



Impacts of Environmental Responsibility and Performance on Organizational Performance: Importance of Environmental Performance

Quang Linh Huynh*

Tra Vinh University, Tra Vinh City, Vietnam. *Email: huynhquanglinh@tvu.edu.vn

Received: 20 May 2020

Accepted: 28 August 2020

DOI: <https://doi.org/10.32479/ijeeep.9955>

ABSTRACT

This study evaluated the causal effect of environmental friendly activities and resultant environmental performance of enterprises on their organizational performance. More importantly, it analyzed and empirically investigated the mediation of environmental performance in the research model which has been paid no attention to in previous studies. The final research data was gathered from 399 publicly listed enterprises in the three main stock markets of Vietnam. Multiple regression analyses were applied to test the causal hypotheses, while mediating procedures were employed to test statistical significance for the mediation mechanism. The empirical findings reveal positive influences of environmental responsibility on organizational and environmental performance that in turn puts a positive influence on organizational performance. Environmental performance is discovered as an entirely mediating factor in the joint research model, where environmental responsibility has no direct effect on organizational performance, but only has indirect effect through environmental performance. When included into the research model, environmental performance will transmit the whole of direct effect of environmental responsibility on organizational performance.

Keywords: Environmental Responsibility, Environmental Performance, Firm Performance, Vietnam

JEL Classifications: Q01, Q51, E01

1. INTRODUCTION

Insufficient compliance with environmental friendly rules has been an extreme challenge to economies and especially to emerging economies including Vietnam (World Bank, 2012). However, there have been increasingly more organizations recognizing the notion there is room to raise environmental responsibilities (Jo et al., 2015). Social responsibility as well as sustainability controlling practices in theory needs an unbiased means to social and financial effectiveness. However, there has recently been increasing concern about environmental responsibility in enterprises because they have been facing growing pressures from the public and relevant parties to run their businesses in a more socially responsible way as well as comply with environmental friendly rules (Lee et al., 2016). Environmental responsibility has

been deemed as a fundamental aspect of managing sustainability and social responsibility. Environmental, social and economic aspects are three main sides of sustainability reflecting sustainable growth of enterprises; where environmental side or environmental responsibility has been broadly considered to play a growingly imperative role in organizational strategies and environmental and economic performance of the enterprises (Elkington and Rowlands, 1998). Increasingly, the public have raised concerns about environmental pollution in reaction to scientific circles and extensive media coverage of global warming as well as other environmental pressures (Sharma et al., 2010). Investing in environmental friendly technology has been costing the enterprises so much, so the balance of investments in environmental friendly technology and organizational performance has drawn the attention of the enterprises (Xu et al., 2016). Vietnam has been one of the

most rapidly developing economies in Southeast Asia; but such fast development may cause some environmental problems such as the high cost relevant to environmental deterioration (Le et al., 2006). Enterprises in Vietnam have been major pollution makers, so they have been gradually subject to rules of environmental protection and demanded more responsible to the nature environment. Governments around the world including Vietnam have stipulated several rules and policies related to environmental protection in order to enable enterprises to environmental-friendly orientation (Koo et al., 2014). Consequently, numerous top executive directors have been considering complying with these rules as an imperative work of their job so that they can gain good organizational reputation and then better performance. Environmental issues are currently often at the major agenda of enterprises and especially of those which are principally linked to energy consumption, waste dumping, and recyclable waste during input, production and output processes, which can lead to negative effects on the nature environment.

Environmental responsibility, a manifest of environmental sustainability is the duty and environmentally managerial tools, which the enterprises employ to operate their business towards to protecting and improving surrounding environments (Holtbrügge and Dögl, 2012). Several enterprises hesitate to spend so much money on activities related to technological innovation and environmental protection, because these activities demand big investments in renovating production processes that can decrease their business effectiveness. Nevertheless, Porter and Van der Linde (1999) claimed that, business activities relevant to environmental sustainability might make major contributions to economic and environmental performance. In addition, Berry and Rondinelli (1998) were based on the natural resource based view (NRBV) to highlight that, enterprises have been constrained by governmental rules ordered to prevent them from polluting the natural environment. These rules can allow the enterprises to enhance environmental performance owing to a reduction in environmental expenditure and an augmentation in organizational image, while Verrecchia (1983) asserted that, excellent environmental performance could lead to a decrease in environmental expenses for the enterprises in the forthcoming period that may win the confidence from potential shareholders. Moreover, grounded on Porter and Van der Linde (1999), the serious rules of environmental pollution can enable the enterprises to develop their environmental performance by vigorously seeking the best instruments of protecting the nature environment, innovating technology and increasing production effectiveness, which thereby enhance organizational effectiveness.

