

Applying 2-stage DEA model to evaluate the corporate social responsibility implementing efficiency of FDI firms

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ABSTRACT

From the stakeholder theory, the research evaluates the efficiency and impact of corporate social responsibility (CSR) implementation for various stakeholders including government, labor, customer, community on corporate reputation. A 2-stage Data Enveloped Analysis (DEA) model was employed using a quantitative method of questionnaire survey among a sample of 208 foreign direct investment (FDI) enterprises in Hanoi, Vietnam: Stage 1: Using DEA model to evaluate the efficiency of CSR implementation to improve the reputation of enterprises; Stage 2: Using multivariate regression model to assess the impact of CSR implementation on stakeholders in order to improve the reputation of enterprises. The result of the study should give managerial implications for the government and FDI firms in understanding the current state of CSR efficiency, as well as to formulate more target policies to promote FDI firms' efficient commitment to CSR.

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1. Introduction

Over the past decades, corporate social responsibility (CSR) has become a corporate component and management philosophy that more and more companies choose to embrace (Carroll & Shabana, 2010). The motives underlying CSR have shifted from being ethical to being strategic with the focuses of analysis have shifted from the benefit of society to the benefit of organization (Isaksson, 2010). Nowadays, firms adopt CSR as a strategic tool to respond to market and customer pressures with actions that exceed legal and environmental obligations (Carroll & Shabana, 2010; Wood, 2010), which in turn enhance the competitive position and reputation of a company (Hill & Knowlton, 2006). Implementing CSR has become an indispensable part of building a company's reputation (Tucker & Melewar, 2005; Pirsch, Gupta & Grau, 2007). Moreover, the implementation of CSR helps to minimize the negative impact from media crisis on the reputation of enterprises (Klein & Dawar, 2004). CSR is considered as an investment in corporate image (Cardebat & Cassagnard, 2010) and effective CSR implementation will bring reputation to the company (Alexander & Buchholz, 1978; Bowman & Haire, 1975). Although numerous empirical researches have shown a positive relationship between CSR implementation and business reputation, some researchers have pointed out limitations in the theoretical basis of this causal relationship (Hillenbrand & Money, 2007). In addition, only a few studies have approached CSR from the perspective of stakeholders and assessed the impact of CSR implementation on these stakeholders on the reputation of the business. Therefore, the article proposes a research model between the implementation of CSR for important stakeholders and the reputation of the business. As part of the business operation, firms need to generate resources to fulfill CSR activities. The concept of efficiency is put into consideration since firms need to determine which resources can be converted to CSR in the most effective way. Efficiency is an important measure to evaluate the performance, production, and business activities of entities in the economy. Therefore, understanding

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the true nature of efficiency, identifying the right criteria to measure and evaluate efficiency is crucial when evaluating CSR efficiency of FDI enterprises.

This study focuses on Foreign direct investment (FDI) enterprises due to the following reasons. Firstly, FDI has contributed significantly to Vietnam's economic growth, added to investment capital for development, increased budget revenue, boosted exports and many other important areas. However, in the current decade, FDI activities are to be blamed for negative impacts to the environment and society such as pollution, safety of products, labor's health concerns. More often than not, FDI firms are expected to be the solvers of social issues through their CSR programs. Secondly, limited papers have paid attention to FDI firms in developing country like Vietnam. The intrinsic differences among different types of firms such as domestic, joint venture, FDI firms lead to different perspectives to the same particular issues, in this case is CSR. The selection of FDI firms for this study will, therefore, contribute distinct implications for CSR practices of FDI firms. The contributions of this paper are to adopt 2-stage DEA to test the efficiency of CSR implementation on non-financial objective - corporate reputation. Stage 1: Using Developed Envelopment Analysis (DEA) model to evaluate the effectiveness of CSR implementation to improve the reputation of the enterprise; Stage 2: Using a multivariate regression model to assess the impact of CSR implementation on stakeholders in order to improve the reputation of enterprises. The research results will contribute a theoretical framework and a research model to the CSR efficiency and the causal relationship between CSR implementation and corporate reputation. The result of the study should give managerial implications for the government and FDI firms in understanding the current state of CSR efficiency, as well as to formulate more target policies to promote FDI firms' efficient commitment of CSR.

