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Factors affecting stakeholder's levels of satisfaction with community partnership association in Rayong Province, Thailand

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ABSTRACT

Corporate social responsibility (CSR) studies have investigated the differences among five parameters: gender, age, education, income, and occupation; however, the findings are generally dissimilar. For instance, no comprehensive concordance has been reached on the performance and importance of the differences among those five parameters regarding stakeholder expectations and perceptions of CSR activities. Some voluminous investigations have revealed that the literature does not discuss the essential importance of the differences among the five parameters, and as a consequence, the magnitude of such differences is unexplained. This research analyses the quantitative and qualitative significances of the differences among the five parameters in stakeholder satisfaction level and perceptions of CSR activities conducted by the Community Partnership Association in Rayong Province, Thailand. Overall satisfaction levels positively correlated with education and age, indicating that intellectual background and personal experiences considerably influence the perceptions of CSR activities. This study assists policymakers and industrial sectors to launch the most practical strategies for plotting, scheming, implementing, and evaluating sustainability initiatives.

KEYWORDS

Community Partnership Association (CPA); Corporate Social Responsibility (CSR); Analysis of Variance (ANOA); Pearson Analysis (PA); Hierarchical Cluster Analysis (HCA); Multiple Linear Regression Analysis (MLRA); Principal Component Analysis (PCA)

Introduction

Due to several problems caused by economic and social development that greatly affected the socio-economic environment, an attempt to emphasize the correlation between the community and environment has been initiated. International for Standardization (ISO) has issued guidelines to address corporate social responsibility (CSR) (ISO 26000), which may affect the management of a corporation (Castka & Balzarova, 2007; Fuzi, Habidin, Desa, Zamri, & Hibadullah, 2013; Zinenko, Rovira, & Montiel, 2015). Earlier investigations have targeted the impacts of companies' CSR activities and indicated that CSR can positively influence corporate reputation coupled with political activity, customer satisfaction, brand, and financial performance (Bear, Rahman, & Post, 2010; Hond, Rehbein, Bakker, & Lankveld, 2014; McGuire, Sundgren, & Schneeweis, 1988; Park, Lee, & Kim,

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2014; Perez & Bosque, 2015a; Saeidi, Sofian, Saeidi, Saeidi, & Saaeidi, 2015). Hence, each corporation must adjust by engaging CSR policy to display a company's social responsibilities along with its growth and development, which are integral aspects for the present and future. In Thailand, the Department of Industrial Works has also issued social-responsibility standards for industrial sectors to enable manufacturers to comply with the international standards. Therefore, policies involving CSR have become a criterion, and many countries have used them as a benchmark to set trade conditions and as a new business model, by which customers, partners, employees, and other stakeholders are involved in the sustainable development of local communities (Breitbarth, Harris, & Aitken, 2009; Fliess, Lee, Dubreuil, & Agatiello, 2007; Fombrun, 2005). Being environmentally responsible and socially ethical increase customer confidence and positive outlook towards the corporation as well as reduce the risk of competitors using environmental regulations and social ethics as trade barriers (Breitbarth et al., 2009; Verbruggen, Kuik, & Bennis, 1995).

The implementation of CSR policies has been very keenly undertaken in Thailand. The Thailand Industrial Standards Institute has set up guidelines, which have become formal regulations since 2010, to accompany ISO 26,000, which comprises five crucial factors: ethics, public health, environment, public safety, and labor regulations. These standards indicate a corporation's attempt to be socially responsible. The Community Partnership Association (CPA) was founded on 23 June 2010, by five manufacturers who operate in the Map Ta Phut industrial estate. The CPA consists of PTT Pub Co., Ltd. (PTT Group), Siam Cement Group Pub Co., Ltd. (SCG), BLPC Power Pub Co., Ltd. (BLPC), Dow Chemical Thailand Pub Co., Ltd. (DCT), and Glow Group Pub Co., Ltd. (GG). The main objectives of the CPAs are to promote an eco-industry and environmental-friendly practices. The goal is for the industry to sustainably coexist with the local community. Currently, there are 11 new members, including Bangkok Synthetics Co., Ltd. (BS), Vinythai Pub Co., Ltd. (VNT), ABB Ltd. (ABB), Bangkok Industrial Gas Co., Ltd. (BIG), Linde Thailand Pub Co., Ltd. (LT), Padaeng Industry Pub Co., Ltd. (PI), Siam Yamato Steel Co., Ltd. (SYS), Air Liquide Thailand Co., Ltd. (ALT), Indorama Petrochemical Pub Co., Ltd. (IP), Indorama Polyester Industries Pub Co., Ltd. (IPI), and JSR BST Elastomer Co., Ltd. (JBE).

As representatives of CSR practices, industrial sectors have three principle stakeholders; factory workers, customers, and local communities. Without targeting any of the aforementioned stakeholders, achieving the sustainable development goals proposed by the United Nations is difficult. Industrial sectors also provide job opportunities for local communities and strengthen the national economy. By implementing CSR exercises, industrial sectors can gain competitive advantages, such as an improvement in firm financial performances coupled with favorable stakeholder attitudes and better support behaviors (Du, Bhattacharya, & Sen, 2010; Torugsa, O'Donohue, & Hecker, 2012). CSR exercises in the industrial sectors commence with the factory workers and move on to the other stakeholders. As manufacturing small and medium enterprises (SMEs) and industrial sectors (e.g., wine, tourism, and mining industries) are acknowledged as the impetus for CSR activities (Dodds & Joppe, 2005; Gabzdylova, Raffensperger, & Castka, 2009; Govindan, Kannan, & Shankar, 2014; Williamson, Lynch-Wood, & Ramsay, 2006), local communities are crucial stakeholders (Lee & Shin, 2010; Perrini, 2006). Consequently, a reasonable assumption is that without focusing on factors affecting the satisfaction level of

local communities, industrial sectors may not be able to effectively engage CSR exercises, policies, and practices for other stakeholders.

This social study was carefully designed to examine the stakeholders' perceptions of and satisfaction with the CPA's CSR activities within the districts of Map Ta Phut, Baan Chang, and Map Kha Pattana in Rayong Province. The main purpose of this study is to evaluate the differences in stakeholder satisfaction across different CSR activities in the same study area and classify dimensions underlying overall perceived quality. This study also focuses on the presence of dissimilarities in perceived quality among CSR activities and the parameters governing those differences. Based on these consequences, this study investigates the strengths and weaknesses of each CSR activity. Overall, the main objectives of this research are as follows: (*i*) to quantitatively examine factors affecting the levels of satisfaction with CSR activities conducted by the CPA, (*ii*) to assess the magnitude of the social investment of the activities that the CPA has organized, and (*iii*) to qualitatively learn the stakeholders' needs and expectations from the CPA so it can plan future CSR activities or events based on the results from social studies. In addition, there are two main research questions, which are (*i*) how local communities perceive the CPA's activities? and (*ii*) how this influences their CSR satisfaction?

Research methodology

Population and sample groups

Categorization of the population

The survey categorizes the population into four groups:

(1) Households and local shops: People living in the districts of Map Ta Phut (38 communities), Map Kha Pattana (8 communities), Baan Chang (14 communities). The local fishermen living in the districts of Map Ta Phut and Baan Chang (10 groups). In this study, people should theoretically have resided in the communities no less than five years.
(2) Community leaders: People with significant roles within the communities. They are respected and can speak for the community, including the sub-district councils and village headmen. Their decisions can greatly affect others' opinions. This category also includes anyone well reputed and well trusted in the community, such as the heads of the fishing communities and health care volunteers.
(3) Government officials: Officials responsible for the community. They are the go-betweens between people and government institutions, such as officials at the divisions of local administrations in the districts of Map Ta Phut, Map Kha Pattana, and Baan Chang, in Rayong Province.
(4) Employees of manufacturers: Employees of member manufacturers and other manufacturers located in the Map Ta Phut industrial complex (5 industrial towns and Map Ta Phut Port; the districts of Map Ta Phut, Baan Chang, and Map Kha Pattana, in Rayong Province.)

