos (1989) and Siomkos & Kurzbard (1994) suggested that the company should manage well three factors: (i) Corporate reputation, (ii) External effects such as the impact of media, and (iii) The company's response to the crisis. Considering the company's response,there are four types to notice as follows: Denial which means the company refuses the responsibility and avoids the communication on the recall; Involuntary recall which is recalling under the force of the government or the Federal Agency; Voluntary recall implying the companies recall the defective product voluntarily, without the force from the Federal Agency, and Super-effort which shows the great effort and concern on the community's benefit as well as welfare. Based on situation and ability, the company would decide the response to recover the brand.

Product recall:

Product recall is one kind of the product-harm crisis. Tobin (1982) defined product recall as "any attempt to remedy or correct products that are defective or hazardous or that do not comply with agencies' safety standards". In other words, product recall is an action from the company to get back the defective or unsafety products in order to prevent the community from the harm. According to Magno, Cassia & Marino (2010), the product recall begins with a detection from manufacturers, distributors, importers, retailers, end users or government organizations. There are three kinds of product recall classified by Hartman (1987) as follows: (i) Major recall is the situation wherein the company has to recall more 20% of the stock of the recalled model. (ii) Medium recall is the middle level with the rate of recalled stock falling between 10% and 20%. (iii) Minor recall is the less harmful situation with less than 10% of stock recalled. Regarding the cost that the product recall brings to company only, there appears two costs: (1) Direct costs implying the expenditures used to manage the product crisis such as expenses for detecting, fixing, refunding, replacing (Jayaraman, Patterson & Rolland, 2003) or handling the media crisis, and indirect cost which is associated with the damage on the brand image (van Heerde, Helsen, & Dekimpe, 2007) like the decrease in reputation and market performance. The research from Siomkos & Kurzbard (1992) showed that the negative information on the recalled product which the customers mostly perceive throughout the recall, impacts negatively on the customers' perception and might lead to the change in purchasing behavior. Moreover, it is said that brand reputation depends on the perception so when the customers are affected, their perception about the brand's safety and quality may be changed (Keller, 1993).

Previous research related to the study

The research model of this research was considered and adapted after a review process of the previous research papers had been made. The first model was reviewed is from Francesca Magno (2013). In this paper, Magno investigated the impact of perceived company's efforts, the perceived potential danger, and time on the behavioral intention to response where variable "time" was the period between the purchase of the product and the recall announcement (Roth et al., 2008; Hora et al., 2011). By using this model, the research is only able to draw a general conclusion as there was no clear classification on the company's effort and the risk (perceived danger) into specific categories or cases. In the real situation, the invalidity is likely to appear.

The second research proposed by Hee-Kwon Jung in 2011 showed how repurchase intention is affected by perceived risk, perceived corporate response, perceived brand difference, perceived expertise difference and perceived social responsibility. Basically, this model focuses on the repurchase intention more than the customer attitude. The plus point of this model is the clear and wide range of perception it classified including risk, corporate response, brand difference, expertise difference, and social responsibility. Again, the researcher would only study the customer's perception in general if using "influencing factors on consumers' reaction". The point is that the researcher cannot know if the customers think the same as the company when the company response to the recall situation in the different way. That can be considered as both the strength and weakness of this model.

The research conducted by a team of Athens University of Economics and Business and University of Ioannina in 2009 was also reviewed. In this paper, Vassilikopoulou, Siomkos, Chatzipanagiotou & Pantouvakis (2009) researched the customer responses under the affection of Crisis extent, Social responsibility, Company's response and the most important factor in that research, Time period after the crisis (i.e.: 3 days, 3 months, 1

year) The customer responses were studied in the form of Future Purchases moderated by Perceived danger and Impression on the company. The good point of this model is to include variable "Time", which is rarely seen in most of the present researches. Vassilikopoulou et al. (2009) found that Time is the powerful indicator to decide whether the crisis passed or not. Conversely, the limitation of this model and its method is that the research has to be conducted under a real event and time period. It is suggested that the study carried out within 2 weeks after the crisis would give an accurate result on the customers' perception. Unless it is studied in the real time span, the customer may find difficult to determine their perception associated with the time period. In sum, this model is ideal for measuring the impact of time on the crisis management but it is impossible to apply in case of Apple Inc.

The fourth study is from Magno, Cassio & Marino (2010). In their research, they proposed a model with 4 variables where Responsible recall management and opportunistic recall management affect customer attitude throughout the moderation of brand reputation. Its good point is that it showed a gap between the expectation of the company when they handle the crisis and the perception of the customer to that response. In this sense, the response was studied with two characteristics: responsible and opportunistic. One of the limitations of this research is it used the quasi- experiment with the recalls was not studied within their natural setting. It might be costly and resulted in the low validity.

