

# **Structural Equation Model of Corporate Social Responsibility Innovation Adoption among Generation Y: A Case Study of PTT Public Company Limited**

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## **ABSTRACT**

This research on Structural Equation Model of Corporate Social Responsibility Innovation Adoption among Generation Y: A Case Study of PTT Public Company Limited aims to test the structural equation model of CSR innovation, corporate image and corporate reputation towards CSR innovation adoption among Generation Y, generated by the researcher, with the existing empirical literatures and principles. The quantitative research: a cross sectional survey methodology was applied to conduct the research. Then, 340 sets of questionnaire are distributed to collect data from Generation Y, who are 18 to 34 in age, living, studying or working in Bangkok and Vicinity. The respondents are composed of 152 male (44.7%), 184 female (54.1) and four unidentified gender (1.2%).

Results show that the model fit with empirical data (Chi-square = 131.348, df = 109,  $p = 0.71$ , Chi-square/df = 1.205, GFI = 0.961, AGFI = 0.932, CFI = 0.995, IFI = 0.995, NFI = 0.971, RMSEA = 0.025, RMR = 0.028). Corporate image has a positive direct effect towards corporate reputation at 0.05 significant level. The value of effect is 0.95. Likewise, attributes of CSR innovation has a positive direct effect towards CSR innovation adoption. The value of effect is 0.02. Besides, corporate image has a positive direct effect towards CSR innovation adoption. The value of effect is 0.01. Also, corporate reputation has a positive direct effect towards CSR innovation adoption. The value of effect is 0.67. Moreover, corporate image has a positive indirect effect towards CSR innovation adoption, through corporate reputation. The value of effect is 0.64.

The findings indicate that attributes of the CSR innovations of PTT Public Company Limited has no effects on CSR innovation adoption among Generation Y consumers. This is probably

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because Generation Y consumers believe that even though CSR innovation demonstrates all seven attributes of innovation that lead to acceptance, it is of little importance compared to good corporate image and reputation. In other words, no matter when the attributes of CSR innovation are, they are less important compared to the reliability and trustworthiness perceived by Generation Y consumers, through good corporate image and corporate reputation. In fact, there may be other factors that lead Generation Y consumers into CSR innovation adoption such as personal innovativeness and the concept of classifications of people who accept innovation. Since, corporate image happens before corporate reputation, as people's first impression towards the organization, they evaluate the organization through its execution over a course of time and create its corporate reputation; therefore, corporate image is a variable that has a direct effect to corporate reputation. In summary, if an organization has a good corporate image, its corporate reputation will be, accordingly, good.

**KEYWORDS:** Corporate Social Responsibility (CSR), Innovation Adoption, Generation Y, Structural Equation Model, Corporate Image, Corporate Reputation

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## Introduction

Undeniably, Corporate Social Responsibility (CSR) plays a significant role in corporate communication and focuses more on sustainable development. In fact, organizations are required to show their responsibilities by integrating CSR concepts in three dimensions of responsibility; economy, society and environment (Thaipat Institute, 2008). Indeed, CSR is now beyond an option of organizations in generating good corporate image, competing with competitors or following a global trend. In point of fact, it's fully merged with business models and becomes a core strategy of business executions (Seritanondh, 2016). This statement is similar to what Theerasorn (2009) said about corporate image and corporate reputation. These two terms; corporate image and corporate reputation are not able to be generated and strengthened in the short-term period, whether from news announcements or advertising. In fact, they require many important factors; for example, a consistency of good quality of products and services offer, the use of innovation in manufacturing and delivering products and services (McWilliams & Siegel, 2001, as cited in Preuss, 2011) as well as business execution with social and environmental responsibilities.

The term "Innovation" was well-recognized after the world has entered into the digital era; for example, in The 70<sup>th</sup> Session of the United Nations General Assembly – UNGA 70, held in the United State of America. According to the session, the direction for sustainable development in 2030 and the 17 items for Sustainable Development Goals – SDGs, clearly indicated that one of the successful keys for developing any country, is a collaboration of private businesses in which it will definitely play an important role in terms of sustainability and business movement. Noticeably, item no. 9, which is one of 17 items for Sustainable Development Goals – SDGs, showed the industry, innovation and infrastructure requirements. Interestingly, these ideas are congruent with Thailand's 20 Year Strategic Plan and Reforms as well as the 12<sup>th</sup>

National Economic and Social Development Plan which includes three main ideas, as follows:  
1. Good economic health and sustainable well-being 2. Infrastructure and logistic development and science 3. Technology, research and innovation development (Thaipat Institute, 2017).

As a result of the international meeting's consensus, the rise of public expectation and the advancement of innovation and technology, organizations intentionally starts integrating innovation and technology in business executions and communication; for example, in CSR activities. One of the CSR innovation campaigns is the "1 Million Trees for King" project of PTT Public Company Limited. The campaign invites people to announce their devotion for how to conserve forests and ease the ongoing global warming problems by writing one's ways or techniques on the "imitated plant leaf" or via on-line forest plantation. Likewise, PTT has introduced Café Amazon's bio plastic made paper cup which now composts naturally without extra processing in landfill within 180 days at room temperature. In fact, PTT does not only put its concern in environmental issues, but PTT also shows its concern in social issues such as injury prevention, which is one of the social issue types, categorized by Kotler and Lee (2008). In this type of social issue, PTT has launched the World's first mobile application that helps awake drowsy drivers by using advanced eye and face tracking technology to analyze driver fatigue. The application reads drivers' eye position and a very obnoxious alarm will sound if their eyes get droopy while they're behind the wheel. When it catches them nodding off, it directs them to the closest Café Amazon store for a caffeine hit.