2. Literature review and conceptual development

2.1. Corporate social responsibility

CSR has been conceptualized as a corporate strategy that most thoroughly depicts the relationship between firm and society, and within which stakeholders represent a crucial and inescapable determinant (Branco et al., 2014). Stakeholder theory by Freeman (1984) asserts that the company's major objective is to balance the expectations of all stakeholders through its operation. Stakeholder is defined as any group or individual who can affect or is affected by the operation of the business and who are vital to the survival and success of the corporation (Freeman et al., 2004). The concept itself consists of different dimensions of corporate social responsibility, which encompass activities geared towards different types of stakeholders (McWilliams et al., 2006). These stakeholders can be identified as customers, employees, local communities, suppliers in distributors as well as shareholders (Friedman, 2007).

2.2. Corporate reputation

Corporate reputation is known as a result of stakeholders' assessments on the ability to create value of the business when compared to other competitors (Rindova, Williamson, Petkova & Sever, 2005). Reputation is an emotional state that can be positive or negative, more or less of the relevant stakeholders including customers, investors, employees, the community for a business (Davies, Chun, Da Silva & Roper, 2003).

2.3. The linkage between CSR and corporate reputation

CSR is described as a form of strategic investment to build and maintain the reputation of enterprises (McWilliams et al., 2006) and reputation can be gained from CSR activities (Fombrun, 2006). CSR is a signal that a corporation is interested in caring for the well-being of stakeholders and society as a whole (Bhattacharya et al. 2009), which in turn, positively affects corporate reputation (Fombrun & Shanley 1990; Nguyen 2010). However, each firm has a range of stakeholders that some may obtain a more important role than others. For FDI enterprises, when investing in the domestic market, their most important stakeholders should include customer, labor, government and the community.

No business can exist without customers buying its products and services. Customers are important stakeholder that directly determine the profit of the business. Therefore, implementing CSR for customers is a way for businesses to ensure the sustainable development. Fitchett (2005), Castka et al. (2003), Simpton et al. (2004) and Long et al. (2005) point out that customers demand ethical responsibilities from businesses. In addition, many aspects of customer relationship management are placed in the enterprise's CSR strategy such as product quality (Long et al., 2005), product safety (Enderle, 2004), product information (Long et al., 2005) and customer care (Spence, 1999).

Thus, a business that execute CSR for customer will create a positive image for the quality of products and services from the perspective of consumers. Hence, the implementation of CSR for customers will positively impact the reputation of the business. Hence, the hypothesis is:

H₁: The better CSR implementation for customers, the better the reputation of the business.

Labors directly involve in the business operation of the enterprise at all stages and have a direct relationship with the company's core business activities, therefore, they need to be identified as important CSR stakeholders (Longo et al. , 2005;

Jenkins, 2004). Without them, or in case their basic needs are not met, it will indirectly affect the quality of the business operation that eventually lead to the failure of the business. There are many ways for businesses to implement CSR for employees, for example ensuring a safe working environment and occupational health (Longo et al., 2005), encouraging employee morale (Castka et al., 2003), offering career opportunities (Besser & Miller, 2001; Enderle, 2004), providing social insurance (Longo et al., 2005), organizing training programs (Toyne, 2003; Jenkins, 2004). Businesses who are serious about implementing CSR often have higher levels of employee engagement, attract more talents, and increase recruitment rates of high-quality labor (Carroll & Shabana, 2010). In many cases, workers are also interested in CSR initiatives of the firms to determine whether their personal values are compatible with the values of the business they will or continue to work for. As a result, the implementation of CSR for employees helps businesses generate a better reputation. The following hypothesis is put forward:

H₂: The better implementation of CSR for employees, the better the reputation off the business.