The research of Murphy & Popa in 2012 was the last review. The model developed by Murphy et al. (2012) proposed 3 main dependent variables: information search behavior, attitudes toward the company and purchase intentions. The variable "product recall event" appearing in their model played the role of the independent variable which only affectspurchase intentions. The complexity in the relationship among variables causes the difficulty in collecting and analyzing data. Furthermore, this model was first tested with a stimulated case, thereby, it is risky to use for studying a real case as case of Apple Inc. However, this model benefits the research studying the behavior, the attitude and the purchase intention at the same time. The model and tactic are ideal for studying the customers' reaction under the recall situation with various cases. This results from Murphy and Popa's classification of product problem into major versus minor problem, company response into strong versus weak response. The combination of product problem and company response would provide four different cases for researching.

Hypotheses development and Research model

The relationship between the crisis management and the customer attitude toward the company has been studied in a number of research. Soiuden & Pons (2009) pointed out a firm's crisis management is positively linked to the customers' loyalty and the repurchase intention in the future. This interpretation is confirmed by a research from Dawar & Pilluta (2000) stating that a company's response to a product crisis affects the future repurchases of consumer, meanwhile, the future repurchase and the customer attitude correlate (Jung, 2011). Then referring to a finding of Mowen et al. (1981), it suggested that the company should act in a socially responsible manner when there is a product recall. However, while the company supposes that it acts responsibly, the customer may perceive differently and change their attitude permanently. Hence, the following hypotheses are raised to confirm the relationship between perception on responsible (opportunistic) recall management and customer attitude:

H1: Customers' perception that the company has managed product recall in a responsible way is linked to their attitude toward the company after the crisis.
H2: Customers' perception that the company has managed product recall in an opportunistic way is linked to their attitude toward the company after the crisis.
H3: Customers' perception that the company has customer empathy is positively linked to their attitude toward the company after the crisis.

The research conducted by Siomkos & Kurzbard (1994) confirmed that the company's reputation, response and external effects during the crisis have a significant influence on the customer with respect to the sales of other products by the same manufacturer. In other words, under the crisis situation, the three elements above would have an impact on the sale of not only the recalled product but also the other products from the same company. Moreover, it is said that brand reputation could shape consumer response to recalls (Eilert, 2013) and a good reputation can palliate the negative effect of the product crisis on the company (Siomkos, 1989). Additionally, Magno et al. proved the correlation among responsible recall management, opportunistic recall management, brand reputation and customer attitude in their research about the product recall in 2010. Hence, we can hypothesize that brand reputation can moderate the effectiveness of product crisis management on the customer attitude.

H3: Brand reputation has a positive effect on the customers' perception of the company recall as responsible recall management.

H4: Brand reputation has a positive effect on the customers' perception of the company recall as opportunistic recall management.

H6: Brand reputation has a positive effect on the customers' perception of the company recall as customer empathy.

H7: Brand reputation is positively linked to the customer attitude.