The above is an example of what organization has done; nonetheless, in term of consumers who are the target audiences of CSR innovation campaigns, there is some evidence indicated that the target audiences, especially Generation Y consumers, have a positive attitude towards innovative organizations. In fact, Generation Y are interested in new things, including technology, package design, and any kinds of corporate social initiatives and activities like community volunteering. (Prachachart Turakij, 2016). According to Forbes and The New York Times, Generation Y will play a significant role as employees in organizations and as major consumers within next three years. Interestingly, Generation Y will account for 50% of the workforce by 2020. Since, Generation Y has grown up on technology and innovation, they give attention and interest to everything related to new media, technology and innovation.

Furthermore, Generation Y see the importance of charity donation and community volunteering. Around 60% of Generation Y said, "They are concerned and worried about the state of the world and feel personally responsible to make the difference." Additionally, the report of Deloitte also showed that around 63% of Generation Y are interested in participating in any kind of corporate philanthropy activities and further expect to see good corporate citizens that have full responsibility, especially the ones they work for. Indeed, Generation Y expects to see their executives who have good vision in both making profit for business and contributing to community well-being, for society at large (Lumesse, 2017).

As a matter of fact, organizations start communicating CSR activities via online media, using technology and innovation in their business execution. It shows that organizations aim to receive positive response from Generation Y consumers who are now changing in terms of lifestyle, behavior and media consumption. To prove these statements, there have been much

research about consumers' responses towards CSR in various areas of study, such as media exposure, attitude and behavior of consumers, especially in Generation Y. Additionally, the study of the effectiveness of CSR in supporting social issues are also in the interests of many researchers.

Despite much research related to the area of study, there is no research that directly examines or tests the model of CSR innovation adoption among Generation Y consumers, including in terms of the attributes of CSR innovation, corporate image and corporate reputation. With these statements, the research entitled "Structural Equation Model of Corporate Social Responsibility Innovation Adoption among Generation Y: A Case Study of PTT Public Company Limited", hereby occurs to fill in the gap of these studies.

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## **Research Objective**

To test the structural equation model of CSR innovation, corporate image and corporate reputation towards CSR innovation adoption among Generation Y, generated by the researcher, with the existing empirical literatures and principles.

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## **Literature Review**

### **Corporate Social Responsibility (CSR) Innovation**

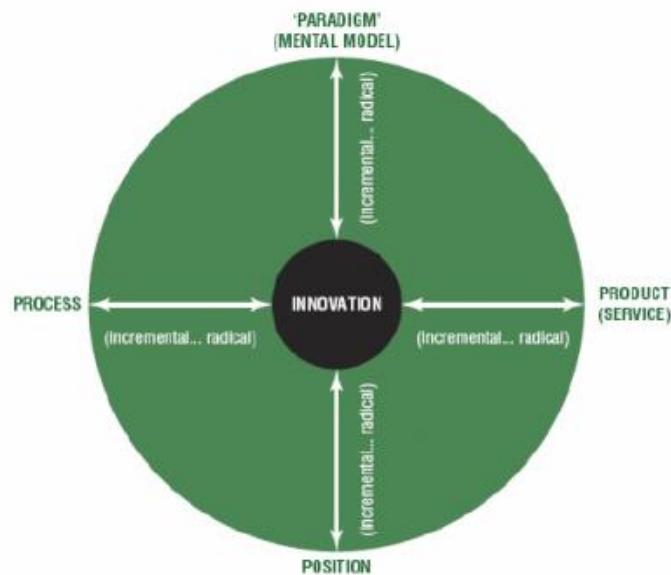
In recent years, the concept about innovation has been discussed by CSR scholars. Porter and Kramer opined that CSR should be more than just the expenditure budget of the corporate or charitable donation, but also the source of opportunity, innovation, and competitive advantage. Zwiersloot highlighted that innovation and non-stop development should be part of the business operation in order for the corporates to illustrate their CSR activities.

Today, innovation about product and modern technologies of the business sector play an important role in influencing consumption alternatives and improving the quality of life at the local and global levels. Likewise, CSR activities have developed and generated innovation by welcoming creative ideas from external sources such as NGOs and local communities to apply with their activities. This method is referred to as open innovation (Preuss, 2011).

In short, innovative CSR refers to the discovery of new methods to handle with social and environmental issues, by introducing these management method to the business operation and establish good relationships with stakeholders of the corporate (Preuss, 2011).

By linking with the aforementioned concept of Tidd and Bessant (2009) about the 4Ps innovation model which consist of product, process, position, and paradigm (see figure 1), the explanation can be summarized as follows:

**Figure 1** The 4Ps of innovation space



Source: Tidd, J., & Bessant, J. 2009. *Managing innovation: Integrating technological, market and organizational change* (4th ed.). UK: John Wiley & Sons. p. 22.

1. *CSR Innovation in CSR project content*: The CSR innovation in this category usually deals with environmental issues. For example, a corporate may opt to avoid using metals, solvents, or ingredients that contain toxic substance in the production process of product or service, and shift to produce environment-friendly product and design sustainable products and services.
2. *CSR Innovation in CSR processes*: This type of CSR innovation usually concerns social and environmental issues. The innovation is mostly about products that minimize the social and environmental impact. In terms of environment, corporates may invent the renewable packaging material and decomposable products upon expiry. Some corporates may change from using road transport to railway transport. In term of social issues, some corporates apply the concept of open innovation from external sources or stakeholders with their CSR activities.
3. *CSR Innovation in CSR positioning*: Innovation is used in the CSR for the purpose of business positioning. For example, illy Coffee repositioned its business when the new generation succeeded the former management. The new management team changed its organizational culture by focusing on social and environmental issues and developed good relationship with stakeholders, such as coffee bean producer in order to compete with the giant competitors like Starbucks.
4. *CSR Innovation in CSR paradigm*: Innovation is used with business operations with a social responsibility. The focus is on the core business model. For example, AT&T made charitable donations a CSR activity. Later, it changed the business model to be driven by CSR. In mid 1980s, the AT&T Foundation established the family care fund managed by the Union Management Committee to support employees at different communities during the day. As a result, not only could the Foundation facilitate the employees during the day, the service was also improved.