Drawing on existing research on environmental responsibility, it can summarize that, environmental responsibility is one of the most vital driving forces for augmenting organizational as well as environmental performance, which is in turn also a fundamental determinant of organizational performance. Nonetheless, these studies have usually focused only on the causal connections among the factors; and have failed to investigate complicated effects on the causal links such as mediating mechanisms that have been ignored. This omission can lead research results to be inaccurate (Surroca et al., 2010). Therefore, a more comprehensive research

project is necessary to be performed on this gap. Furthermore, in a study on environmentally sustainable development, Nguyen (2014) underlined that, Vietnam is one of the fastest developing economies, having transformed from a centrally planned economy to a market-oriented one. Although there have been potentials for social-economic growth, Vietnam has been facing serious effects of environmental deterioration. In addition, Nguyen (2014) also estimated in Vietnam financial losses derived from environmental deterioration makes up from 1.5% to 3% of Vietnam's GDP. It is consequently needed to conduct more research on environmental responsibility in Vietnam so that the Government can promulgate suitable environmental friendly policies, which will help Vietnam's economy as well as enterprises to be more sustainable. To address the above mentioned issues, this research tries to scrutinize the linkages among environmental responsibility, environmental and organizational performance. Especially, it seeks to analyze the mediating role of environmental performance in the joint research model.

2. LITERATURE REVIEW

2.1. Effect of Environmental Responsibility on Organizational Performance

Various studies have explored the causal link from environmental responsibility to organizational performance; but their findings have been inconclusive (Jo et al., 2015). A study by Hart and Ahuja (1996) investigated the causal connection from a decrease in environmental pollution to organizational performance, the findings of which indicated no consensus to this causal linkage. Furthermore, certain researchers explained that the large investment of enterprises in environmental management would lead to bigger expenses and decreased benefits; as a result, it is required to weigh benefits with expenses to the enterprises (Palmer et al., 1995). On the contrary, other researchers have stressed that severer environmental rules can make enterprises invest in new production technology to decrease environmental pollution and production expenses, resulting in higher profits (Lee et al., 2016). For the standpoints of environmental performance, Hutchinson (1992) declared that, enterprises have to rely on environmental friendly activities, so that they could achieve possible advantages, including improved organizational reputation, drawing clients who are concerned about environmental pollution, reducing production expenses by conserving power, developing good relationship with local communities and generating environmental friendly products. An early investment in environmental technology can lead enterprises to enjoy higher competitiveness, which is because environmental friendly technology likely diminishes the unit expenses of production and develops organizational success (Nehrt, 1996).

In addition, environmental rules force enterprises to renovate production technology and so improve competitive advantages for a prolonged period, because environmental friendly equipment could lessen expenses due to the effectiveness of production, which enables enterprises to gain better competitive advantages (Porter, 1998). This can be called a 'win-win' approach, where the core of the causal link from environmental responsibility to organizational performance is so imperative. Especially, a positive

link between them will offer evidence on this perspective. Drawing on the win-win standpoint, Karagozoglu and Lindell (2000) asserted strict rules of environment protection would encourage enterprises to be innovative and competent, which could augment the savings of production expenses and so lead to productivity, simultaneously decreasing environmental effects and then resulting in better organizational performance. Furthermore, other empirical research has tried to explore the causal linkage from environmental responsibility to organizational performance. Miles and Covin (2000) studied the association among environmental management, organizational reputation and performance, revealing a sound managerial mechanism of environmental protection can enable enterprises to obtain good organizational reputation that is one of the most imperative drivers resulting in improved organizational performance. Environmental irresponsibility can be a negative factor in damaging organizational reputation, which will lead the enterprise to suffer poor organizational performance (Konar and Cohen, 2001). Advocates of environmental protection emphasize enterprises ought to weigh environmental responsibility with organizational performance (Guenster et al., 2011). In this line, Guenster et al. (2011) affirmed that, good environmental responsibility is related to better organizational performance, concluding that directors do not have any reason to be concerned about the inconsistency of environmental rules with their business goals.