The government imposes laws and regulations that FDI firms need to comply (Revell & Blackburn, 2005). Simpson et al. (2004) argue that the government is not an CSR stakeholder that should be satisfied because companies just merely fulfill to the rules. However, government will be an important stakeholder to which a proactive attitude needs to be taken. In the current era, businesses compete fiercely with each other and CSR is becoming a trend, a strategy for businesses to polish their reputation in order to enhance their competitive position. Therefore, businesses approach CSR proactively for certain goals. Enterprises proactively comply with the provisions of the law take initiative in satisfying the government and establishing a sustainable relationship with the government in order to facilitate its operation in the host country. FDI enterprises not only identify the government as a relevant object need to be satisfied from the legal perspective (Tilley, 2000; Revell & Blackburn, 2005) but also need to maintain a long-term relationship with the government in order to facilitate operations in the host country. For that reason, FDI enterprises need to be proactive in implementing CSR for the government. By doing so, they will be able to form a positive image of the firm leading to more trust in the local government. The hypothesis is:

H₃: The better implementation of CSR for the government, the better the reputation of the business.

Businesses interested in local community engagement will create a better image for their businesses (Davis, 1973). In many cases, to improve or erase their lousy image, business leaders have tried to convince the public that businesses create many good things for society (Asemah et al., 2013). Many evidences show that better community will support businesses in the long-term profit-making process. Asemah et al. (2013) states that enterprises that perform some activities contributing to the community tend to have more long-term and safer returns, which is an inevitable result of better community relations and corporate image. Therefore, implementing CSR for the community positively affects the reputation of the business. The hypothesis is as follow:

H₄: The better implementation of CSR for the community, the better the reputation of the business.

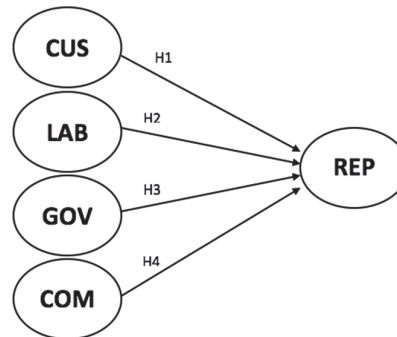


Fig. 1. Proposed model

The regression model has been tested to find the causal relationship between the independent variables and the dependent variables as follows:

$$REP = \alpha + \beta_1 \times CUS + \beta_2 \times LAB + \beta_3 \times GOV + \beta_4 \times COM$$

(REP: reputation; CUS: CSR for customers; LAB: CSR for workers; GOV: CSR for Government; COM: CSR for the community)

2.4. CSR efficiency Evaluation

Farell (1957) introduces the concept of efficiency associated with the correlation between optimization of output and specific outputs. According to Pham (2009), efficiency reflects the level of exploitation and cost savings of resources to achieve the objectives in the operation process. In general, the concept of efficiency is used as a criterion to evaluate how well resources

are distributed. That leads to the implementation efficiency is the degree of success of entities in allocating resources to achieve specific goals. Thus, CSR efficiency can be defined as an optimal allocation of resources for CSR implementation in order to improve the reputation of the business. The inputs are CSR implementation for government, labor, customer and community, and the output is the reputation of the business. Among a considerable number of studies on efficiency, the DEA method is commonly used to evaluate performance because of the simplicity of the model, which uses many input and output variables without assigning prior weight to indicators (Aldamak & Zolfaghari, 2017). Botsian and Karpiuk (2015) states DEA as a non-parametric analysis method that can be used to measure efficiency of CSR. Many author has attempted to apply DEA model to test the implementation efficiency of CSR such as Wang et al. (2018), Puggioni and Stefanou (2016), however, these studies mostly focus on financial outputs with the neglect of non-financial outputs such as reputation. For a business considered successful, it needs to satisfy both financial and non-financial goals simultaneously. To measure the performance of CSR, the author uses the DEA method developed by Charnes et al. (1978) based on the estimation of production frontiers, which will be used to estimate the efficiency of production. The efficiency of production is calculated by the following equations:

$$\text{Efficiency} = \text{Total Inputs} / \text{Total Outputs}$$

For each company, the ratio of X inputs and Y outputs [$u^j q_i / v^j x_i$] are measured, in which u is a vector of outputs q_i and v is a vector of inputs x_i . Inputs and outputs of all companies could be described by matrix X (N rows, I columns) and matrix Q (M rows, I columns). The number of maximum inputs and outputs of a company can be solved as:

$$\begin{aligned} & \max u, v [u^j q_i / v^j x_i] \\ & \text{st: } u^j q_j / v^j x_j \leq 1 \\ & \text{where } j = 1, 2, 3, \dots, I \text{ and } u, v \geq 0 \end{aligned}$$