## **Corporate Image**

Gray and Balmer (1998) summarized the definition of “corporate image” as the image of the corporate in the notion of the target groups when they perceive the corporate identity, such as corporate name and corporate product brand. Pope and Voges (1999) added that “corporate image” is the overall feeling of each individual of the target group toward the corporate, as they perceive from the corporate operation i.e. activity sponsorships.

Likewise, Wongmonta (1998) once said that today’s corporates produce the products and services with similar characteristics to the market. Therefore, “image” has become an important factor for business operation in order to differentiate them from the competitors. Corporates could use social issues such as environmental management to create an image through CSR activities.

In measuring corporate image, Wanakasemsan (2009) investigated “Development of corporate image measurement form” by surveying the corporate image from 1989 – 2009, from 77 theses and special projects of Ph.D. students at Chulalongkorn University.

After the survey, Wanakasemsan found that most corporates measured their image using the Likert scale, which is an interval indicator. That is to say, there are questions for informants to answer whether they agree or disagree and to what extent they do so on certain topics. After that, Wanakasemsan analyzed the questionnaire’s measurement from the document in order to develop a new questionnaire to measure the corporate image. The new measurement was tested for validity and reliability. The result was that reliability was 0.9525, which was highly satisfactory. The questionnaire contained six attributes in measurement.

In the next year, Sabaiwan (2010) further developed the measurement of corporate image from Wanakasemsan (2009) by testing the question structures with 500 samples to improve reliability for review by experts. After the examination, the reliability of the questionnaire was 0.9808, which was very good. The new questionnaire consisted of the questions regarding the six attributes with different names: image about corporate, employees, executives, economic, social, and environmental responsibility, products and services, equipment, building, and common area.

## **Corporate Reputation**

Gray and Balmer (1998) explained that the corporate reputation takes a long time to be formed, unlike corporate image which comes faster. Corporate reputation, in the notion of stakeholders will directly influence the willingness to support or go against the corporate. Therefore, when such stakeholders as customers of the corporate have negative perception about the corporate or the product brand, the sales will be inevitable affected.

Foreign scholar Topalian (1984) stated that corporate reputation refers to the notion and expectation of people in society toward the business operation of the corporate. It comes from the identity that the corporate creates and communicates through its communication channels. Likewise, Thai scholar Pitpreecha (2014) summarized the definition of “corporate reputation”

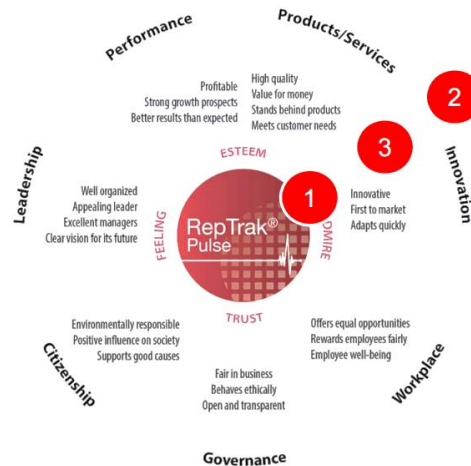
as the result from operation, including the old works of the corporate that reflects its ability and profits, and to what extent the corporate benefited the society. Corporate reputation is the notion that people in the society perceive. Therefore, the corporate should carefully manage corporate reputation in order to establish good acceptance and relationship and earn trust among stakeholders by operating the business with openness, honesty, and responsibility. Good corporate reputation management will lead to esteem, trust, and admiration that people in the society have toward the corporate.

The most widely used and accepted corporate reputation measurement is called Reputation Quotient (RQ) developed by Fombrun, Gardberg, and Sever (2000). The measurement consists of 20 questions that cover six attributes of corporate reputation. However, the Reputation Quotient (RQ) has certain limitations. Therefore, the Reputation Institute developed another reputation measurement called RepTrak System which has the ability to measure, at a good standard, and can be used for reputation management. The Institute conducted research to develop this tool by testing with 15 groups of stakeholders in more than 7,000 corporates in 25 industries from 50 countries worldwide. The research revealed that this tool can measure corporate reputation with many groups of stakeholders and with many types of business corporates. It consists of seven attributes where the key factors are esteem, trust, feeling, and admire that people in the society have for the corporate (Reputation Institute, 2017).

**Figure 2** Measurement by RepTrak® Framework



Source: Reputation Institute. (2017). RepTrak® Framework. Retrieved July 22, 2017, from <https://www.reputationinstitute.com/reptrak-framework.aspx>

**Figure 3** The RepTrak® Model

Source: Reputation Institute. (2015). Reputation country report 2015 Germany. Annual RepTrak® Report.