Following this perspective, Kim and Statman (2012) maintained if enterprises want to enhance organizational performance, they had better invest much more in environmental protection. These authors discovered organizational behaviors are in agreement with the statement that they take steps in serving shareholders' benefits, augmenting the investment in protecting environment, as it is essential in enhancing organizational performance for their enterprise. In addition, Koo et al. (2014) emphasized environmental protection as a vital driver, which enterprises have to apply to develop competitive advantages and then improve organizational effectiveness. The empirical findings of that research indicated that environmental friendly activities might help the enterprise to attain environmental performance, leading to organizational performance. As asserted by Wong et al. (2016), enterprises' investment in environmental friendly activities is an operation for future benefits, because these activities force the enterprises to be more relevant to enhancements in environmental performance as well as increase organizational transparency and finally decrease organizational threats. A decrease in using resources enables the enterprises to operate more effectively by improving organizational reputation, eventually resulting in competitive advantages and organizational success (Cai and He, 2014). Fast economic development in developing countries has caused a serious deterioration in the natural environment, so enterprises there should act in more environmental friendly ways (Li et al., 2017). The research of those authors investigated the causal relationship from environmental responsibility to organizational performance, the empirical results of which indicated that environmental responsibility puts a positive effect on organizational performance. Overall then, it could come to the following hypothesis.

H₁: Environmental responsibility likely improves organizational performance.

2.2. Influence of Environmental Responsibility on Environmental Performance

Drawing upon the viewpoint of investment, excellent environmental performance can decrease environmental expenses for enterprises in the forthcoming period that may win the confidence from potential shareholders (Verrecchia, 1983). Furthermore, the serious rules of environmental pollution prevention will force the enterprises to improve their environmental performance by vigorously seeking suitable practices of protecting the environment, increasing production efficiency and renovating technology, which thereby enhance organizational effectiveness (Porter and Van der Linde, 1999). Based on the (NRBV), Berry and Rondinelli (1998) emphasized enterprises are progressively constrained by the environmental protection rules, which likely allows enterprises to enhance their environmental performance owing to a decline in environmental expenses as well as a development in organizational reputation. Furthermore, Chuang and Huang (2018) stressed that, the increasing public concern about environmental pollution entails enterprises to concentrate more on the aspects of environmental responsibility, the effect of which on environmental performance is the matter about which the enterprises are concerned. Applying practices to solve the problems related to environmental pollution, enterprises could gain advantages from complying environmental rules. These advantages consist of decreased production expenses, lower waste disposal and less usage of energy and resources (Koo et al., 2014). The regulations of environmental protection are more and more influential on enterprises with stricter principles, which are closely linked to environmental performance (Watson et al., 2010). The effects of environmental friendly managerial tools is likely evaluated at the segments of enterprise and environment such as effectiveness of pollution prevention, environmental benefits of production expense reduction as well as savings of energy and resource (Melville, 2010).

Besides, numerous studies have provided evidence on the causal association from environmental to organizational performance, including the work of Seuring and Muler (2008) that found out a strong association of environmental with organizational performance. In addition, there are several benefits for the enterprises where environmental responsibility is seriously implemented. These benefits include the efficient use of resources, a decrease in production waste to the surrounding nature environment as well as improvements in the satisfaction of stakeholders, leading to environmental performance (Koo et al., 2014). According to Qi et al. (2012), ISO 14001 is regarded as a managerial practice that enables enterprises to manage environmental effects of their producing process and an initial step for the enterprises to follow positive environmental friendly systems. The adoption of ISO 14001 in business may result in an improvement in the technology of environmental protection that likely enhances the effectiveness of environmental pollution treatment, which has been widely recognized as an important driver in augmenting environmental performance (Hertin et al., 2008). The implementation of environmentally managerial tools may allow enterprises to build up their active competence of environmental pollution management by delivering the commitment of environmental responsibilities and the participation of workers in environmental

protection activities, leading the enterprises to improve continually (Arimura et al., 2008). In a study related to environmental responsibility and performance, Dilla et al. (2019) mentioned two different perspectives on socially responsible actions. The first perspective is relevant to environmental responsibility, holding that enterprises had better invest more in the technology of environmental and social protection to benefit the relevant community as well as society even if it reduces the profits of shareholders. The shareholders following the first perspective tend to support organizational objectives of improving environmental responsibility instead of increasing shareholder economic benefits; because they think that environmental performance is an important factor to improve financial effectiveness for a long future period. The second perspective is concerning environmental performance. This viewpoint emphasizes that enterprises had better participate in socially as well as environmentally responsible actions, which can develop firm wealth.