Based on the background of the study, the review of the related models, and the hypotheses addressed above, the research model of Magno et al. (2010) is adapted in this research because of two following reasons:This model gives a clear direction to investigate with two aspects of the company's response (responsible and opportunistic) under the moderating of brand reputation. Brand reputation is one of the elements having a close relationship with the product recall as Cleeren, Dekimpe & Helen (2008) found that the stronger brand recover much faster than the weaker brand. Dawar & Pilluta (2000) also figured out "the more reputable the firm or the stronger it's the brand, the more likely companies are able to get away with stonewalling" which means the brand equity of the more reputable firm is less affected by the crisis than the weaker ones.This model was tested in Italy which is a developed country and has not been studied in the context of Vietnam yet. Meanwhile, the economic background of the developed countries as Italy and the developing countries as Vietnam is totally different. Therefore, this framework is useful and suitable to test under the economic condition of Vietnam.
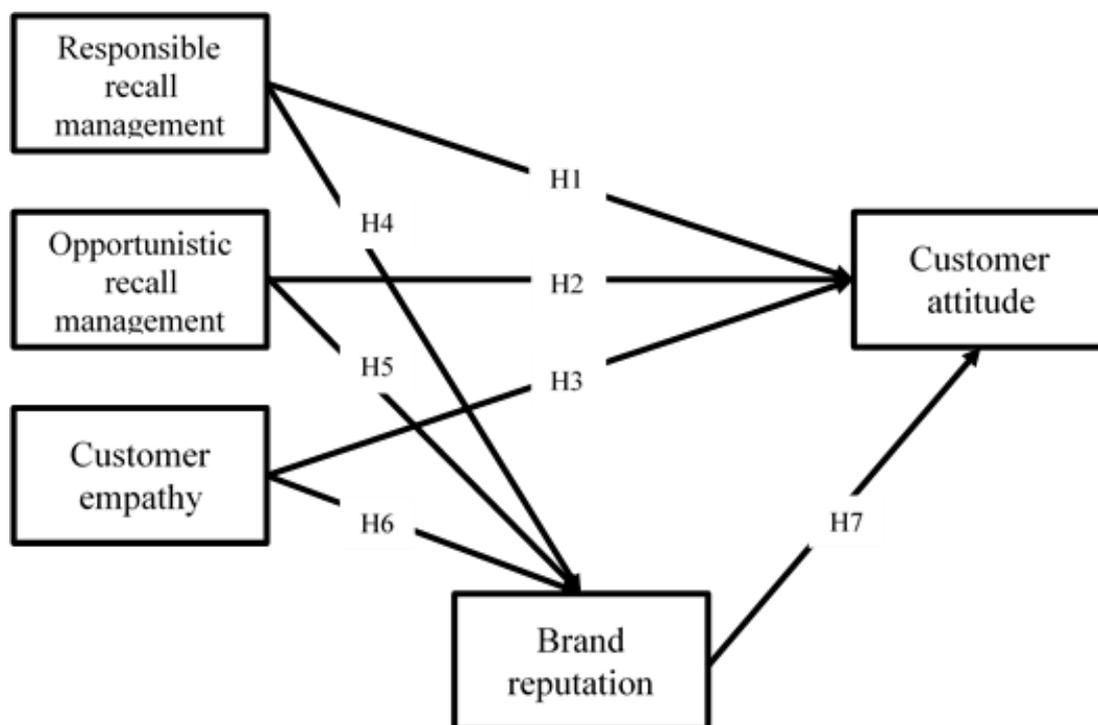

Figure 1: The proposed conceptual framework

III. RESEARCH METHODS

The constructs of the survey were measured by the interval measurement scale through multiple items on 5 points Likert Scale. The main target respondents are iPhone users aged 18 to 35 in Ho Chi Minh city. Three hundred questionnaires were delivered to respondents. The response rate is 89% given by dividing the number of sent survey by the number of returned survey (Instructional Assessment Resources, 2007). However, only 227 responses are qualified to be used as the sampling data for the research. Then, the descriptive statistics and reliability test confirmed that the measurement scale was well-structured with high internal consistency. As table 1 shows all of the Cronbach's alpha results were greater than .6 ranging from 0,699 to 0,899. Then, factor analysis was also employed. his study processed exploratory factor analysis with the principal component extraction method and Varimax rotation. Factor analysis was first applied for 15 items of independent variable: Responsible recall management (RES) and Opportunistic recall management (OPP). After six rounds, the

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number of items were reduced to 9 items. At the same time, these 9 items were grouped into three independent variable including the new variable: Customer empathy (CEM). Also, together, these three variables explained 58.78% of total variance with KMO value was relative good (.731). Regarding moderating variable, after 3 rounds of factor analysis, 7 initial items were deducted to 4 items. The KMO value of this variable was high (.814) and explained 67.18% of total variance. Finally, dependent variable (Customer attitude – ATT) with six items were remained and explained 66.711% of total variance with very high KMO value (.899).The result of factor analysis extracted one new independent variable: Customer empathy. According to Keith Armstrong (2013), Customer empathy is the development of the customer understanding about needs and motivations. Moreover, Customer empathy was included in Service quality model developed by ParsuParasuraman, Valarie Zeithaml and Len Berry in 1988. This model predicts and evaluates the customer expectation and attitude toward the service and company. A research from RoksanaManukian in 2015 also proved the correlation between 5 dimensions of SERVQUAL and brand reputation as well as customer attitude. As a result, it is reasonable to include Customer empathy (CEM) in the research model

IV.   RESULTS AND DISCUSSION
Most of the respondents for this study was female. Among 227 respondent, there were 153 female respondents which accounted for 67%. Noticeably, 73% of the respondents are from 18 to 22 years. Likewise, Student was the largest group with 79% of the total. Regarding the income, 52% of 227 people which meant 117 respondents have less than 2 million for the income and the group of people having 2 million to less than 5 million accounted for 26% of the total respondents. Lastly, 43% of the asked people revealed that they have been used or used to use iPhone for at least 1 year or less than 3 years.