Besides global scholars, Thai scholar Pitpreecha (2014) also adopted Reptrak's measurement and examined it in the Thai context. Then, Pitpreecha (2014) proposed the overall factors that determine corporate reputation. There are seven factors as follows:

- |                        |               |                |               |
|------------------------|---------------|----------------|---------------|
| 1. Product and Service | 2. Innovation | 3. Workplace   | 4. Governance |
| 5. Citizenship         | 6. Leadership | 7. Performance |               |

According to the measurements of corporate image and corporate reputation above, the author has selected only the questions in the questionnaire of corporate image and corporate reputation that fit the research area about using innovation in holding CSR activities on social and environmental issues mainly through the process of producing products and services of the corporate. For this reason, the measurement in this research consists of three attributes: 1) social and environmental responsibility, 2) innovation, and 3) product and service.

### Innovation Adoption

Rogers (2003) said that to decide to fully use an innovation, considering the innovation is the best way and brings more benefits, can be done by using the five attributes of the innovation that affect its adoption. The five attributes are as follows:

1. *Relative advantage* involves the perception that the new innovation is more valuable than the one existing. Relative advantage could appear in the form of profit or improvement of social status. The innovation acknowledge as more useful will become popular rapidly.

2. *Compatibility* involves the perception that the innovation, that is compatible with its value, and in line with the past experience and the need of the members of society. The innovation that people think compatible with the culture of the society will get adopted very quickly.



3. *Complexity* involves the perception of the simplicity or complexity of how to use the innovation. The innovation that people in society think is hard to understand and use will have a lower adoption rate than the one that is simpler to understand, use, and control.

4. *Trialability* involves the perception that the innovation of which trial can be carried out at a small portion. The innovation that can be divided into small portion for a trial tends to be interesting and adopted faster than the indivisible ones.

5. *Observability* involves the perception that its results can be observed. The innovation that impacts on society and are evident on the society will get adopted more easily and quickly than the ones whose impacts are difficult to observe.

Subsequently, Masso, and Thompson (2016) proposed two other attributes of innovation as follows:

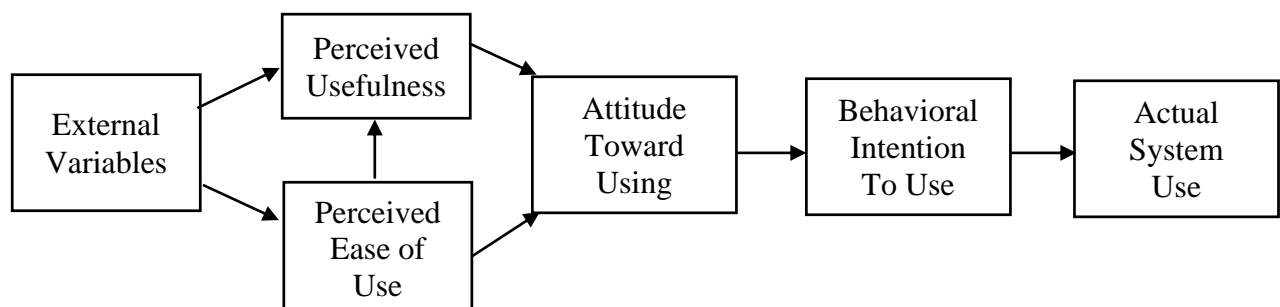
6. *Adaptability* involves the perception that the innovation can be adapted to the society and the environment which satisfies diverse groups of people.

7. *Low risk* involves the perception that the innovation has a low risk when applied to the society and environment and does not cause concerns for people in the society.

One of the most frequently employed tools for measuring innovation adoption is the innovation adoption model (TAM) developed by Davis (1989) based on the theory of reasoned action of Ajzen and Fishbein in 1975, which served to explain an individual's voluntary behavior, including those regarding computer use. This model has been widely adopted in measuring or predicting an individual's behavior regarding innovation adoption (Argwal & Prasad, 1997).

Davis (1989) proposed the innovation adoption model, or TAM (Figure 3), explaining that perceived usefulness and perceived ease of use both have influence on attitude toward use, which subsequently leads to behavioral intention to use and actual system use.

**Figure 4** Technology Acceptance Model



Source: Davis, F.D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly*, 13(3), p.339.

This model was widely adopted in a large number of studies investigating innovation adoption in different contexts. Lu, Yu, Lui and Yao (2003) reviewed 18 studies that were conducted between 1989 and 2001 in which this model was employed to study innovation adoption in different contexts and found further factors that contributed to innovation adoption with five of them being found across all 18 studies.

- |                                |                          |                         |
|--------------------------------|--------------------------|-------------------------|
| 1. Perceived usefulness        | 2. Perceived ease of use | 3. Attitude towards use |
| 4. Behavioral intention to use | 5. Actual system use     |                         |

In addition, another factor that is always taken into consideration together with individual innovation adoption is “personal innovativeness” which is a measurement of individuals’ technology-seeking behavior. For example, a study by Lu, Yao, and Yu (2005) investigating the role of personal innovativeness and social influences on acceptance of wireless Internet, via mobile devices, showed that personal innovativeness is a determinant of individuals’ acceptance of wireless Internet via mobile devices.

In Thailand, there was a study conducted by Sirithorn (2011) investigating media exposure and innovation adoption of Generation X and Generation Y consumers using the innovation adoption model (TAM) with personal innovativeness being taken in account as an addition to the five major factors, given that it was considered relevant and agreeable with demographics of the study population. The finding showed that the reliability coefficient of the questionnaire on acceptance of communication technology, after being adapted to the local Thai context, was 0.84, which was a good result. Given the result, personal innovativeness was added into the innovation adoption model (TAM) employed in this study as an indicator when the framework was drawn with an objective to investigate acceptance of CSR innovations among Generation Y. To be specific, the level of innovation adoption in this study was measured in six aspects: (1) perceived usefulness, (2) perceived ease of use, (3) attitude towards use, (4) behavioral intention to use, (5) actual system use, and (6) personal innovativeness.