In consistence with these standpoints, Brooks and Oikonomou (2018) also suggested a positive effect of corporate socially responsibility including environmental responsibility on environmental performance, which then increases firm value. Shareholders with these perspectives consider enterprises behave in environmentally responsible ways can make more long-term earnings than those who are environmentally irresponsible. Furthermore, Dilla et al. (2019) indicated that environmental performance is more influential on the evaluation of stakeholders in the environmental friendly investments with the strong notions on environmental responsibility, and appreciated the important role of environmental responsibility to environmental performance. Yusof (2020) tried to link the adoption of green practices in business with environmental performance, in which green practices refer to the systems of developing structures and employing environmental friendly measures. Environmental friendly practices are recognized as a vital driver in augmenting organizational reputation, so enjoying confidence from investors as well as customers. The application of these environmental friendly measures is one of the best approaches to deal with the harmful effects of production processes and then enhance environmental performance. Based on the abovementioned discussions, it can arrive at the following hypothesis.

H₂: Environmental responsibility is likely a positive determinant of environmental performance.

2.3. Effect of Environmental Performance on Organizational Performance

Prior researchers have thought the constructive and sustainable activities taken by enterprises to enhance environmental performance likely augment the contentment in stakeholders, which can lead the enterprises to develop their competitive advantages (Stock et al., 1997). A study by Bragdon and Marlin (1972) asserted that a reduction in environmental pollution and organizational productivity are well matched, the findings of which indicated a positive influence of environmental performance on organizational efficiency. In addition, excellent environmental performance may lead to various advantages for organizations, including efficiency in using input resources, a decrease in production expenditures and an improvement in

organizational reputation, so the enterprises can expand their market share (Chuang and Huang, 2018). The advantages can allow the enterprises to achieve higher firm value and enhance organizational performance. Analyzing the resource based view (RBV), Russo and Fouts (1997) emphasized that the RBV of competitive advantage provides environmental responsibility scholars with an instrument to refine how the environmental policies of an enterprise affect their organizational performance. The effects happen in two ways. Firstly, the RBV of competitive advantage strongly focuses on organizational performance as the major output. Secondly, it clearly identifies the important role of intangible resources, for example organizational reputation. The RBV of competitive advantage also concentrates on the match between what enterprises have the competence in doing and what they have the chance of doing in order to gain the best potential performance. This theory provides an important prospect to investigate the causal link from environmental to organizational performance.

In line with these perspectives, Chuang and Huang (2018) asserted the usage of environmental friendly practices to improve environmental performance allow enterprises good opportunities and also various advantages, which can improve organizational performance due to a decrease in environmental pollution, risks, and production expenses as well as an increase in outcome quality and business effectiveness. Additionally, Kao et al. (2010) suggested enterprises employing proactive environmental friendly practices could obtain superior environmental performance and the findings reveal empirical evidence that environmental performance positively affects organizational performance. Likewise, Khanifah et al. (2020) argued that, enterprises are expecting a positive reaction of investors to their organizational reputation, aimed at drawing them to spend more capital into the enterprises, which can improve organizational performance, bring profits for the investors, and enhance their firm value. Instead of trying to avoid the investment in environmental friendly systems; enterprises had better positively react to the governmental rules of environmental pollution as well as actively take part in environmental friendly actions to build up organizational reputation and develop business effectiveness. This can lead the enterprises to obtain organizational objectives in maximizing business competitiveness and performance (Ravindra and Pradeep, 2012).

In addition, Angelia and Suryaningsih (2015) also investigated the influence of environmental on organizational performance and claimed that, enterprises with higher environment performance could enjoy their stakeholders' positive feedbacks, which likely increase their customers' satisfaction and for the long term obtain better benefits. If an enterprise performs good environmental performance, it can develop long-term financial performance. These authors also suggested a positive causal relation from environmental performance to organizational effectiveness, which is because of good image derived from their environmental protection activities. Furthermore, Cohen et al. (1995) tried to link environmental to financial performance, demonstrating that environmental performance is one of the most imperative driving forces to augment organizational competitiveness.