The concept is to draw a production frontier line on the graph on which Input = Output. This ratio is always less than or equal to 1. At 1, the firm reaches its optimal operation and considered effective. The index of ineffective units will be calculated by projecting ineffective units on the effective boundary. For each ineffective unit, DEA provides a set of benchmarks of other units so that the values of the unit being assessed can be compared. Thus, DEA is beneficial for managers to identify the actual operation of their facilities compared to others, thereby focusing on improving the operation of inefficient units.

Based on the above formulated scales, the variables of DEA model are used as follow:

1. Inputs: CSR for government, CSR for labor, CSR for customer, CSR for community
2. Output: Corporate reputation.

3. Research method and measurement scales

This study conducted a qualitative survey based on google form platform. With the help of the Department of Planning and Investment and the Hanoi Tax Department, online links and specific email instructions were sent to 500 FDI enterprises in Hanoi, Vietnam. The respondents of the survey were CEOs, managers, and the strategic department head of the company. The survey took place in April 2018, used convenient sampling methods. Out of the 500 surveyed enterprises, 233 responded to the questionnaire, achieving a returning rate of 46.6%. However, 25 responses were rejected due to lack of information or the quality of the responses was low. The 208 valid sampling units include a majority of enterprises in the manufacturing and trade sectors (21.63% and 20.67% respectively). In terms of organizational size, small businesses from 10 to 100 employees, and micro-enterprises under 10 employees take the most portion with 44.23% and 37.5% respectively. The measurement instruments were developed based on the comprehensive literature review of both academic and non-academic sources. Based on the collected data, the input and output values are used to assess the effectiveness of CSR implementation of FDI enterprises in Hanoi, Vietnam as given in Table 1.

4. Results and discussion

4.1. CSR Efficiency Evaluation for FDI Enterprises in Vietnam

The results from processing data through DEAP2.1 software reveal that a total of four firms achieve the maximum efficiency with an optimal score of 1. These four firms belong to the following industries: Logistics, Information, Technology, and Communication (ITC), Education, and Manufacture. Suprisingly, all four firms are micro and small-sized businesses. Each individual firm obtains an efficiency score. The average efficiency score of all 208 FDI enterprises surveyed is 0.79. Enterprises with efficiency score greater than 0.79 are those considered performing CSR effectively. Among 208 FDI enterprises, 95 enterprises (45.67%) are considered to implement CSR effectively, the remaining 113 businesses are considered to be ineffective in implementing CSR. Thus, the results indicate that in the sample of 208 FDI firms included in the analysis, efficiency levels are pretty low as approximately 54.33% of the firms are found to be technically inefficient.