The Analysis
Correlation test confirmed the low consistency among the independent variables. Thus, there was a low probability of collinearity and these variables could be proceeded with multiple linear regression analysis. This type of analysis was performed on the revised model to find out the equation that describes the relationships among the variables. The equations would be the base for the path analysis in the final stage.

The relationship between independent variables and dependent variable:
$$ATT = .371*RES + .192*OPP + .287*CEM$$
Among three variables, RES (β =.371, p<.01) was considered as the most influential element since its value of correlation part value (.341) was the highest and the square of R was 11.63% which means it devoted the highest percentage to the total variance in the dependent variable. Moreover, the values in front of RES, OPP and CEM depicted how much the score of the ATT increases in association with every 1-standard deviation increases in the RES, OPP and CEM. Every 1- standard deviation increase in RES, OPP and CEM would yield an increase of a score of .371, .192 and .287 in ATT respectively. In sum, together, RES, OPP and CEM would explain 39.4% of variance of ATT and RES itself contributed 11.63% of total variance in ATT, when the variance explained by all other variables in the model is controlled for.

The relationship between independent variables and moderating variable:
$$BRA = .417*RES + .209*OPP + .207*CEM$$
The equation indicated that with every 1-standard deviation increment on RES, OPP and CEM, BRA increased by .417, .209 and .207 unit respectively. Moreover, among 3 variables, RES, again, was the most important factor and contributed the largest portion to the total variance in Brand reputation, when the variance explained by all other variables in the model is controlled for (β= .417, R^2= 14.67, p<.05). This means when RES increases 1- standard deviation, BRA would go up by .417 unit. An explanation for the highest percentage of RES might be because the positive attitude created when the customers perceive the recall of Apple Inc. as the responsible recall management. This positive attitude increases the customers' trust then building the reputation of the company. The most positive correlation which is between RES and BRA also suggested that the more the customers perceive Apple Inc. acting responsibly, the more they perceive the reputation of this company. In other words, if Apple Inc. wants to increase the reputation, this company has to care the customers sincerely and shows its respect to the customers.To conclude, 38.8% of the variance in Brand reputation could be explained by the linear combination of Responsible recall management, Opportunistic recall management and Customer empathy. Additionally, Responsible recall management was shown to have the main effect on Brand reputation with 14.67% of the total variance.

The relationship between moderating variable and dependent variable:

*ATT = .733*BRA*

The Standardized Coefficients – Beta in the equation above (.733) could be interpreted that the increase of 1-standard deviation in Brand reputation would yield .733 unit in Customer's attitude. In short, Brand reputation and Customer attitude have a very strong correlation as the representative value was .733. Brand reputation also explained 53.8% of the total variance of Customer attitude while the rest is explained by the excluded factors.
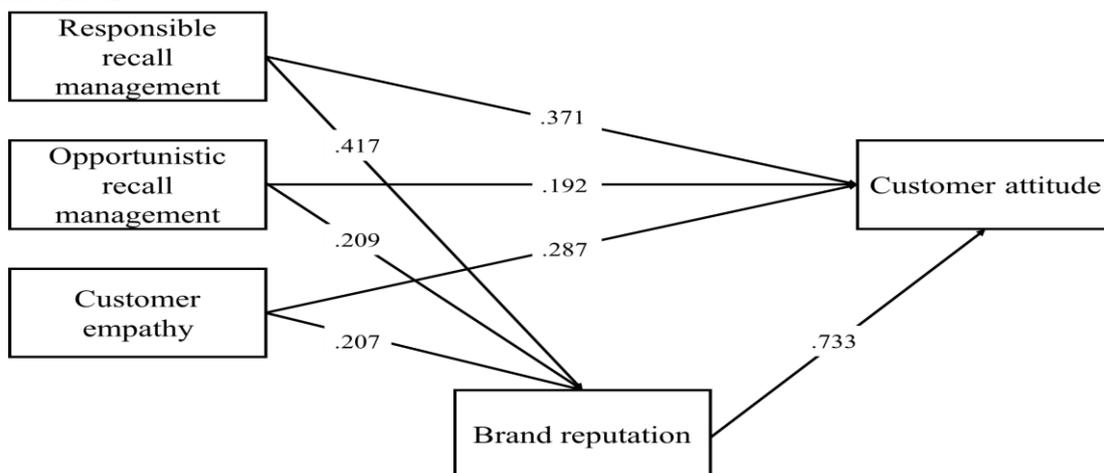

Figure 2: Path coefficients of the structural equation for hypothesis testing

Path analysis:

With respect to direct effect, the result of multiple regression shows that BRA had the strongest direct effect on ATT with β= .733 (p< .001) followed by RES with β= .341 (p< .001). The weakest correlation belonged to OPP with the value of .182 (p< .001), CEM was correlated with ATT at β= .268 (p< .001).