Drawing on the NRBV, Hart and Dowell (2011) asserted businesses are supposed to concentrate on environmental pollution and consider the causal linkage from environmental to organizational competitiveness. The prevention of pollution is an indicator of the efficient resource usage and the practices employed to reduce and prevent environmental pollution may decrease production expenditures and so obtain higher profits. Moreover, Surroca et al. (2010) argued that, good perception of stakeholders on an enterprise's pledge to environmental performance can allow it to draw more high-quality job candidates and retain the workers if they are taken on; so the enterprise will decrease new enrollment as well as training expenses. Likewise, environmental performance also affects workers' attitudes and enables them to contribute more to proposals, which benefit the enterprise, for example making some environmental friendly approaches to the enterprise. The implementation of these environmental friendly practices helps the enterprise to motivate their workers to be involved in environmental protection, thereby improve organizational image as well as reputation and finally gain better competitive advantages. Hence, it can suggest the following hypothesis.

H₃: Environmental performance could impose a positive impact on organizational performance.

2.4. Role of Environmental Performance

Research on environmental responsibility has investigated the feedbacks of enterprises to environmental issues as well as environmental and organizational performance (Dias-Sardinha and Reijnders, 2005). The compliance of enterprises with environmental friendly rules can lead to competitive advantages and organizational performance (Porter and Van der Linde, 1999); because these rules is expected to enforce the enterprises to behave towards to environmental sustainability. The compliance with environmental protection regulations can cause some expenses for the enterprises; but it may result in a decrease in other costs, which are important in improving environmental performance and other competitive advantages such as improved organizational reputation; whereas environmental performance is widely recognized as one of the most imperative determinants to improve organizational performance (Chuang and Huang, 2018). Furthermore, in a study on environmental responsibility, Sáez-Martínez et al. (2016) argued that investing more in environmental responsibility, enterprises could enjoy higher competitiveness, and so allow them to achieve better organizational performance. They also suggested a positive influence of environmental responsibility on organizational performance. As the aforementioned arguments showed, on the one hand, environmental responsibility is a vital driver of organizational efficiency; on the other hand, it affects environmental performance that is in turn a vital determinant of organizational performance, which can therefore result in the following hypotheses of mediation (Baron and Kenny, 1986). The aforementioned basis could lead to the following hypothesis. H₄: Environmental performance can mediate the impact of environmental responsibility on organizational performance.

3. MEASUREMENTS

3.1. Environmental Responsibility

According to Gunningham (2009), environmental responsibility (ENY) refers to the complying level of enterprises to the regulations

of environmental protection. Environmental responsibility is reflected in a gradual extent that the enterprises comply with environmental friendly regulations. Applying the scale used by Sáez-Martínez et al. (2016), this research assessed environmental responsibility to a gradual extent which the enterprises advocate environmental protection. A five-point Likert scale was employed to measure the variable of environmental responsibility. The scale consists of five items, which are (1) "the enterprise has complexities in complying with the rules of environmental protection," (2) "the enterprise just complies with the rules of environmental protection," (3) "the enterprise complies and contemplates to do more with the rules of environmental protection," (4) "the enterprise goes beyond conformity in spite of being short of pro-environmental thoughts from the entrepreneur," and (5) "the enterprise goes beyond conformity and regard environmental issues as a priority."

3.2. Environmental Performance

Drawing on Latan et al. (2018) and Chuang and Huang (2018), in the current research, environmental performance (ENR) was measured with eight dimensions, There has been no common consensus on the instrument of environmental performance and various differences among prior studies (Latan et al., 2018). Hence, this research combined several characteristics of environmental performance to get better dimensions, which are "uncovering expense cutting opportunities," "preventing and mitigating environmental crises," "reducing pollution and production expenses," "limiting environmental impacts beyond," "improving reputation," "generating societal benefits," "improving relations with local community" and "increasing competitive advantages." These dimensions focus on compliance with current environmental protection set of laws, environment related effects and advantages relating to environmental friendly activities. The dimensions were evaluated with a five-point Likert scale (completely disagreement through completely agreement).