Determination of household sample size

The approaches to determining sample size include applying a census for small populations (e.g., 200 or less), a sample size of a similar study, and published tables (Cochran, 1963; Singh & Masuku, 2012; Sudman, 1976). The first approach eliminates sampling errors and provides data on all the individuals in the population. Because there are 38, 8, and 14 communities in the districts of Map Ta Phu, Map Kha Pattana and Baan Chang (i.e., 53,702 households), respectively, according to the database of local administration office in the designated area, applying the census technique to the sampling for the entire population to achieve a favorable level or precision appears irrational. The second approach seems problematic due to the limited information from social studies focusing on CSR activities in this particular area. The third approach requires a sample size of 400 to represent a population larger than 100,000 with the precision level of ±5%. However, the two main assumptions for applying this method, that is, the number of obtained responses is not always necessarily the number of survey questionnaires and the population of this social survey is normally distributed. In the case where these two assumptions cannot be met, subsequently, it may be necessary to study the entire population may. Alternatively, a simplified formula for proportions can determine the sample size of this study. By applying the formula proposed by Yamane (1967) (Eq.1), the minimum number of households to sample was 1,089 (n = 53,702; e = 0.03).

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

where n, N, and e represent the minimum number of households to sample, number of households, and acceptable inaccuracy rate, respectively. Notably, the Yamane formula can be used only for a finite population with a simple random sampling technique particularly designed for social survey instead of being correlational or for experimental research.

Random sampling

(1) Households and local shops
Apply a simple random sampling method to acquire thorough and complete information from the sample group by interviewing the head of the household or a designated person.
(2) Community leaders
Employ a purposive sampling method. Interview a person who speaks for the community, who can publicly express the community's general concerns.
(3) Government officials
Utilize a purposive sampling method to acquire the general concerns of government officials. Interview a person who can communicate for a particular organization such as the head of the office.
(4) Employees of the manufacturers
Adopt a purposive sampling method for obtaining the opinions from employees of the industrial sectors by interviewing the head of the department or division.

Sampling devices

Sampling devices, when conducting in-depth interviews, are people (e.g., government officials and community leaders). For quantitative research, questionnaires are used among households and local establishments. In this research, the questionnaire is designed to have close- and open-ended questions (Table S2). The questionnaire consisted of five parts, which are;

Part 1: General information such as participant's gender, religion, education, occupation, marital status, place of origin, and history of resident relocation.

Part 2: Information regarding economic and social status, such as sources of income or number of household members.

Part 3: Opinions about the activities organized by the CPA to propel Rayong Province to become an eco-industry province. This section has five questions, and the answers are calculated as follows:

Extremely satisfied (6 points)
Very satisfied (5 points)
OK (4 points)
Neither satisfied nor dissatisfied (3 points)
Dissatisfied (2 points)
Extremely dissatisfied (1 point)

In addition, the scores of answers can be categorized as follows:

High (80–100%) *Medium* (70–79%) *Low* (0–69%)

Part 4: The awareness and satisfaction the communities have with the CPA. Questions are designed to gauge the awareness of

(*i*) Satisfaction with the activities organized by the CPA, which are separated into three categories: the operation task force (TF), the CSR TF, and the communication TF (CTF). There are five criteria to consider: (*a*) compatibility with the community's needs (*b*) community's involvement (*c*) benefits the community (*d*) community's appreciation, and (*e*) public relations (PR).

(*ii*) Satisfaction in the case of participant's knowledge had been promoted by the CPA.

(*iii*) Satisfaction with the social-responsibility work that CPA has done in 2016 compared to the previous years.

(*iv*) Satisfaction with the benefits that the CPA has been provided.

Details of satisfaction point calculation methods coupled with satisfaction percentages were described in Part 3.

Part 5: Questions about how to stay in contact and the best means of communication. Respondents can offer advice and opinions beneficial to the CPA. In addition, 30 questionnaire items associated with stakeholders' levels of satisfaction with the CPA and its activities are described in Table 1.

Statistical analysis

An analysis of the statistics in this study used a method called descriptive statistics, which describes a basic feature of data (e.g., average, standard deviation, minimum,

Table 1. Questionnaire items.

Abbreviation	Description	Construct
EI	Satisfaction with the CPA's role in propelling Rayong Province to become an Eco-Industry Town	Ecosystem
ES	Satisfaction with the CPA's role in creating an Eco-School	Ecosystem
IE	Satisfaction with the CPA's role in promoting its image and stimulating the economy (Image & Economy)	Economy
E	Satisfaction with the CPA's role in promoting Education in Rayong Province (Education)	Education
C	Satisfaction with CPA's role in building a common understanding between factories and communities (Communication)	Communication
EIFD	Upgrading a factory to an eco factory (Eco-Industry Factory Development)	Environment
GA	Increasing green spaces (Green Area)	Environment
PEMN	Training the proactive environmental monitoring network (Proactive Environmental Monitoring Network)	Environment
ERP	Preparing schools and communities in case of emergency (Emergency Response Plan)	Emergency Response
MMU	Providing mobile medical units (Mobile Medical Units)	Medical Care
NS	Providing scholarships to nursing schools (Nursing Scholarship)	Medical Care
NV	Promoting nursing volunteers (Nursing Volunteer)	Medical Care
MSVT	Training medical staff volunteers, for example, to be a phlebotomist (Medical Staff & Volunteer Training)	Medical Care
MSS	Supporting medical staff in district hospitals (Medical Staff Support)	Medical Care
THK	Promoting Thai-style healthy living at Koh Kok Community (Thai Health Kokok)	Health
CT	Tutoring programmes (CPA Tutor)	Education
BDS	Providing scholarships for continuing education (Bachelor Degree Scholarship)	Education
EE	Education expo (Education Expo)	Education
ECM	Community enterprise (Enterprise Community Model)	Economy
ECMK	Eco-community at Koh Kok Community [Eco-Community Model (Kokok)]	Environment & Ecosystem
CMC	CPA Meets Community (CPA Meets Community)	Social Communication
PVN	Public relations via newspaper (PR via Newspaper)	Public Relations
PVR	Public relations via radio (PR via Radio)	Public Relations
PLT	Public relations via local television (PR via Local TV)	Public Relations
PCP	Public relations via car parade (PR via Car Parade)	Public Relations
PAL	Public relations via wire broadcasting (PR via Audio Line)	Public Relations
PVB	Public relations via billboards (PR via Billboard)	Public Relations
PLB	Public relations via LED screens (PR via LED Board)	Public Relations
PCJ	Public relations via CPA journal (PR via CPA Journal)	Public Relations
PSM	Public relations via social media (PR via Social Media)	Public Relations

and maximum). General information, such as gender, age, education, income (i.e., independent parameters), coupled with 30 questionnaire items (i.e., dependent parameters) will be statistically analyzed by using *t* tests, analysis of variance (ANOVA), simple linear regression analysis (SLRA), Pearson analysis (PA), multiple linear regression analysis (MLRA), hierarchical cluster analysis (HCA), and principal component analysis (PCA) with the assistance of SPSS (Statistical Package for the Social Sciences) version 13. The probability distribution function (PDF), a statistical concept that describes the relative probability for this random variable to take on a given value, was applied to all ages of stakeholders (n = 1,473). The probability for the random variable to be within a particular region is given by the Gaussian distribution, which can be described as follows:

$$y = \frac{1}{\sigma\sqrt{2\pi}} \exp\left(\frac{-(x-\mu)^2}{2\sigma^2}\right) \tag{2}$$

where y, σ, σ^2, μ, and x represent the PDF, standard deviation, variance, average, and age of each stakeholder, respectively.

Results

A survey to research stakeholder's level of satisfaction with the CPA aimed to evaluate the association's effectiveness in promoting social responsibility; interacting with communities; and encouraging learning about safety, occupational health, the environment, and stakeholders' requirements. The samplings are the stakeholders that reside and work in districts of Map Ta Phut, Baan Chang, and Map Kha Pattana in Rayong Province. In this study, qualitative research was performed by applying an in-depth interview. Respondents of in-depth interviews (n= 15) are government officials, community leaders, and manufacturing administrators. Respondents of quantitative research (n= 1,473) are household and local establishment groups who answered questionnaires.

General information of respondents

Respondents are general household members and local shop owners. Their places of residences are primarily single houses; some live in rented apartments. The respondents are mostly aged 31–40 years, and almost all are Buddhists. There are approximately four members per household; some households have three or five members. The majority of respondents of households have a high school education, whereas most of the local shop owners received a vocational education. Some household respondents have personal businesses such as local trades. Notably, most respondents have never relocated to other residential areas.