## **Generation Y**

The audience from different groups and different ages may have different feedbacks about CSR activities. Previous studies showed that “age” of people is an important factor for their interest in CSR activities. For instance, Phomun (2012) discovered an interesting result that consumers aged 23 – 32 had a different attitude toward corporate social responsibility than those aged 43 – 52. In Tantivejakul (2013), the audience of a different age range have different engagement in CSR issues. It could be said that different “ages” or “generations” of the target group are a key factor in the study, in order to analyze their openness to media and communications.

From the perspective of Thai scholars, Mongkolsiri (2005) and Decharin (2008) mentioned that Generation Y are people who were born from 1983 – 1997. Sirithorn (2016) had a noteworthy observation that, considering the Thai context where technology is improved very quickly, especially in communication until today, Generation Y in Thailand were born from 1984 – 1999, or those aged 18 – 32. (as of 2017).

Wangkiat, a news correspondent, who wrote a coverage on Generation Y Thailand: A new Me generation in the Bangkok Post, described that Generation Y or the millennial are those who were born from 1980 – 1994 or aged 20 – 35 (as of 2016). They like technology, look for opportunities and career growth, and connect and communicate to the rest of the world through online channels. Wangkiat added that Generation Y is becoming more important as the driver of national development every day, especially in the economic dimension because they are becoming the majority population of Thailand and of the world.

In short, Generation Y, by the definition of this research, are those who were born from 1983 – 1999 or aged 18 - 34 years old, with reference to the definitions by Mongkolsiri (2005), Decharin (2008), and Sirithorn (2016) and they grew up in the era where there are technological advancements. Therefore, they are fond of technology, fast lifestyle, and challenges, and curious to learn new things.

According to Forbes and the New York Times, Generation Y consumers will become the majority of the American population, with a total number of 86 million people. From this figure, we can safely assume that these people will be the majority consumers in the market and manpower of the current corporates. By 2020, Generation Y will take up over 50 percent of the labor market. These people grow up with modern communication technologies, and still focus on charitable donation and volunteer activities. Approximately 60 percent of Generation Y said that they keep up with the global situations and feel that they should make the world a better place. A report by Deloitte also indicated that around 63 percent of Generation Y does not only donate for charities, but they also expect business corporates, especially the ones they work for, to have the work vision beyond just making profit in business (Lumesse, 2017).

In 2006, a survey conducted by Cone Millennial Cause Study pointed out that 80 percent of people aged 13 – 25 wanted to work for corporates with a social responsibility. Generation Y consumers expect corporates to show their responsibility at high level. This group of consumers tend to change jobs or product brands if they find that they do not have social a responsibility. It could be said that CSR activities are the central element that link and maintain a good relationship between the corporate and Generation Y. (Lumesse, 2017)

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## **Research Methodology**

The research article entitled “Structural Equation Model of Corporate Social Responsibility Innovation Adoption among Generation Y: A Case Study of PTT Public Company Limited” uses a quantitative research: a cross sectional survey methodology. Then, 340 sets of questionnaire are used to collect data from Generation Y, who are 18 to 34 in age, living, studying or working in Bangkok and Vicinity.

## **Variables in the research**

Three independent variables and one dependent variable used in the research are as follows:

**1<sup>st</sup> independent variable (X<sub>1</sub>)****attributes of CSR innovation (CSR)**

Sub-variables, which are seven attributes of innovation, were studied.

The seven attributes of innovation were:

1. Relative advantage (CSR1)
2. Compatibility (CSR2)
3. Complexity (CSR3)
4. Trialability (CSR4)
5. Observability (CSR5)
6. Adaptability (CSR6)
7. Low Risk (CSR7)

**2<sup>nd</sup> independent variable (X<sub>2</sub>)****corporate image (IMAGE)**

The corporate image variable is measured in three dimensions:

1. Social and environmental responsibility dimension (IMAGE1)
2. Innovation dimension (IMAGE2)
3. Product and service dimension (IMAGE3)

**3<sup>rd</sup> independent variable (X<sub>3</sub>)****corporate reputation (REPUT)**

The corporate reputation variable is measured in three dimensions:

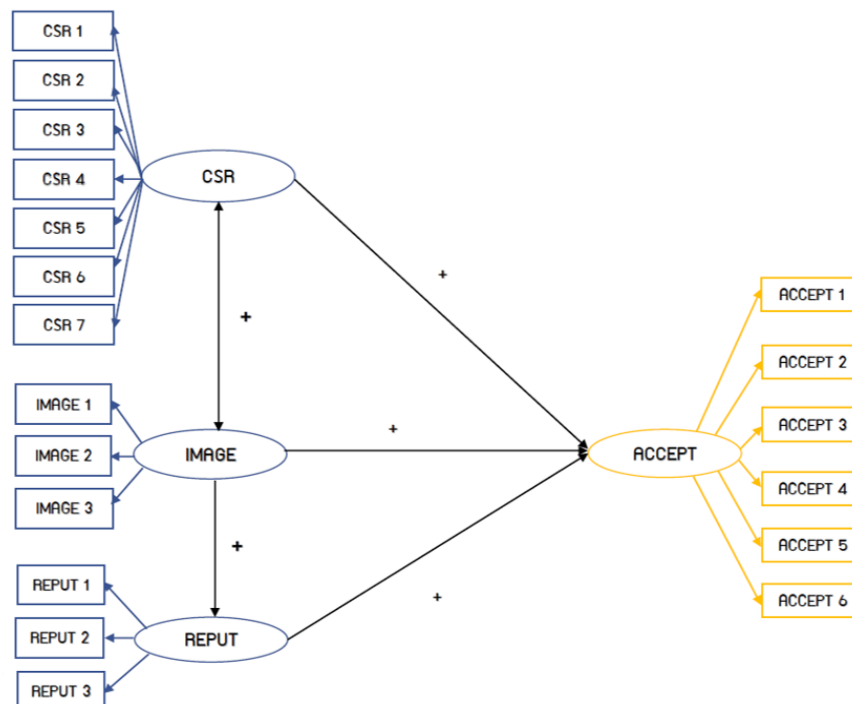
1. Social and environmental responsibility dimension (REPUT1)
2. Innovation dimension (REPUT2)
3. Product and service dimension (REPUT3)