Table 2 summarizes the direct and indirect effects on ATT. In general, through the moderation of BRA, RES had the highest effect (β= .306) then followed by OPP (β= .153) and CEM (β= .152). The total computed indirect effect was .611 which accounted for 27.85% of total effect on ATT. This means when a recall happens, the brand reputation helps the company to shape the customer attitude toward the management of the company. Moreover, the customer attitude can be modified positively through acting responsibly in case the company has a good reputation.

Considering the total causal effect, it is shown that BRA had the strongest effect which was the direct effect only (β= .733). It could be inferred that brand reputation has a strong effect when sharping the customer attitude positively in case a recall happens though there is no action taken from the company. Having a total value of .677, the strong effect of RES on ATT means the company can enhance the customer attitude if they perform as a responsible company. CEM and OPP had the total value of .439 and .345 respectively, which shown the fair effect of CEM and OPP on ATT.

Table 2: Direct, Indirect and Total Causal effect

VARIABLES	CAUSAL EFFECTS		
	DIRECT	**INDIRECT**	**TOTAL**
RES	.371	.306	.677
OPP	.192	.153	.345
CEM	.287	.152	.439
BRA	.733	---	.733
TOTAL	*1.583*	*.611*	*2.194*

The results of analyses confirmed the addressed hypotheses. The summary is shown in table 3.

V.   CONCLUSION

The noticeable result of the study is that both customer attitude and brand reputation are affected mostly by the perception of responsible recall management. Hence, when the reputable company like Apple Inc. has a crisis such as a product recall, taking responsibility should be considered as the priority. Specifically, the

company needs to recall the product without the intervention of the government (Voluntary recall). The communication with the customers and media are also crucial. These connections must be clear and approachable. Especially, the customers including both the group who have purchased the recalled product and the group of current and potential customers of the company, had better be informed in the shortest period of time. The company might deliver the message through the email system, the official website and the announcement on the most popular and reputable online and offline newspapers or media channel. Nonetheless, an appropriate period for the announcement is not in the scope of this study might be investigated in the further researches.

Limitation of the study and suggestions for further research:

There are several considerations that the other researchers can notice if they want to conduct this topic further.Foremost, the research field needs to be noticed. The previous research included the case of automobile or the other products at upscale level. Thus, this paper used the case of iPhone which is a widely-known product with Vietnamese people. However, this product is quite expensive and is not used by the majority. Consequently, the target respondent of this study is narrowed and not easy to reach. This limitation leads to the suggestion that the further researchers might consider to expand the target respondent which may include both users and non-users of the researched product. Another recommendation can be thought of is to research in the other products lines such as food and beverage or low involvement products. Book, clothes or problem at the restaurant, supermarket or grocery store where the Vietnamese people usually visit can be taken as a case to investigate. Recently, Tan Hiep Phat case becomes a famous case about product recall and crisis management in Vietnam and that can be a good consideration for the further researchers to develop and study.

Another limitation of this research is time. iPhone case this research used happened 1 years ago but the recalled products had been distributed since 3 to 5 years ago. Then, most of the product now is not affected by the recall. As a result, although the respondents are iPhone users, they justify the problem based on the provided information and their attitude toward Apple Inc. and iPhone. It obviously lacks of the real justified thinking of people in that situation, which is important to give out the sufficient information for building the adaptable solutions for the situation in the real period of time. The suggestion for eliminating this limitation is to choose the case happening in less than 1 year with the product recently distributed. The distribution period is considered to be less than 1 or 2 years.

Final suggestion is to add more variable to the model. The model tested in this study figures out the existence of Customer empathy which is not included in the original model of Magno et al. (2010). However, together three independent variables and one moderating variable explained 38.8 to 53.8% of the total of variance of Customer attitude, the 40 to 60% remained is explained by the factors excluded in this study. Thus the further researchers need to investigate those excluded factors. The variables are namely time, the announcement form and some other factors can be considered to add up.

To conclude, there appears three limitations in this study which are the limitation of the target respondent, the time and the scale of the study. In order to improve the quality of the study, three suggestions are given out. The first one is to change the product line to investigate which means taking the low involvement product. The second suggestion is to take out the case happening in less than 1 year and the related time period is in maximum two years. This ensures the accuracy and reality in the responses. Finally, the model should be added up with time variable or the announcement form variable as well as the other factors.

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