General opinions about the CPA's activities and projects

The overall opinions are consistent among household and local establishment respondents about the CPA and related agency's aim to propel Rayong to become an eco-industry town. Respondents mostly agree with all five operations: (*i*) becoming an eco-industry town, (*ii*) a pilot eco-school, (*iii*) promoting a positive image and stimulating the economy, (*iv*) working in conjunction with Rayong's educational governmental agencies, and (*v*) promoting understanding between manufacturers and communities. The overall average satisfaction score of these five operations is 68.3, which is good but in the lower end. Operation eco-school activity showed the highest scores, and the scores of promoting understanding between manufacturers and communities were comparatively quite low. In addition, most respondents acknowledge the CPA's logo. Notably, respondents who are local shop owners are less aware of many projects and activities than household respondents. The best-known activities are the mobile medical unit project, volunteer nurse project, scholarship to medical or nursing school project, and promotion of occupation groups.

Satisfaction with the CPA's activities

Most respondents are generally satisfied with the operation task force (OTF). The percentage satisfaction score ranges from 67.8% to 70.8% with an average of 69.2%, which is good but still in the lower end. Operations that promote the awareness of preserving the environment showed the highest score, whereas operations that increase green space and propel Rayong province to become an eco-industry province displayed a comparatively lower score. Notably, respondents from the community leader group generally demonstrate positive attitudes towards the CPA's activities. By calculating the satisfaction level of all 12 criteria of the Corporate Social Responsibility Task Force (CSRTF), the percentage satisfaction level ranged from 67.8% to 72.8%, with an average of 70.0%. This score is moderately good. In the case of the CSRTF, the CPA Meets Community (CMC) showed the highest score, with an average of 66.0%, and the Training Medical Staff Volunteers (TMSV) (e.g., how to puncture blood veins demonstrated) demonstrated the minimum satisfaction level of 60.8%. Unlike the case of the OTF, respondents from the local establishment group had better impressions of the CSRTF than the community leaders. Additionally, the percentage satisfaction level of CTF ranged from 67.7% to 71.6%, with an average of 69.7%. The best score of the CTF was PR via Car Parade (PCP), with an average score of 68.4%. Surprisingly, PR via Local Television (PLT) displayed the minimum percentage score: 59.1%. Generally, all respondents are aware of the activities or projects financially sponsored by the CPA. The most well-known projects are providing Mobile Medical Units (MMUs), promoting Education in Rayong Province (E), encouraging the CPA Tutoring programme (CT), and supporting bachelor's degree scholarships to continuing education (BDS).

Based on the results of the qualitative surveys (i.e., in-depth interviews), the CPA has maintained not only its pledge and standards but also turned good ideas into real projects such as the community enterprise programme, where the association introduces the idea of modern packaging and creating brands. Although the majority of in-depth interview respondents generally appreciate projects such as eco-town, tutoring, and scholarship programmes, they requested additional interactive communication channels such as social media (e.g., Facebook, Twitter) to exchange information between the local residents and CPA staff. Several suggestions associated with the sustainability of the CPA's projects and activities can be described as follows:

- Although many local government officers in all areas assist with emergency drills and provide knowledge in case of emergency, the majority of residents did not pay much attention to activities related to safety, occupational health, and environment. Consequently, having additional CSR activities related to the promotion of safety, occupational health, and environment in Rayong Province is crucial.
- The CPA should recruit additional members and set up realistic goals that are mutually beneficial to the industrial sectors and local communities. For instance, representatives from all the stakeholders should participate in the preparation of emergency response plans.
- Industrial sectors should pay more attention to reforming healthcare projects. For example, a health system should comprise supply-side interventions aiming at improving the effectiveness and quality of care as well as demand-side interventions

aiming at expanding health insurance and providing financial support to the low-income residents.
- The CSR activities should be more specific because not every community has the same requirements.

Discussions

PDF of ages and CSR satisfaction level

In order to make a selection between parametric and the nonparametric test is relatively difficult for a social scientist conducting statistical analysis. For performing hypothesis, in the case of information associated with the population is completely acknowledged, by way of parameters, then the test is said to be parametric test whereas, if there is no information related with population and it is required to test the hypothesis on population, then the test conducted can be considered as the nonparametric test. In this study, the information about the population is completely known and thus it appears reasonable to select parametric test. Furthermore, it is generally known that parametric statistics is far more superior to non-parametric statistics in term of "power of test". For this particular reason, numerous types of "parametric statistics" such as t-Test, ANOVA, and Pearson Correlation Analysis were employed for this study. Please note that for non-parametric statistics, Chi-square, Cochran Q, and Spearman Rank will be used instead of t-Test, ANOVA, and Pearson Correlation Analysis, respectively. As clearly illustrated in Figures 1a and 2a, some distinctive components of PDF can be principally extracted from the original geometric visualization. First, a symmetric distribution curve is observed in Figure 1. Because the calculated values of the PDF are comparatively more concentrated in the middle (i.e., 40–43 years) than in the tails, it seems rational to assume this finding is a consequence of the moderately homogeneous spatial distribution of the population's ages in Rayong Province. Second, notably, Figure 1 can be considered as an asymmetric distribution (i.e., positive-skew distribution or right-skewed distribution) due to its relatively long right tail, indicating—more broadly—variations in ages after 40 years. This finding is also consistent with an age distribution histogram as displayed in Figure 1b. It is crucial to note that a histogram provides an accurate display coupled with a rough sense of the density of the underlying distribution of age. Also notable is that Figure 2 displays two asymmetric distributions (i.e., negative-skew distribution or left-skewed distribution) because of its comparatively long left tail, underlining—more broadly—variations in the satisfaction scores within the range of 1–4. This result highlights the considerable consistency of high satisfaction scores within the range of 5–6. These asymmetrical distribution curves also reveal that the averages are extensively higher than the median; therefore, they reflect positive images of the CPA's projects and activities for both genders. In addition, male and female satisfactory level histograms display left-skewed distributions indicating that the majority of stakeholders is highly satisfied with CPA activities for both genders (see Figure 2b).

T test on gender differences in CSR satisfaction level

One of the major assumptions of applying *t* tests with the alpha level of 0.05 to investigate any significant differences of satisfaction levels between male and female respondents is that each of the two populations being compared should follow a normal distribution, as

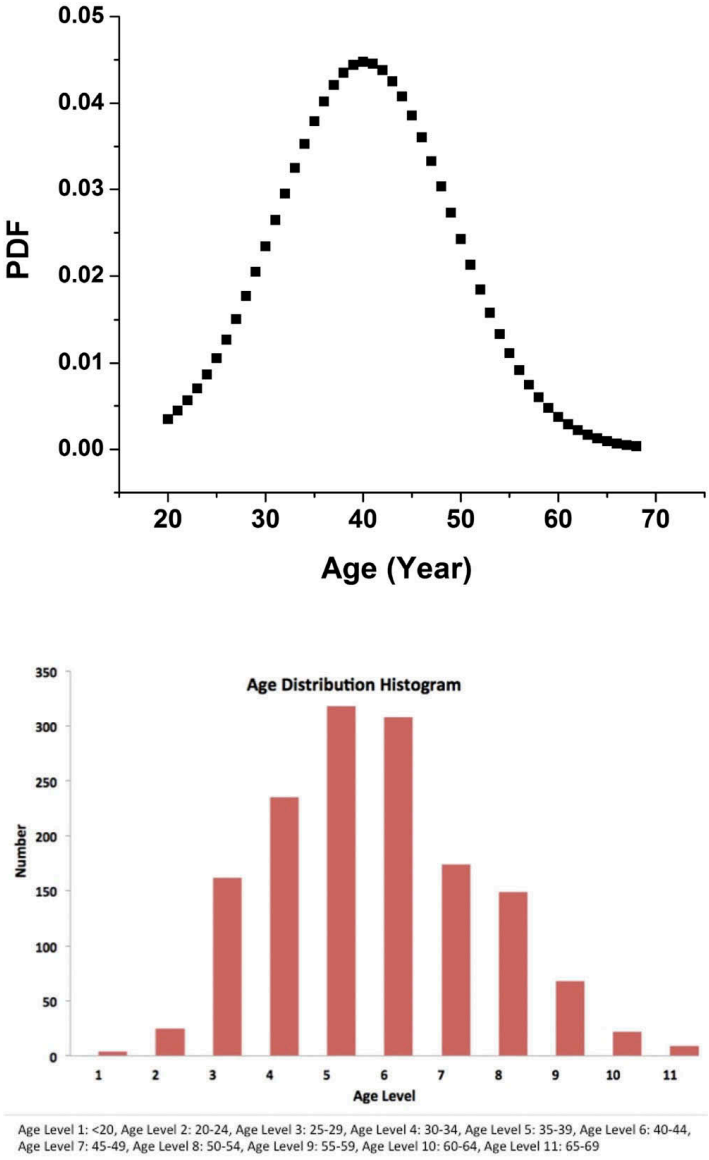


Figure 1. a. Probability distribution function of the participant's ages. b. A histogram of the participant's ages.