**Dependent variable (Y)****innovation adoption (ACCEPT)**

The innovation adoption variable is measured in six dimensions:

1. Perceived usefulness (ACCEPT1)
2. Perceived ease of use (ACCEPT2)
3. Attitude toward using (ACCEPT3)
4. Behavioral intention to use (ACCEPT4)
5. Actual system use (ACCEPT5)
6. Personal innovativeness (ACCEPT6)

**Research hypothesis:** the structural equation model of CSR innovation, corporate image, corporate reputation variables and Generation Y consumers' adoption of CSR innovation developed by the researcher, correspond with the empirical data.



The structural equation model was analyzed using AMOS, a statistical software. The reason for selecting the structural equation model was because it could explain both direct and indirect influence of external latent variables, internal latent variables, and observed variables, which were, CSR innovation, corporate image, corporate reputation, and Generation Y consumers' adoption of CSR innovation, testing the hypothesis with the statistical significance level set at .05 and the reliability value set at 95%.

To check the congruence of the model, the researcher cited the congruence index according to the concept by Kraiwan (2013) who indicated acceptable congruence indices as following table;

(1) Chi-square/df index below 3.00	(2) GFI index exceeding 0.95
(3) AGFI index exceeding 0.90	(4) CFI index exceeding 0.97
(5) IFI index exceeding 0.95	(6) NFI index exceeding 0.95
(7) RMSEA index below 0.05	(8) RMR index below 0.05

## Research Findings

### Demographic data

There are 340 respondents in total; 152 male (44.7%), 184 female (54.1) and four unidentified gender (1.2%).

### The mean score of each variable

The attributes of CSR innovation variable in relative advantage attribute, shows the highest average mean (4.03). Besides, product and service dimension of corporate image variable, has the highest average mean (3.88). This is similar to what is shown in the result of corporate reputation variable in which the highest average mean (3.93) belongs to product and service too (3.89). The dependent variable, which is CSR innovation adoption among Generation Y, reports the highest average mean (3.78) in the perceived usefulness indicator.

### The construct validity measurement by Confirmatory Factor Analysis of measurement model

The construct validity measurement by Confirmatory Factor Analysis (CFA) of measurement model identifies the fit between "Structural Equation Model of CSR Innovation, Corporate Image and Corporate Reputation towards CSR Innovation Adoption among Generation Y" and the existing empirical literatures and principles. In fact, more than three indices of model meet the standard criteria (Kraiwan, 2013). The details are as follows:

#### Attributes of CSR innovation

The finding indicates the factor loading of these observed variables at significant level 0.05. Each observed variable reports its factor loading as follows; 0.65 for relative advantage

(CSR1), 0.75 for compatibility (CSR2), 0.64 for complexity (CSR3), 0.67 for trialability (CSR4), 0.74 for observability (CSR5), 0.72 for adaptability (CSR6) and **0.76 for low risk (CSR7)** attributes.

### **Corporate image**

The finding indicates the factor loading of these observed variables at significant level 0.05. Each observed variable reports its factor loading as follows; 0.78 for social and environmental responsibility (IMAGE1), 0.77 for innovation (IMAGE2) and **0.86 for product and service (IMAGE3)** dimensions.

### **Corporate reputation**

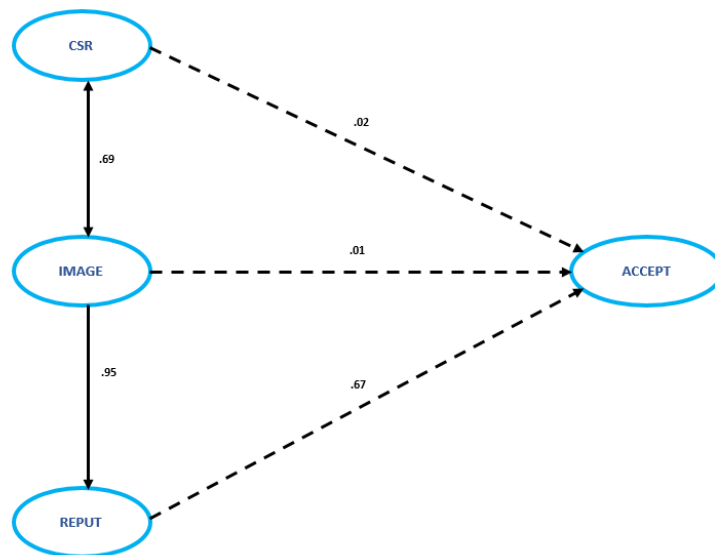
The finding shows the factor loading of these observed variables at significant level 0.05. Each observed variable reports its factor loading as follows; 0.79 for social and environmental responsibility (REPUT1), 0.85 for innovation (REPUT2) and **0.88 for product and service (REPUT3)** dimensions.