Table 1

Input and output variables of DEA model

Input		
CSR for customer (CUS)	CSR2. Your enterprise complies with at least one set of quality standards suitable to the production and business domains CSR3. Your enterprise regularly survey customers' expectations, behaviors and satisfaction levels CSR4. Your enterprise has a customer care center CSR8. Your enterprise provides complete and truthful information about products, quality assurance as published CSR9. Your enterprise provides after-sales service within the committed time period CSR10. Your enterprise supplies products within the committed time period CSR13. Your enterprise's suppliers comply with committed standards	Fitchett (2005); Castka et al. (2003), Simpton et al. (2004) and Long et al. (2005)
CSR for labor (LAB)	CSR1. Your enterprise makes it ease for employees to work at their maximum capability CSR5. Your enterprise focuses on training and improving skills for labors CSR7. Your enterprise often uses internal interaction tools CSR11. Your enterprise has a database of human resource management CSR15. Your salary and bonus payments ensure standard living standards for employees CSR16. Workers have the right to reflect on their working conditions and remuneration without any barriers CSR17. The employees' opinions are received, processed and responded in a satisfactory and timely manner CSR26. Your enterprise provides employees with adequate and timely information related to the company and its employees CSR28. Your enterprise has programs to treat and improve mental health for employees	Longo et al. (2005); Jenkins (2004); Besser & Miller (2001); Enderle (2004); Castka et al. (2003); Toyne (2003)
CSR for government (GOV)	CSR14. Your enterprise complies with environmental regulations and environmental protection CSR18. Your enterprise pays social insurance and health insurance premiums adequately and suitably to employees CSR19. Your enterprise respects and fully comply with the regulations on employment, labor safety, and working environment CSR20. Your enterprise fulfills its tax obligation to the host country	EC (2002); EC (2003)
CSR for community (COM)	CSR12. Your enterprise has certificates for sustainable development CSR21. Your enterprise carries out charity activities and other community activities CSR23. Your enterprise uses environmentally friendly production technologies CSR24. Your enterprise uses transparent sources of raw materials, ensuring safety for the community CSR25. Your enterprise implements propaganda, raising awareness in the use of resources	Brown & King (1982); Besser (1999); Jenkins (2004); McWilliam & Siegel (2001); EC (2003)
Output		
Reputation (REP)	REP1. Your enterprise provides products and services with excellent quality REP2. Your enterprise provide products and services that meet the basic functions REP3. Your enterprise has good communication policies REP4. Your enterprise provides products and services that meet the needs of consumers	Srivoravilai et al. (2011)

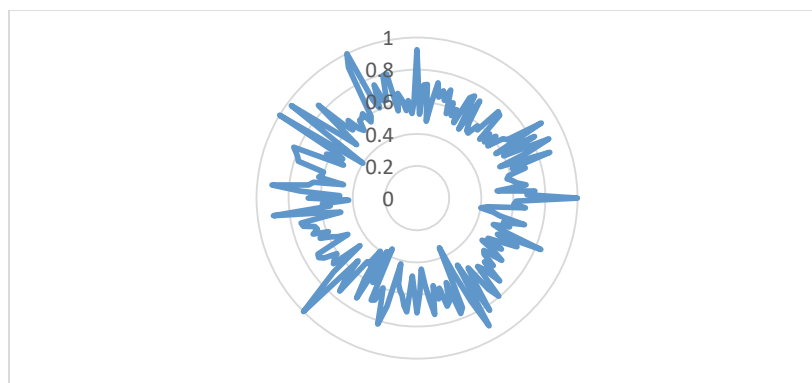


Fig. 2. Efficiency score of each firm

Table 2 shows the average efficiency score for each sector. Logistics, Insurance, Service, Human Resource, Trade, and Agriculture are industries that perform CSR for government, labor, customer and community better than the average and considered to be effective CSR implementation with the purpose of improving reputation. These industries can later be investigating further to determine the key to effective CSR implementation and establish a role model for other firms. Education, Manufacture, Real Estate, Restaurant, Tourism, Construction, and Assembly are industries that perform CSR for government, labor, customer and community lower than the average and considered to be ineffective CSR implementation.

Table 2

Average efficiency score for each sector

Effective		Ineffective	
Industry	ES	Industry	ES
Logistics	0.809	Education	0.7847
Insurance	0.806	Manufacture	0.7795
Service	0.806	Real estate	0.7782
Human Resource	0.8035	Restaurant	0.7762
Trade	0.7995	Tourism	0.778
ITC	0.795	Construction	0.7752
Agriculture	0.7941	Assembly	0.7665

Benchmark: 0.79

In terms of labor size (Fig. 3), micro-enterprises (under 10 labors) perform the most effective CSR with average efficiency score of 0.8013, followed by large enterprises (above 1000 labors) with average efficiency score of 0.7951. Small and Medium-sized enterprises (From 10 to 1000 labors) perform ineffective CSR. For micro firms have less than 10 labors, it should be easier for them to manage the relationship with government, labor, customers and community due to the small scale of operation, making them more effective at CSR implementation. Large firms with above 1000 labors should have financial ability to perform various CSR activities. In addition, they get more attention from the public; therefore, doing CSR should help them secure their image and reputation. Small and medium-sized enterprises take the most portion of the economy; however, the results reveal that they do not perform CSR effectively.