previously discussed in section 4.1. As illustrated in Table 2, a *t* test applied to examine the gender differences in average satisfaction level of CSR activities. Surprisingly, only one in 30 CSR activities showed statistical differences in gender. Male respondents displayed a significantly higher satisfaction level with the MMU activity (i.e. MMUs) than the female respondents. This finding is consistent with a previous study performed on a particularly large sample of 908 clients from 12 of the largest banks in Italy, in which the overall outcomes indicate relatively little substantive difference between women's and men's average expectations (Calabrese, Costa, & Rosati, 2016). Based on a massive amount of questionnaires collected by the Iranian Centre of Statistics, the quantitative analysis showed no significant differences between male and female stakeholders associated with orientation to the CSR activities (Kahreh, Babania, Tive, & Mirmehdi, 2014). Although

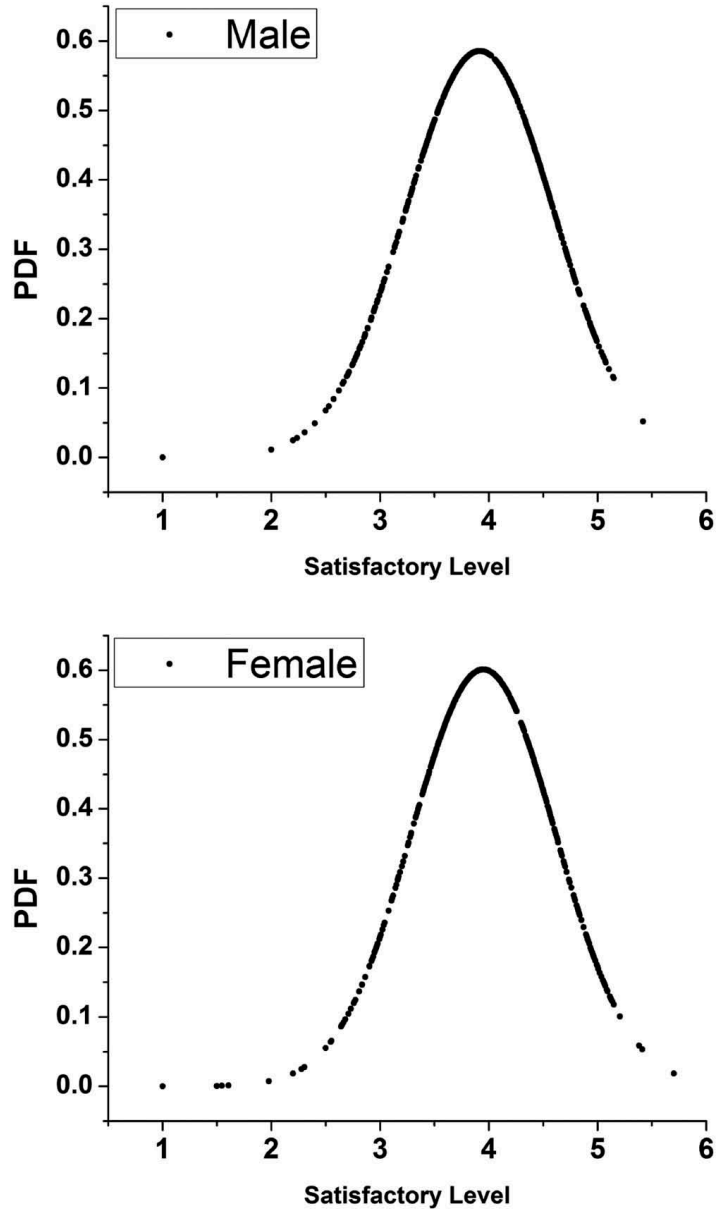


Figure 2. a. Probability distribution function of the participant's overall satisfaction level based on gender. b. Histograms of the participant's overall satisfaction level based on gender.

reasons for gender differences in the average satisfaction levels related with MMU remain unclear, knowing that males are generally more satisfied with mobile medical unit activity than females can be described as a consequence of the comparatively higher risk of serious and fatal injuries from traffic accidents observed in male patients (González-Sánchez et al., 2017). A total of 13,765 respondents from 7,115 households in Sierra Leone, Rwanda, Nepal, and Uganda indicate that younger men are most affected in traffic accidents, supporting this interpretation (Zafar, Canner, Nagarajan, & Kushner, 2018). In addition, notably, there are no significant gender differences on levels of satisfaction for the category of PR tools. For this particular reason, it is, therefore, crucial for policymakers or company

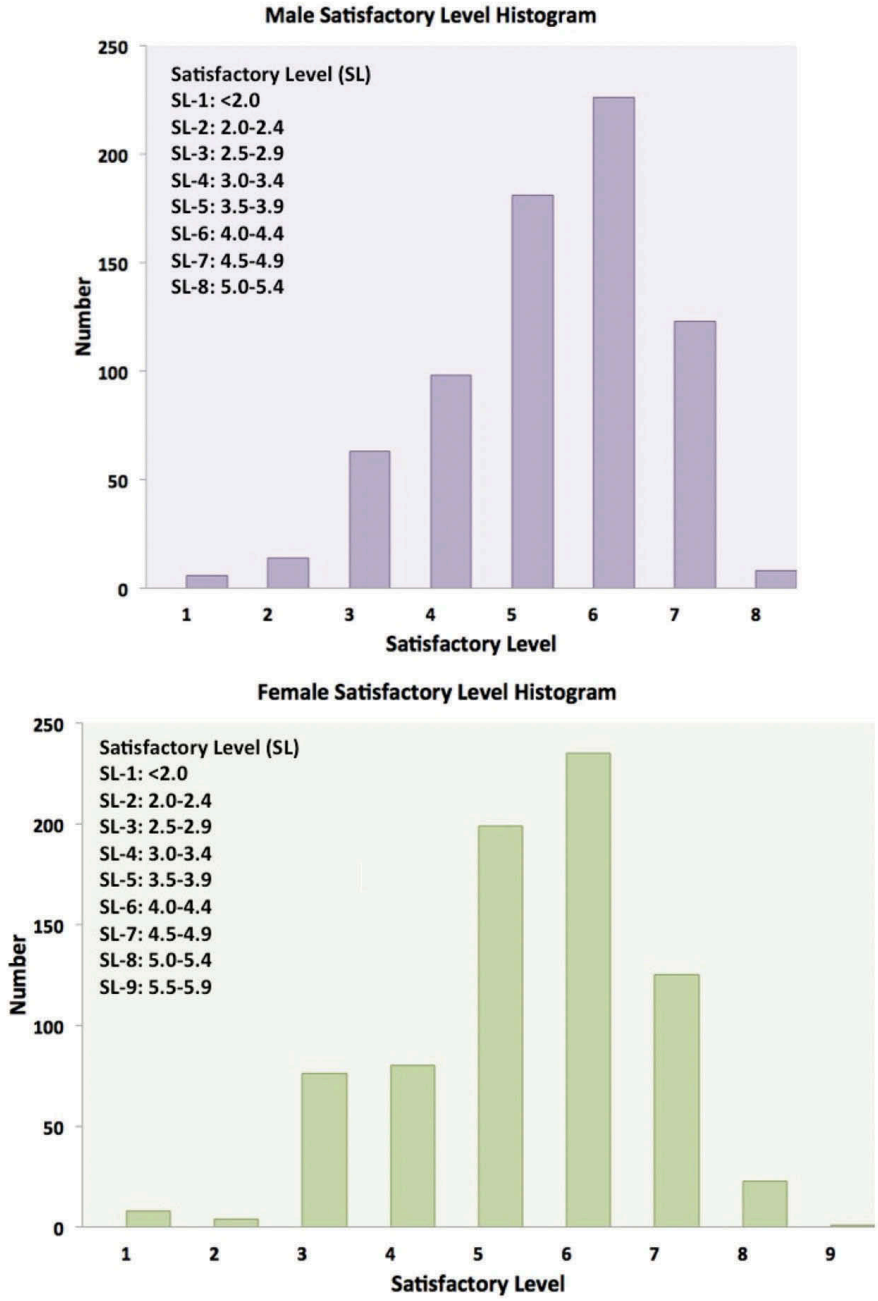


Figure 2. (Continued).

administrators to find the most appropriate PR tools for promoting gender-based CSR activities in the near future.