### **CSR innovation adoption**

The finding shows the factor loading of these observed variables at significant level 0.05. Each observed variable reports its factor loading as follows; 0.64 for perceived usefulness (ACCEPT1), 0.68 for perceived ease of use (ACCEPT2), 0.77 for attitude toward using (ACCEPT3), **0.93 for behavioral intention (ACCEPT4)**, 0.85 for actual system use (ACCEPT5) and 0.80 for personal innovativeness (ACCEPT6).

### **The result of model fit analysis in Structural Equation Model**

The model fit analysis of structural equation model of CSR innovation, corporate image and corporate reputation towards CSR innovation adoption among Generation Y with the empirical literatures and principles, uses the advanced statistical analysis “Structural Equation Model” or SEM technique. Indeed, the model is able to be adjusted until it meets the modification indices or MI standard criteria. The conditions require more than 50% of total number of index to meet the criteria in which eight of thirteen indices are recommended (Kraiwan, 2013). Then, the latest adjusted model with the standardized coefficient and indices, are shown following;



\*Remark       $\longrightarrow$  Significant,  $- - - \rightarrow$  Non-significant

\*Significant at 0.05 level

Chi-square = 131.348, df = 109, p = 0.71,  
 Chi-square/df = 1.205, GFI = 0.961, AGFI = 0.932,  
 CFI = 0.995, IFI = 0.995, NFI = 0.971, RMSEA = 0.025, RMR = 0.028

Modification Indices or MI standard criteria	The latest adjusted model with the standardized coefficient and indices	Meaning
(1) Chi-square/df index below 3.00	(1) Chi-square/df = 1.205	Pass
(2) GFI index exceeding 0.95	(2) GFI = 0.961	Pass
(3) AGFI index exceeding 0.90	(3) AGFI = 0.932	Pass
(4) CFI index exceeding 0.97	(4) CFI = 0.995	Pass
(5) IFI index exceeding 0.95	(5) IFI = 0.995	Pass
(6) NFI index exceeding 0.95	(6) NFI = 0.971	Pass
(7) RMSEA index below 0.05	(7) RMSEA = 0.025	Pass
(8) RMR index below 0.05	(8) RMR = 0.028	Pass

The result indicates the path coefficients and shows that corporate image variable (IMAGE), has the direct effect towards corporate reputation variable (REPUT) at 0.95. Moreover, the attributes of CSR innovation variable (CSR) and corporate image variable (IMAGE) have the positive direct effect to each other at 0.69. The following table exists to show the details of each variable's relationship in structural equation model and other key statistical results.

**Table 1** Show the causal relationship of variables in structural equation model and other key statistical results

No.	Causal relationship	Path coefficients	S.E.	C.R. (t-value)	The summary of relationship
1.	IMAGE $\longrightarrow$ REPUT	0.95	0.058	16.351*	Positive

\*Significant at 0.05 level (Sig. < = 0.05)

Remark:  $R^2$  value of variables in the model are REPUT = 0.90 and ACCEPT = 0.49

**Table 2** Show variables' relationship in structural equation model and other key statistical results

No.	Relationship	Correlation	S.E.	C.R. (t-value)	The summary of relationship
1.	CSR $\longleftrightarrow$ IMAGE	0.69			Positive effect in each other
	CSR	0.232	0.034	6.764*	
	IMAGE	0.321	0.040	8.062*	

\*Significant at 0.05 level (Sig. < = 0.05)

Apart from table 4.31, the structural equation model in term of standardized values of the model, are presented below.

$$\text{REPUT} = 0.95 \text{ IMAGE, } R^2 = 0.90 \quad \dots (1)$$

(0.058)  
16.351\*

\*Significant at 0.05 level

The equation (1) indicates that corporate image variable can explain the variation of corporate reputation variable at around 90%. Indeed, corporate image has a positive effect towards corporate reputation at 0.05 significant level. Reference with this finding, it could be further explained that if a one standard deviation of corporate image increase in state, there will be 0.95 standard deviation of corporate reputation increase.

Apart from the above findings, the studies partially accept the research hypothesis. In fact, most variables in the tests of measurement model and structural model, show the congruence with the existing empirical literatures and principles at 0.05 significant level.



**Table 3** Show the direct effect, indirect effect and total effect analyses of variables in the structural equation model of CSR innovation, corporate image and corporate reputation towards CSR innovation adoption among Generation Y.

Independent variables	Effect	Predictor variables		
		CSR	IMAGE	REPUT
REPUT	DE	0.00	0.95	0.00
	IE	0.00	0.00	0.00
	TE	0.00	0.95	0.00
ACCEPT	DE	0.02	0.01	0.67
	IE	0.00	0.64	0.00
	TE	0.02	0.65	0.67

\*Significant at 0.05 level

Aside from table 3, the further explanation can be categorized into three part as follows;

### Direct effect

Corporate image has positive direct effect towards corporate reputation at 0.05 significant level. The value of effect is 0.95. Likewise, attributes of CSR innovation has positive direct effect towards CSR innovation adoption. The value of effect is 0.02. Besides, corporate image has positive direct effect towards CSR innovation adoption. The value of effect is 0.01. Also, corporate reputation has positive direct effect towards CSR innovation adoption. The value of effect is 0.67

### Indirect effect

The data indicates that corporate image has positive indirect effect towards CSR innovation adoption through corporate reputation. The value of effect is 0.64

### Total effect

In summary, corporate image has positive total effect towards corporate reputation at 0.05 significant level. The value of effect is 0.95. Likewise, attributes of CSR innovation has a positive total effect towards CSR innovation adoption. The value of effect is 0.02. In addition, corporate image has a positive total effect towards CSR innovation adoption. The value of effect is 0.65. Lastly, corporate reputation has positive total effect towards CSR innovation adoption. The value of effect is 0.67