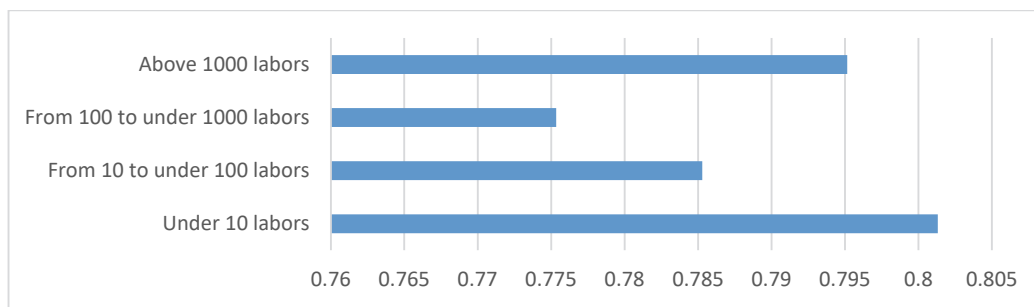


Fig. 3. Efficiency score by labor size

In terms of years of operation (Fig. 4), FDI enterprises operating from 5 to 10 years have the highest CSR performance with average efficiency score of 0.7950, followed by young enterprises under 5 years of operation with average efficiency score of 0.7944. Enterprises operate above 10 years implement the least effective CSR with average efficiency score of 0.7792. For young firms under 5 years of operation, their core objective is to focus on their main activities and financial purpose. They have not yet paid so much attention to CSR implementation. For 5-10 years of operation firms, their target is mostly sustainable development; therefore, they put more effort in implementing CSR in order to build corporate reputation. Firms that operate more than 10 years probably have already established their reputation in the market; therefore, they can continue doing CSR for other purposes but not to improve reputation.

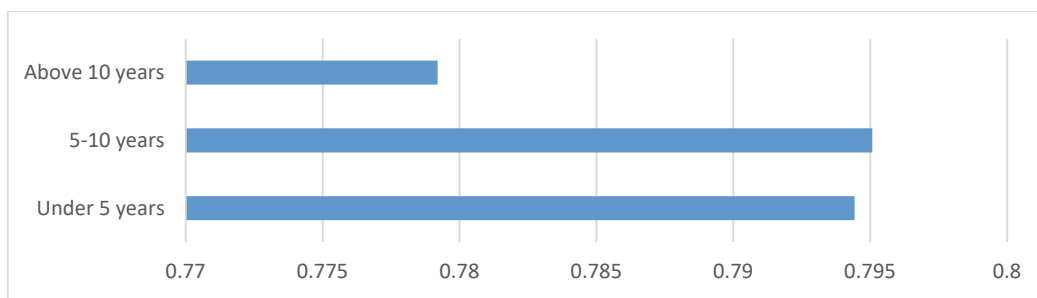


Fig. 4. Efficiency score by the number of years of operation

4.2. Regression results

4.2.1. Reliability and validity assessment

The results show that all variables met the condition of Cronbach's Alpha coefficient greater than 0.6, as suggested by Nunnally and Burnstein (1994). Items including CSR1, CSR3, CSR4, CSR5, CSR7, CSR11, CSR13, CSR14, CSR25, CSR26, CSR28 were dropped from the analysis due to loading on more than one factor during Exploratory factor analysis (EFA). The remaining items loaded on their intended constructs with the majority factor loading greater than 0.60 as shown in Table 5.

Coefficient KMO = 0.827 > 0.6, indicating that the results of the EFA analysis are reliable and that the analysis is appropriate. Sig. value = 0.000 ≤ 0.05 in the Battlet test showed that the analysis results are statistically significantly greater than 95%, and the observed variables are correlated in overall. The results of Table 5 show that the factors that represent research concepts are intrinsically consistent and highly reliable, well suited for subsequent analyzes.