ANOVA on education difference in the CSR satisfaction level

In statistics, ANOVA, which stands for "Analysis of Variance", has been generally provided to the comparison of averages because in order to determine any relationship between different averages, the variances are theoretically being compared. ANOVA is

Table 2. A *t* test applied to examine gender differences in average level of satisfaction with CSR activities with the alpha level of 0.05.

CSR Activity	Male Satisfaction Level (n= 722)	Female Satisfaction Level (n= 751)	*T* Test ($p < 0.05$)
EI	4.15 ± 0.67	4.14 ± 0.74	NS*
ES	4.22 ± 0.74	4.23 ± 0.82	NS
IE	4.12 ± 0.79	4.10 ± 0.85	NS
E	4.22 ± 0.86	4.22 ± 0.93	NS
C	4.07 ± 0.87	4.02 ± 0.87	NS
EIFD	4.07 ± 0.96	4.11 ± 0.82	NS
GA	3.97 ± 0.96	4.05 ± 0.81	NS
PEMN	3.99 ± 0.98	4.03 ± 0.76	NS
ERP	4.08 ± 0.92	4.10 ± 0.76	NS
MMU	4.30 ± 0.90	4.18 ± 0.74	S**
NS	4.10 ± 1.07	4.11 ± 0.85	NS
NV	4.15 ± 0.89	4.10 ± 0.76	NS
MSVT	4.03 ± 0.89	4.06 ± 0.76	NS
MSS	4.06 ± 0.88	4.03 ± 0.73	NS
THK	3.98 ± 0.92	4.03 ± 0.75	NS
CT	3.97 ± 0.96	3.99 ± 0.79	NS
BDS	3.97 ± 0.96	4.03 ± 0.83	NS
EE	3.99 ± 0.98	3.99 ± 0.79	NS
ECM	4.07 ± 0.94	4.12 ± 0.77	NS
ECMK	4.04 ± 0.93	4.00 ± 0.74	NS
CMC	4.16 ± 0.93	4.18 ± 0.77	NS
PVN	4.04 ± 1.01	4.04 ± 0.86	NS
PVR	3.89 ± 0.99	3.96 ± 0.87	NS
PLT	3.82 ± 1.01	3.83 ± 0.84	NS
PCP	4.21 ± 0.92	4.21 ± 0.78	NS
PAL	4.17 ± 0.91	4.15 ± 0.81	NS
PVB	3.96 ± 0.91	3.99 ± 0.78	NS
PLB	3.83 ± 1.02	3.87 ± 0.86	NS
PCJ	4.08 ± 0.97	4.16 ± 0.82	NS
PSM	3.94 ± 1.10	3.99 ± 0.87	NS

*S: Significance
**NS: No Significance

particularly useful because while carrying out multiple, two-sample tests, there is an increased chance of a Type-l error, and ANOVA can simultaneously compare the means. Another crucial characteristic of ANOVA is that it compares scale or interval variables also called "continuous variables." On the contrary, the MANOVA (Multivariate Analysis of Variance) method shows if the dependent parameters were significantly influenced by variations in the independent parameters. It also describes the interactions occur amongst dependent parameters. In addition, MANOVA determinately explains the interactions occur amongst independent parameters as well. While ANOVA adopts three different models for experimentations (i.e., random-effect, fixed-effect, and multiple-effect methods) to describe the differences in averages which is its major goal while MANOVA describes if the dependent parameters are significantly influenced by alterations in the independent parameters. In section 4.3, the social survey separates the population into seven groups according to the level of education:

(1) Elementary school (Grades 1–6)
(2) Junior high school (Grades 7–9)
(3) Senior high school (Grades 10–12)
(4) Vocational certificate

(5) Vocational diploma
(6) Bachelor's degree
(7) Postgraduate degree

It is obvious to mention that these seven groups can be considered as dependent parameters (i.e., satisfactory level) as categorized by seven different educational levels. As a consequence, it appears rational to use ANOVA for determining the differences in averages of satisfactory levels rather than focusing on the interactions take place amongst independent variables.

According to the ANOVA results, all average satisfaction levels ($n = 30$) of postgraduate respondents are significantly higher ($p < 0.05$) than those of elementary school respondents (Table 3). Generally, a tendency for the satisfaction level to positively correlate with education level is observed. This tendency can be explained by numerous reasons. Firstly, well-educated respondents tend to understand and appreciate the core values of several CSR activities in comparison with those of low-educated group. These findings are in satisfactory agreement with a previous study highlighting that customer education plays a crucial role in establishing and increasing customer satisfaction and customer loyalty (Suh, Greene, Israilov, & Rho, 2015). Secondly, the differences in educational experiences and lines of specialization can considerably affect overall satisfaction levels, which is consistent with an earlier report conducted in western universities (Munteanu, Ceobanu, Bobâlcă, & Anton, 2010). Notably, senior high school respondents (i.e., education level 3) show the maximum satisfaction levels of PVR (4.20 ± 0.77) and PVB (4.22 ± 0.73) (Table 3). These findings indicate that radio and billboard are still powerful public relation tools, particularly for respondents who qualified for post-compulsory education. By contrast, only postgraduate respondents display the maximum satisfaction levels of PLT (4.11 ± 0.88) and PSM (4.33 ± 0.70), emphasizing that local television and social media are the two most powerful PR tools among the highly educated group. Notably, car parade (PCP) is the most effective communication tool that covers a wide range of education levels, such as an elementary school, senior high school, or vocational diploma and a postgraduate degree. Another crucial feature of the ANOVA results is the significantly highest satisfaction levels of junior high school respondents with the CSR activities associated with eco-industry town (EI: 4.41 ± 0.68), eco-school (ES: 4.43 ± 0.71), image and stimulating economy (IE: 4.43 ± 0.77), education (E: 4.58 ± 0.71), and communication (C: 4.40 ± 0.81). These results can be ascribed to the overall success of CSR activities covering four major aspects, namely, environment, economy, education, and communication, irrespective of education level in the study area.

MLRA on analyzing factors affecting CSR satisfaction level

Prior to the application of MLRA, it is important to underline the assumptions associated with the random variable μ (error term), which can be ascribed as its probability distribution remains the same for all observations of X (i.e. AGE, EDU, MEM, INC) and in particular that the variance of each μ is the same for all data of the explanatory parameters (i.e., the variance of errors is the same across all levels of the independent parameters). It is crucial to highlight that μ tend to be cumulative over time and thus it appears difficult to collect the data and confirm its consistency and reliability.

Table 3. ANOVA applied to evaluate education level differences in average level of satisfaction with CSR activities with the alpha level of 0.05.