## Discussion

The core businesses of PTT Public Company Limited are about chemicals, packaging for beverages, gas and fuel services. In fact, these kinds of product and service have an effect on both society and environment. Therefore, when a corporate utilizes innovation to execute CSR activities, they are likely to be related to such products and services the corporate offers. Indeed,

it's about how the corporate utilizes innovation to support both social and environmental issues i.e. Café Amazon Drive Awake application and Café Amazon Bio PBS cups. Therefore, consumers expect that the innovations utilized by PTT Public Company Limited in developing goods and services in CSR activities, should demonstrate a low-risk. In other words, it should be safe for use. This is what Masso and Thompson (2016) once described that a good innovation should demonstrate low-risk in applying it for use within society and the environment. It should not create anxiety to consumers. Then, it should be easily accepted. It is clear that the core businesses of PTT Public Company Limited are related to safety of the society as well as the environment. As a matter of fact, Generation Y, who grow up with modern communication technologies, and still focus on charitable donations and volunteer activities (Lumesse, 2017), thus, pay highest attention to the innovations utilized to execute CSR activities which demonstrates a low-risk level.

PTT Public Company Limited has the most factor loading in “product and service” among corporate image and corporate reputation. It is probably because the company stands out in offering products and services that are related to consumers' lifestyle, such as gasoline stations and Café Amazon. When the company utilizes innovation to execute CSR activities, its corporate image and corporate reputation are obvious, in goods and services, in terms of product innovation. This is similar to what Tidd and Bessant (2009) stated about how to improve products and services with new technological innovation. Therefore, consumers highly perceive products and services dimension, seeing the company's products and services like gasoline stations' provision of convenience in daily life and meet the needs of the society as the corporate keeps improving its products and services.

These findings correlate with research named “Factors affects Thai business reputation” by Pitpreecha (2014) whose results of in-depth interviews with executives, from 12 public companies, suggest that public companies of all sizes mainly focus on the products and services factor. In addition, they agree that one of the three factors that is an indicator for the business reputation in Thailand is products and services, which means delivering quality products at reasonable prices.

Likewise, the reason that “behavioral intention to use” of CSR innovation adoption variable, of PTT Public Company Limited, has the most factor loading is probably because of the conative component in attitudes, which is a tendency for consumers' behavior based on their previous knowledge, understanding, and emotions. This also means their decision to purchase, acceptance, or participation through the core businesses of PTT Public Company Limited's involvement in products, to which consumers highly relate. Therefore, consumers need the drive from behavioral intention to use, which is a further step after attitude towards acceptance of CSR innovation. As the products may be expensive and complicated, consumers need time to search for information to help them make a decision to accept such innovation.

Moreover, the *Structural Equation Model* testing suggests an interesting point that attributes of CSR innovation of PTT Public Company Limited have no effect on CSR innovation adoption among Generation Y consumers. This is probably because Generation Y consumers believe that even though CSR innovation demonstrates all seven attributes of innovation that

lead to acceptance (Masso & Thompson, 2016; Rogers, 2003), it is of little importance compared to good corporate image and reputation. In other words, no matter how attributes of CSR innovation are, they are less important compared to the reliability and trustworthiness perceived by Generation Y consumers, through good corporate image and corporate reputation. In fact, there may be other factors that lead Generation Y consumers into CSR innovation adoption, such as personal innovativeness according to the research results of Lu, Yao, and Yu (2005) and the concept of classifications of people who accept innovation stated by Rogers (2003).

Besides, the *Structural Equation Model* testing indicates the positive direct effect of which corporate image has towards corporate reputation with a path coefficient valued at 0.93. This complies with the ideas of many scholars such as from the “Corporate Image and Corporate Reputation Management model of Gray and Balmer (1998). These two scholars explain corporate communication procedures in managing corporate image and corporate reputation, stating that “corporate image” and “corporate reputation” are two correlating variables as a result of the organization’s communicating its identity through corporate communication procedures, that function as a channel that links to corporate identity, creating corporate image in stakeholders’ perception and later developing it as corporate reputation after a long period of constant execution. This complies with Barnett, Jermier, and Lafferty (2006) whose study collects definitions of ‘corporate reputation’ reviewing literature related with such ideas written by many scholars and concluding the definitions and presenting them through “Classifications of corporate reputation” model stating that corporate image happens before corporate reputation as people’s first impression towards the organization. The people then evaluate the organization through its execution over a course of time and create corporate reputation. Therefore, corporate image is a variable that has a direct effect to corporate reputation. In other words, if an organization has a good corporate image, its corporate reputation will be, accordingly, good.

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## **Limitation and Suggestion for Future Research**

This research only examined one group of stakeholders, which is Generation Y consumers. Therefore, the results may only be applied to this specific group of stakeholders. However, corporate communication involves several groups of stakeholders such as press, investors, community, and the like. Therefore, for information about other groups of stakeholders, this study can be used as a guideline for further studies to yield broader and clearer results. Likewise, this research only studied corporate image and corporate reputation variables in three dimensions, which include social responsibility and environment, innovation, and the products and services dimensions. Therefore, in further studies, researchers may attempt to take into consideration other dimensions of corporate image and corporate reputation variables, such as executive and employee dimensions, as observed variables of corporate image and corporate reputation variables in the structural equation model to see whether they correlate with the empirical data or not, utilizing this research as a guideline, to provide a knowledge body that covers all dimensions of corporate image and corporate reputation variables.

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