Table 5
Reliability and Validity Assessment

	Component			
	LAB	CUS	GOV	COM
CSR17	0.815			
CSR16	0.815			
CSR15	0.738			
CSR9		0.788		
CSR8		0.757		
CSR10		0.69		
CSR2		0.521		
CSR20			0.878	
CSR18			0.811	
CSR19			0.776	
CSR21				0.78
CSR12				0.663
CSR23				0.642
CSR24				0.597
Cronbach's Alpha	0.867	0.774	0.838	0.738
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.				0.885
Bartlett's Test of Sphericity			Approx. Chi-Square	1392.721
			df	91
			Sig.	0

4.2.2. Regression analysis

Table 6
Regression analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1							
	(Constant)	.796	.274		2.908	.004	
	LAB	.090	.060	.098	1.513	.032	.567
	CUS	.270	.067	.237	4.025	.000	.691
	GOV	.161	.052	.192	3.071	.002	.613
	COM	.288	.050	.375	5.824	.000	.577

a. Dependent Variable: REP R Square = 0.514, Adjusted R Square = 0.504 Durbin-Watson = 2.007 F = 53.663 (Sig.f=0.000)

+) F statistic from ANOVA test of the model has value of Sig = 0.000 < 0.01, indicating that the multiple linear regression model is suitable for the data set or the independent variables are linearly related to the dependent variables, and the model can be used.

+) The R2 coefficient of 0.514 and the modified R2 of 0.504 indicate that the model with four variables CUS, LAB, GOV, COM explains 50.4% the variability of the dependent variable.

+) The Durbin - Watson coefficient is in the range of 1 to 3, so it is possible to conclude that the model has no autocorrelation and ensures the appropriateness in measuring the influencing factors.

+) The VIF indicators are less than 2, indicating that the regression model does not have multi-collinearity problems.

From the above results, this regression model is suitable to explain the general model, in which the independent variables are positively related to the dependent variables. Regression analysis gives the following normalized linear regression equations:

$$REP = \alpha + 0.27 \times CUS + 0.09 \times LAB + 0.161 \times GOV + 0.288 \times COM$$

The normalized regression shows that the reputation of the firm is affected by the implementation of CSR for all four stakeholders. The magnitude of the impact of implementing CSR on each of the target groups on the business reputation is different when other factors remain the same. In particular, the implementation of CSR for the community has the strongest impact, followed by the implementation of CSR for the customer, followed by the implementation of the CSR for the government and finally, the implementation of CSR for labors.

5. Discussion and implications for business

A large degree of variation is found in the efficiency scores, indicating that there is room for improvement. Many firms are sub-optimal, meaning that, given their CSR activities, they simply do not do well enough when it comes to improve their reputation. The following solutions are proposed to government and managers in order to help firms improving their reputation through executing CSR practices.

First, it seems that CSR has not really been adequately paid attention to some FDI enterprises in Vietnam, both in viewpoint, content and implementation method. Still, enterprises are not fully aware of CSR and its role in improving their reputation and competitiveness, some even consider CSR to be a burden of expenditure. Therefore, it is necessary to continue to propagate, disseminate and raise awareness about CSR, its role to corporate reputation and implementation methods to enhance efficiency.

Second, every business needs a long-term strategy for sustainable development. Therefore, businesses need to develop an appropriate roadmap to gradually implement the contents of CSR not only in accordance with common standards, but also in harmonization with relevant stakeholders. By doing so, CSR strategy not only serves as a competitive advantage but also brings sustainable values to the community and society.

Last, in order to improve corporate reputation, FDI firms should enhance CSR activities for stakeholders. In light of this situation, the results of multivariate regression can draw some suggestions as following:

First, the community is considered the most important stakeholder for FDI enterprises ($H4: \beta = 0.288, se = 0.050$) due to its implementation of CSR has the strongest impact on the reputation. CSR activities towards the community are often more pervasive because it is easily accessible and easily acknowledged by a wider audience. Therefore, businesses should actively implement CSR for the community to improve business reputation. The implementation of CSR for the community can be done in several ways. Businesses need to ensure their operations are eco-friendly, not compromise economic growth for adverse affects in the environment. Next, businesses need to implement programs that contribute to protecting and addressing environmental issues as well as supporting and developing the local community. Businesses need to see this as their own responsibility, and must voluntarily devote part of their profits to contribute to support community activities on an annual basis, not just when it becomes a problem. FDI businesses should change their perspective on philanthropy, charitable activities should be linked to the core activities of the enterprise instead of just focusing on emergency assistance, businesses should invest in long-term programs to be able to solve certain social problems at their root.