Education Level		EI	ES	IE	E	C	EFID	GA	PEMN	ERP	MMU	NS	NV	MSVT	MSS	THK
1	Aver	4.12	3.99	3.98	4.29	4.14	3.84	3.66	3.71	3.74	4.32	3.78	3.93	3.82	3.85	3.54
	Stdev	0.76	0.67	0.88	0.81	0.96	1.14	1.00	0.97	0.82	0.83	0.95	1.07	0.95	0.87	0.70
	n	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147
2	Aver	4.41	4.43	4.43	4.58	4.40	3.66	3.63	3.66	3.71	4.04	3.58	3.87	3.72	3.87	3.61
	Stdev	0.68	0.71	0.77	0.71	0.81	0.81	0.78	0.79	0.72	0.69	1.00	0.81	0.70	0.64	0.70
	n	198	198	198	198	198	198	198	198	198	198	198	198	198	198	198
3	Aver	4.05	4.21	4.03	4.15	3.95	4.20	4.26	4.13	4.33	4.27	4.41	4.17	4.23	4.13	4.30
	Stdev	0.69	0.76	0.79	0.88	0.83	0.72	0.76	0.70	0.69	0.70	0.74	0.68	0.69	0.67	0.70
	n	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391
4	Aver	4.00	4.08	3.98	4.02	3.89	3.84	3.67	3.78	3.81	3.93	3.73	3.84	3.75	3.78	3.82
	Stdev	0.74	0.92	0.84	0.96	0.85	0.77	0.74	0.73	0.68	0.77	0.80	0.78	0.69	0.68	0.68
	n	171	171	171	171	171	171	171	171	171	171	171	171	171	171	171
5	Aver	4.08	4.18	4.01	4.06	3.87	4.36	4.25	4.27	4.32	4.34	4.32	4.27	4.23	4.20	4.18
	Stdev	0.67	0.81	0.81	0.98	0.88	0.68	0.71	0.68	0.66	0.70	0.73	0.69	0.72	0.69	0.69
	n	296	296	296	296	296	296	296	296	296	296	296	296	296	296	296
6	Aver	4.16	4.37	4.21	4.42	4.13	4.21	4.15	4.00	4.23	4.14	4.27	4.09	4.12	3.96	4.17
	Stdev	0.69	0.74	0.75	0.76	0.74	0.74	0.61	0.62	0.66	0.70	0.71	0.74	0.63	0.61	0.61
	n	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67
7	Aver	4.36	4.41	4.28	4.30	4.20	4.42	4.20	4.31	4.26	4.48	4.37	4.34	4.22	4.21	4.15
	Stdev	0.67	0.76	0.85	0.91	0.91	0.67	0.62	0.65	0.60	0.63	0.69	0.71	0.62	0.64	0.61
	n	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137
ANOVA Test ($p < 0.05$)		S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Education Level		CT	BDS	EE	ECM	ECMK	CMC	PVN	PVR	PLT	PCP	PAL	PVB	PLB	PCJ	PSM
1	Aver	3.70	3.63	3.70	3.72	3.60	3.90	3.72	3.53	3.24	4.20	4.24	3.72	3.38	3.87	3.58
	Stdev	0.94	0.94	0.94	0.87	0.78	0.83	1.18	1.09	0.89	0.84	0.97	0.85	0.97	1.02	1.07
	n	147	147	147	147	146	147	147	147	147	147	147	147	147	147	147
2	Aver	3.62	3.58	3.59	3.74	3.68	3.86	3.58	3.50	3.40	3.94	3.86	3.64	3.42	3.76	3.43
	Stdev	0.95	0.87	0.90	0.80	0.73	0.74	0.84	0.85	0.75	0.73	0.74	0.71	0.77	0.80	1.00
	n	198	198	198	198	198	198	198	198	198	198	198	198	198	198	198
3	Aver	4.16	4.28	4.15	4.35	4.22	4.41	4.18	4.20	4.10	4.37	4.18	4.22	4.08	4.31	4.22
	Stdev	0.66	0.71	0.70	0.69	0.69	0.73	0.77	0.77	0.75	0.71	0.71	0.73	0.75	0.72	0.80
	n	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391
4	Aver	3.76	3.68	3.72	3.78	3.73	3.80	3.81	3.59	3.60	3.83	3.89	3.60	3.64	3.86	3.70
	Stdev	0.67	0.67	0.68	0.67	0.64	0.69	0.76	0.71	0.65	0.78	0.77	0.67	0.76	0.76	0.76
	n	171	171	171	171	171	171	171	171	171	171	171	171	171	171	171
5	Aver	4.21	4.22	4.22	4.31	4.20	4.33	4.32	4.15	4.03	4.37	4.33	4.14	4.10	4.35	4.21
	Stdev	0.68	0.71	0.69	0.70	0.71	0.72	0.72	0.75	0.77	0.71	0.71	0.76	0.80	0.72	0.70
	n	296	296	296	296	296	296	296	296	296	296	296	296	296	296	296

(*Continued*)

Table 3. (Continued).

Education Level		EI	ES	IE	E	C	EFID	GA	PEMN	ERP	MMU	NS	NV	MSVT	MSS	THK
6	Aver	4.01	4.18	4.08	4.20	4.08	4.31	4.16	4.20	4.00	4.31	4.17	4.17	3.97	4.22	4.15
	Stdev	0.65	0.63	0.70	0.68	0.70	0.71	0.83	0.71	0.68	0.72	0.77	0.64	0.65	0.68	0.76
	n	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67
7	Aver	4.21	4.24	4.28	4.28	4.29	4.41	4.37	4.15	4.11	4.37	4.45	4.13	4.08	4.35	4.33
	Stdev	0.61	0.58	0.60	0.58	0.63	0.64	0.75	0.74	0.88	0.68	0.70	0.67	0.83	0.70	0.70
	n	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137
ANOVA Test ($p < 0.05$)		S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

Furthermore, some omitted parameters from the regression model tend to alter in the same direction with X, resulting in an enhancement of the variance of the observation from the regression line. As a consequence, if the assumption of homoscedasticity is not met, the prediction of Y (i.e., satisfactory level) would be inefficient due to the variance of prediction includes the variance of μ and of the variable estimates which are not minimal because of the incidence of heteroscedasticity.

MLRA is a universal form of linear regression analysis. In this study, MLRA is employed to describe the relationship between one continuous dependent variable (i.e., satisfaction level of CSR activities) and four independent variables (i.e., age, education, income, household members) as a predictive analysis. The independent variables can be continuous or categorical. There are three major assumptions prior to the application of MLRA: (*i*) the regression residuals must be normally distributed, (*ii*) the existence of a linear relationship between the dependent and independent variables, and (*iii*) the absence of multicollinearity. By using the data from the respondents, including independent parameters such as the actual age (AGE), seven scales of education level as categorized in section 4.3 (EDU), and actual household members (MEM), MLRA was successfully computed and displayed in Eqs. (3)–(7). This social study classifies the population into seven groups according to the level of their incomes (INC):

(1) Less than THB 5,000 per month
(2) In the range of THB 5,001–THB 10,000 per month
(3) In the range of THB 10,001–THB 15,000 per month
(4) In the range of THB 15,001–THB 20,000 per month
(5) In the range of THB 20,001–THB 25,000 per month
(6) In the range of THB 25,000–1THB 30,000 per month
(7) Greater than THB 30,000 per month

Notably, SL1, SL2, SL3, SL4, and SL5 are the average satisfaction level of following CSR activities:

SL1: EI, ES, IE, E, C, EFID (Ecosystem, Economy, Education, Communication)
SL2: GA, PEMN, ERP (Environment, Emergency Response)
SL3: MMU, NS, NV, MSVT, MSS, THK (Medical Care & Health)
SL4: CT, BDS, EE, ECM, ECMK, CMC (Education)
SL5: PVN, PVR, PLT, PCP, PAL, PVB, PLB, PCJ, PSM (PR)

In this study, SPSS (Ver 13.0) was used to perform an MLRA by inputting the dependent variables (i.e. SL1–SL5) and independent variables (i.e. AGE, EDU, MEM, INC). MLRA equations can be described as follows:

$$SL1 = 3.621 - 0.00087 \times AGE + 0.061 \times EDU + 0.05149 \times INC + 0.01294 \times MEM \quad (3)$$

$$SL2 = 3.196 - 0.00594 \times AGE + 0.1304 \times EDU + 0.1030 \times INC - 0.00555 \times MEM \quad (4)$$

$$SL3 = 3.222 - 0.00139 \times AGE + 0.1219 \times EDU + 0.07406 \times INC - 0.01276 \times MEM \quad (5)$$

$$SL4 = 3.306 - 0.00537 \times AGE + 0.1339 \times EDU + 0.09626 \times INC - 0.03936 \times MEM \quad (6)$$

$$SL5 = 3.185 - 0.00388 \times AGE + 0.1322 \times EDU + 0.09579 \times INC - 0.02195 \times MEM \quad (7)$$

There are several features, which can be extracted from Eqs. (3)–(7). Firstly, the actual age of the respondents is negatively correlated with all satisfaction levels, reflecting some dissatisfaction among elderly respondents. Although the actual age is negatively correlated with all satisfaction levels, the respondents are satisfied to some extent with the CSR activities associated with the ecosystem, the economy, education, and communication as a consequence of the lowest coefficient value (i.e., −0.00087) observed in Eq. (3). This finding is in satisfactory agreement with the fact that the majority who participated in CSR activities, such as EI, ES, IE, E, and C, are elderly people. Secondly, the education level of respondents is positively correlated with all satisfaction levels, indicating that well-educated people tend to demonstrate a positive attitude towards the CSR activities. The highest positive coefficient observed in Eq. (6) (i.e., 0.1339), which is the MLRA of SL4 (i.e., education), is inconsistent with this interpretation.

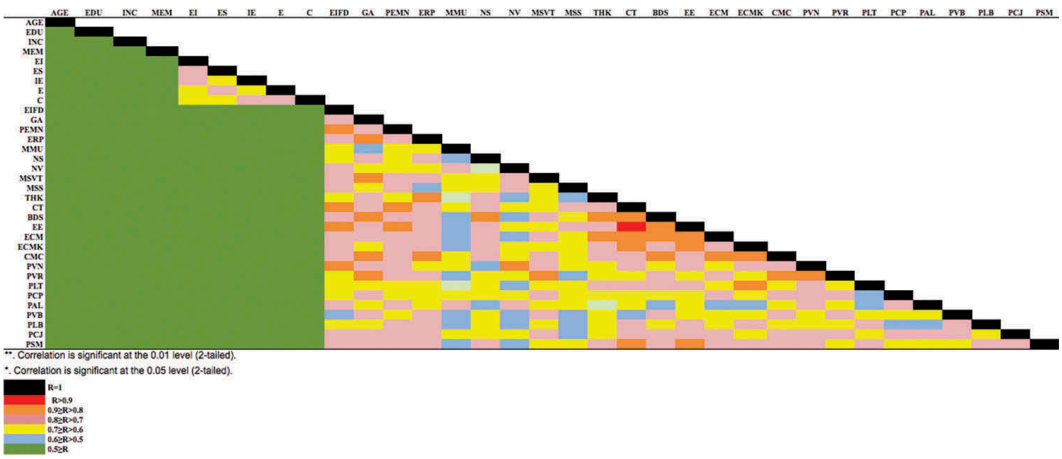
Thirdly, the higher the respondents' incomes the higher their satisfaction levels with the CSR activities. This result can be attributed to the high-income respondents tending to have higher educations; thus, it is positively correlated with all satisfaction levels. Fourthly, the higher the respondents' household members the lower their satisfaction levels with the CSR activities.

In addition, the number of household members is negatively correlated with all satisfaction levels. This result indicates that low-socioeconomic status (LSS) households, which have comparatively low income to cope with any adverse health impacts, appear to have more children; hence, their level of appreciation for the CSR activities was minimal. Notably, the majority of the CSR activities related to the environment, the ecosystem, education, and communication, whereas economy was considered as only one aspect. As a consequence, a reasonable conclusion is that CPA staff should increase their efforts to create CSR activities that meet the requirements of the LSS communities, such as career guidance, providing supplementary job opportunities, and allocating relatively more skillful job training programmes.

PA on the satisfaction level with CSR activities

An examination of the Pearson correlations revealed that the following CSR activities had strong positive correlations (i.e., $0.80 < R$; highlighted in orange and red color): EIFD *vs*. GA, EIFD *vs*. CT, EIFD *vs*. EE, EIFD *vs*. PVN, GA *vs*. ERP, GA *vs*. MSVT, GA *vs*. BDS, GA *vs*. CMC, GA *vs*. PVR, PEMN *vs*. CT, PEMN *vs*. EE, ERP *vs*. THK, ERP *vs*. CMC, NS *vs*. BDS, NV *vs*. PVN, and MSVT *vs*. PVR (Table 4). These findings suggest that the CSR activities associated with the environment are positively correlated with other aspects, such as education, medical care, health, and emergency response. The strong positive correlations between THK *vs*. BDS, CT *vs*. BDS, ECM *vs*. THK, ECM *vs*. CT, ECM *vs*. BDS, and ECM *vs*. EE also emphasize the importance of community enterprises deeply connected with numerous dimensions, such as health care and educational support. Notably, CT *vs*. EE displayed the highest positive correlation coefficients of 0.91, indicating that the majority of respondents are predominantly concerned about their children's education. In this study, social media (i.e. PSM *vs*. THK, PSM *vs*. EE) is the only public relation tool that demonstrated positive correlation coefficients larger than 0.8 (,i.e. highlighted in orange color) (Table 4). As a result, it appears reasonable to promote the CSR activities related to education and health care by using Facebook, Twitter, and other types

Table 4. PCA was applied in the evaluation of the correlations between the CSR activities.



of social media. In addition, all the PR tools show some weak positive correlations (i.e., $0.5 \geq R$) with EI, ES, IE, E, and C; thus, this result indicates that the CPA staff should increase their efforts to find the most practical PR tools specifically designed for promoting the CSR activities related to the environment, the ecosystem, the economy, education, and communication.

HCA on the satisfaction level of CSR activities

This section employs a technique called HCA which categorizes information into 'variables'. The level of satisfaction with CPAs is the dependent variable, which can be further separated into 30 variables. Variables adjacent to each other can be considered as a similar group on a dendrogram (i.e., a graph displaying the correlation of variables) (Figure 3). The results are arranged in a tree structure (i.e., dendrogram). Any variables from different groups are located apart from each other on a dendrogram. The greater the difference in the variables the farther apart they are. A few clustering algorithms, methods to define the similarity or dissimilarity of the variables are observed.

In this study, the K-means method was employed to compute the middle ground or partition the median periphery of the recorded data and then calculate the data record to find the average value or 'centroid'. Subsequently, a comparison of the centroid to the median periphery is performed to designate which group the 'data record' belongs to. By repeating the process as many times as planned or until the data record is stagnant, a dendrogram of all 34 variables is successfully created. As illustrated in Figure 3, the independent variables (i.e., age, level of education, income, and number of members in a household) are extremely adjacent to each other along with dependent variables (i.e., E, C, IE, ES, and EI). This result shows that the independent variables have considerable effects on the dependent variables, which are at a satisfactory level regarding the CSR activities, including the scope of the ecosystem, the economy, education, and communication. These findings are inconsistent with those of the PCA, as previously mentioned in section 4.5, where comparatively weak correlations (i.e., $0.5 \geq R$) between independent and dependent variables (i.e. E, C, IE, ES, and EI) are observed. Perhaps the discrepancy

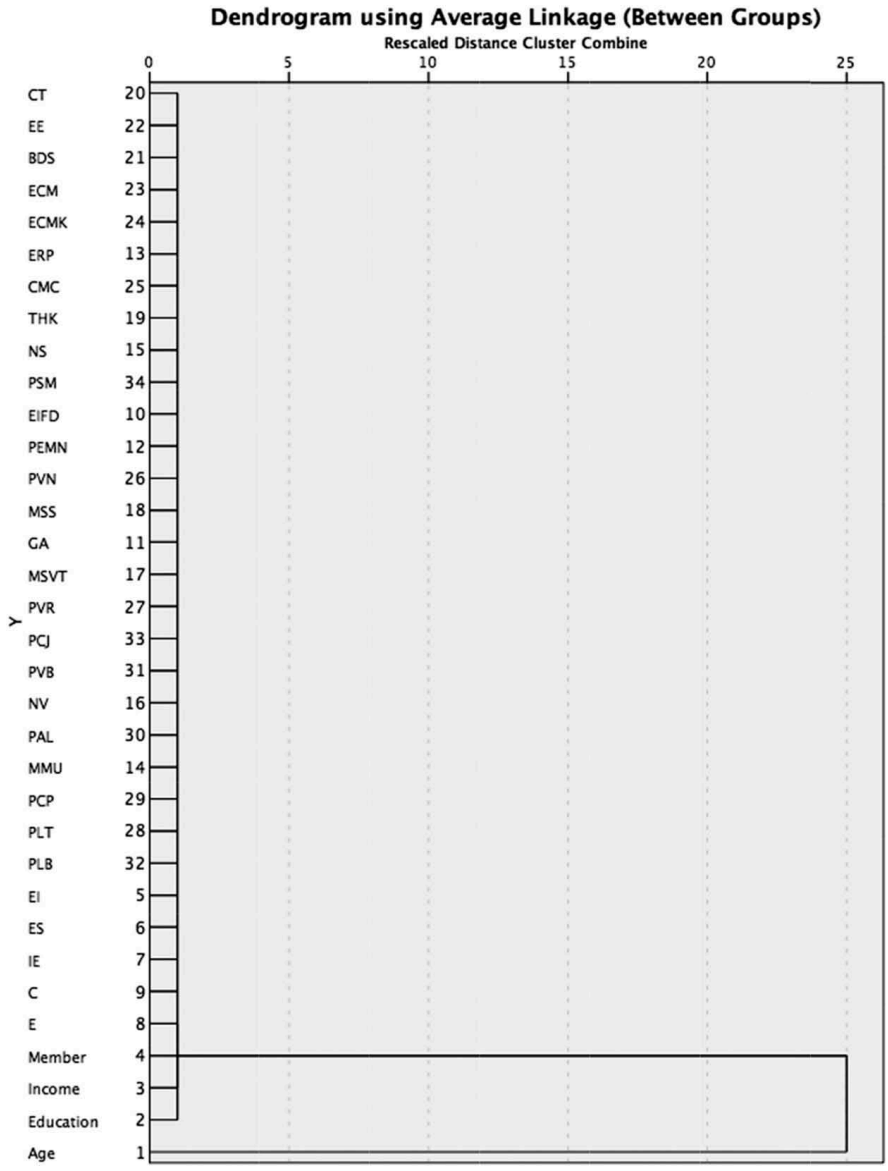


Figure 3. HCA of the participant's overall satisfaction level associated with 30 CSR activities coupled with four independent variables.