Second, customers are considered the second most important stakeholder for FDI enterprises ($H2: \beta = 0.270, se = 0.067$). Implementing social responsibility for customers will help businesses improve their reputation. CSR for customers is an ethical responsibility of the business. It may not be required by the law but by the business itself to be responsible with the customer. CSR for customers is reflected in the quality and safety of products, answering customer complaints, information disclosure, reasonable prices, satisfaction level and maintaining relationships with customers. (EC, 2002).

Third, the Government is considered the third most crucial stakeholder ($H3: \beta = 0.161, se = 0.052$). The implementation of CSR for the Government will help businesses improve their reputation. CSR for the Government includes compliance with the laws of the host country and tax liability. However, CSR is a business practice that surpasses the legal obligations, so CSR for the Government is the act that the enterprise carries out its compliance at a higher level than the current law provisions of the local government. By doing so, the business proactively creates confidence in the Government with its business activities. Enterprises that want to implement CSR in this direction need to focus resources on environmental protection (Philippe and Durand, 2009). These activities will be more effective and reliable if certified by a third party (Fombrun, 2005).

Finally, CSR for labor has the least impact on the reputation of the enterprise ($H2: \beta = 0.09, se = 0.060$). Labor is a subject belonging to the internal environment of the enterprise. Thus, CSR for labor is more difficult to observe and evaluate than those belong to the external environment. Nevertheless, the implementation of CSR for employees also helps businesses gain reputation. CSR for workers refers to the responsibility of businesses to ensure the legitimate benefits for employees both now and in the future. The contents of CSR for employees include paying adequate salaries, protecting employee rights, training to improve the quality of human resources and building a safe and effective working environment. According to research results, implementing CSR for the community has the most positive impact on the reputation of the business, followed by customers, government and employees. This finding does not suggest that all companies should focus on doing CSR only for community. It means that companies should focus on performing CSR for all stakeholders, however, in the case of limited resources, businesses can prioritize CSR activities for the community, then customers, governments and workers in order to optimize efficiency and impacts on corporate reputation. Some studies show that many businesses commit to CSR may not intend to take it seriously and substantially, but only use it for marketing purposes. Therefore, businesses need to rapidly change their perception about the role of CSR, because if they implement CSR well, they will achieve substantial intangible values those will be converted into financial and economic profit for businesses in the long run.

6. Conclusion and future research directions

The main contribution of this research is the adoption of 2-stage DEA to measure the CSR efficiency and impact of CSR implementation for stakeholder on corporate reputation. Research results point out some findings that should be taken into consideration when managing CSR activities of FDI firms. In addition, the efficiency analysis of CSR in this study can be used by other governments and FDI firms in different countries to understand the state quo of CSR efficiency and provide local policy-makers and FDI firms valuable references in policy-making and strategy-making to achieve sustainable development. However, inevitable to any study are its limitations which need to be further studied and responded in the future. First, this research uses a convenient sampling method on an online platform which may not well representative for the population. The data in this study are qualitative, collected from online questionnaire responses, based on a Likert scale, which can be subjective. However, inevitable to any study are its limitations, which need to be further studied and responded in the future. First, this research uses a convenient sampling method on an online platform, which may not be well representative of the population. The data in this study are qualitative, collected from online questionnaire responses, based on a Likert scale, which can be subjective. However, these limitations are known beforehand and accepted as part of the study. Second, an additional limitation of the questionnaire is the fact that respondents are firms 'delegators, thereby, tend to have a more positive view on their CSR activities, which in turn generate bias rating. Third, in addition to the four stakeholders mentioned above, many other stakeholders have not been taken into account, such as suppliers, business partners, media, NGOs, which also have a significant impact on CSR activities of firms. Last, it is proved to be challenging to link the findings of this research paper to specific theories or theoretical literature. It is because the practical and theoretical field related to CSR of FDI firms is underdeveloped. Therefore, this research was formulated based on data-driven rather than theory-driven without any academic theories being tested.

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