can be explained by the differences in the nature of the two algorithms applied in the HCA and PCA. Additional information associated with the close proximity between variables can be further extracted from a dendrogram, which can be described as follows:

(i) EIFD and PEMN *vs*. PSM and PVN
(ii) MSVT and NV *vs*. PVR and PCJ and PVB
(iii) MMU *vs*. PCP and PLT and PLB and PAL

Valuable knowledge can be retrieved from these findings. Firstly, social media and newspapers are two PR tools that strongly influence the level of respondents' satisfaction with the CSR activities related to eco-industry factory development and the proactive

environmental monitoring network. Secondly, radio, CPA Journal, and billboard are three PR tools that affect the local people's perception of the CSR tasks associated with nursing and medical staff & volunteer training programmes. Thirdly, car parade, local television, LED board, and audio line are closely related with the MMU. This result implies that if the CPA must promote the eco-factory project or training of the environmental monitoring network, they should select PR tools such as social media or newspaper instead of radio, local television, and audio line. Alternatively, in the case of the promotion of training medical staff and the nursing volunteer programme, it appears plausible to consider radio, CPA Journal, and billboard as PR tools. Additionally, it seems rational to use LED screens, car parades, and wire broadcasting as major PR tools for promoting the mobile medical unit project. Other variables, such as CT, EE, BDS, ECM, ECMK, ERP, CMC, and THK, are located farther from the independent variables of age, level of education, income, and number of members in a household. This result indicates that the other CSR activities, such as the tutoring program, education expo, or the CPA meets communities event has not been affected much by age, level of education, income, and number of members in a household; by contrast, it could mean that all population groups have already shown an interest in these types of activities.

PCA on satisfaction level of CSR activities

PCA is another advanced statistical analysis method used to examine variables without separating them into groups. Unlike SLRA or MLRA, PCA does not require independent or dependent variables. PCA is only interested in determining the relationship between variables. All independent and dependent variables are shown in standardized form with an average of 0 and a standard deviation of 1. Consequently, the total variance can be considered as the total number of variables, and the variance of each factor expressed as a fraction of the total variance, namely, the eigenvalue. In the case when a factor has a low eigenvalue, it is, therefore, contributing little to the explanation of variances in the variables and can be ignored. PCA is widely applied to reduce the information in various detected variables into a smaller set of components, finds a linear combination of variables such that the maximum variance is extracted from the variables, subsequently decreases this variance and seeks a second linear combination that describes the maximum proportion of the remaining variance, and so on, which is called the principal axis method and results in orthogonal (uncorrelated) factors. Therefore, the greatest combination, offering an explanation for the majority of variances, becomes principal component 1 (PC1), the second largest accounts for the next largest amount of variances and becomes principal component 2 (PC2), and so on. Researchers apply this method to reduce the complexity of a matrix or uncover the relationship of input data.

In this study, there are 34 variables. PCA reduces the matrix to five main principal components (Table 5). After analyzing the first component, we found that the variables EIFD, GA, PEMN, ERP, NS, MSVT, THK, CT, EE, ECM, ECMK, CMC, PVN, PVR, PLT, PCP, PVB, PLB, PCJ, and PSM have correlation values larger than 0.6, with total variance explained for 40%. This result means that PR via radio, local television, car parade, billboard, LED screen, and CPA journal has a 40% effect on the satisfaction level of the CPA's activities, such as promoting eco-industry factory development, increasing green areas, the proactive environmental training programme, and preparing schools and

Table 5. PCA was applied to evaluate the correlations between the CSR activities.

	Principal Component				
	PC1	PC2	PC3	PC4	PC5
AGE	−.216	.096	.060	−.735	.207
EDU	.102	.105	.023	.797	.105
INC	.142	.107	.048	.416	.560
MEM	−.114	−.013	.047	−.171	.665
EI	.093	.375	.800	.020	.114
ES	.272	.019	.818	.064	.149
IE	.041	.139	.862	.042	−.003
E	.148	−.039	.875	−.093	.021
C	−.023	.068	.897	−.008	−.127
EIFD	.612	.674	.114	.141	.069
GA	.859	.283	.101	.087	.130
PEMN	.646	.593	.150	.149	.010
ERP	.872	.194	.129	.119	−.002
MMU	.516	.600	.155	−.147	.057
NS	.793	.199	.060	.195	−.203
NV	.510	.697	.151	−.061	.205
MSVT	.820	.313	.127	−.001	.220
MSS	.469	.701	.175	.035	−.125
THK	.828	.169	.111	.217	−.162
CT	.649	.609	.102	.177	−.116
BDS	.841	.300	.076	.173	−.103
EE	.664	.595	.067	.208	−.154
ECM	.820	.320	.071	.154	−.100
ECMK	.677	.484	.109	.254	−.208
CMC	.868	.287	.079	.071	.007
PVN	.649	.607	.093	.112	.188
PVR	.862	.215	.050	.066	.196
PLT	.656	.373	.123	.330	−.211
PCP	.767	.355	.042	−.137	.098
PAL	.555	.639	.145	−.125	.169
PVB	.848	.138	.093	.008	−.015
PLB	.684	.341	.126	.251	−.176
PCJ	.812	.333	.089	.005	.126
PSM	.682	.472	.056	.253	−.179
% of Variance	**40**	**16**	**12**	**6**	**4**

Extraction Method: Principal component analysis.
Rotation Method: Varimax with Kaiser normalization.[a]

communities in case of emergencies, and are greatly effective among all population groups regardless of gender, age, level of education, income, or number of members in a household. In the second principal component (i.e. PC2), we observed that EIFD, MMU, MSS, CT, PVN, and PAL have correlation coefficient values greater than 0.6, with total variance explained for 16% (Table 5). This result indicates the considerable effects of newspapers and wire broadcasting on the level of satisfaction level with the CPA's activities, such as upgrading an industrial factory to an eco-factory, providing MMUs, supporting medical staff in district hospitals, and encouraging tutoring programmes for local children.

In the third principal component (i.e. PC3), we observed that EI, ES, IE, E, and C have correlation values higher than 0.8, with total variance explained for 12%. This result implies that the awareness of the CPS's roles can be considered as only 12%. This comparatively low correlation coefficient is similar to the results obtained from other advanced statistical analysis methods, highlighting that the role of CPA is not well recognized irrespective of its highly adored CSR activities. In addition, notably, AGE (−0.735) is negatively correlated with EDU (0.797) and INC (0.416) (displayed in PC4). This result indicates that elderly

respondents have a comparatively low education and income. Therefore, the CPA should create additional CSR activities, such as supporting medical care for an elderly group or establishing health-care facilities for the elderly in Rayong Province.

Conclusions

Although the majority of respondents are aware of the CPA's activities and projects, the role of the CPA is not well recognized. Generally, the respondents are satisfied with several projects, such as the mobile medical unit project, emergency drills, the dental hygiene projects, the community enterprise programmes, the scholarship projects, and the reforestation projects. No significant differences are observed between male and female respondents regarding satisfaction level—except for the mobile medical unit project, indicating that gender plays a minor role on stakeholders' expectations of CSR activities. The ANOVA results suggest that well-educated respondents appear to acknowledge the core value of CSR activities in comparison with those in the low-educated group, emphasizing the importance of education in the satisfaction levels associated with numerous CPA projects. According to the results of the MLRA, we observed negative correlations between the respondents' actual age and level of satisfaction with all the CSR activities. These findings are consistent with those of the PCA and highlight insufficient efforts to implement CSR activities related to the elderly group. The PA emphasizes the significance of community enterprise that profoundly related to several aspects, such as health care and educational support. Based on the results of the HCA, it appears rational to promote the CSR activities associated with eco-industry factory development and the proactive environmental monitoring network by using social media and newspaper. To enhance the awareness of CSR tasks connected with nursing and medical staff & volunteer training programmes, it seems plausible to apply radio, CPA Journal, and billboard. Additionally, the PCA implies that radio, local television, car parade, billboard, and LED screen are still effective as PR tools, particularly in the case of promoting eco-industry factory development, enhancing green spaces, educating the proactive environmental training program, and preparing schools and communities in case of emergencies. To achieve sustainable collaboration, the CPA must be persistent and work continually with the local people. The employees of new members to the association should be included in internal communications. Additionally, healthcare for children and seniors should be included in future CSR projects.

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