3.3. Organizational Performance

Anchored in Delaney and Huselid (1996), this research measured organizational performance (ORR) using eleven dimensions, which are comparative. These dimensions were generated by requesting informers to evaluate organizational performance compared with the average performance of the industry. The dimensions are "quality of products/services," "competence for drawing needed workers," "development in new products/services," "competence for maintaining needed workers," "pleasure of customers," "association between superiors and subordinates," "association among workers," "marketing," and "improvement in sales," "profitability" and "market sales." The data collected on the perception of informants could suffer some confines caused by possible monomethod bias, but it is not extraordinary to employ those dimensions. The eleven dimensions were generated by evaluating informants' perceptions on the organizational performance of their enterprises in comparison with other enterprises during the last 3 years. The dimensions were computed with a five-point Likert scale (completely disagreement through completely agreement).

3.4. Control Variables

The current study controlled for organizational risk - ORK, organizational leverage - OLE, organizational size - OSE, and

industry type - INE with the dependent variables of environmental and organizational performance in the research model. According to Surroca et al. (2010), organizational risk, organizational leverage, organizational size, and industry type were driving forces of social (including environmental) and organizational performance. This research drew on the work of Martínez-Ferrero (2014) to measure the controlling variables of organizational risk, organizational leverage, and organizational size. ORK was assessed on the beta of the market model. OLE was evaluated on the debt to equity ratio. OSE was calculated on the natural logarithm of the equity market value. Additionally, the controlling variable of industry type was adapted from Huynh (2017). INE is computed by employing a three-point scale from manufacturing (1), manufacturing-service (2) and service (3).

4. DATA COLLECTION

The data was collected from publicly listed enterprises in Vietnam. This research decided on Vietnam as a case study, because it is a fast developing economy. Issues related to environmental deterioration have been on the increase there. Therefore, environmental sustainability in Vietnam, which has been underemphasized (Nguyen, 2014), is needed to be comprehensively analyzed to help the government make suitable appropriate environmental friendly policies for Vietnamese enterprises to be more environmentally sustainable and then more economically sustainable. The questionnaire employed to gather the data was preliminarily evaluated with 20 managers involved in environmental issues (Bowden et al., 2002). The research sample compassed publicly listed enterprises in the chief Stock Exchanges of Vietnam. There were three big Stock Exchanges in Vietnam, which were Ho Chi Minh Stock Exchange, Unlisted Public Company Market and Hanoi Stock Exchange. Simple random sampling was employed to select 500 out of the 1753 enterprises that were still being operated at the research time. The 600 questionnaires were distributed out, but only 399 suitable replies were collected, satisfying the sample size for this research (Hair et al., 2011). The survey technique was applied by asking each environmental manager for every chosen enterprise to complete the research questionnaire.

5. INSTRUMENTAL RELIABILITY AND VALIDITY

For the multidimensional variables, it is needed to assess internal stability among dimensions within their main variable to ensure the reliability of constructs. This research employed the procedures of Cronbach Alpha (α) suggested by Landis and Koch (1977) and Hair et al. (2011). The coefficient of α is a measure of internal constancy, indicating how strictly connected a set of dimensions are to their own cluster. There are two multidimensional variables in this study, which are environmental performance and organizational performance; so they were entered into the procedures of Cronbach Alpha. The results are exhibited in Table 1. The α s of two main variables range from 0.8 to 0.9 values, allowing the internal consistency of environmental performance and organizational performance to be very good. The total correlations are all >0.5 threshold. Furthermore, the α s if the dimension is

removed are all lower than their total α s, which are 0.893–0.895. The aforementioned results show the nineteen dimensions are all consistent with their main constructs, indicating the measured dimensions get the reliability of their own constructs.

In addition to the reliability of constructs, to judge the validity of the measurement model of multidimensional variables, the current research work applied the procedures of factor analysis as Hair et al. (2011) suggested. It needs exploring the goodness of fit and the validity of the constructs, which is the degree to that a set of observed dimensions really reflect their main unobserved variable they are assigned to proxy for. The findings are presented in Table 2. As shown in Table 2, the Measure of Sampling Adequacy (KMO) obtains the 0.921 value, over than the acceptable 0.7 threshold and the Chi-squared gets the 4008.144 level with the significance of 0.01, demonstrating the measurement model of environmental and organizational performance achieves the goodness of fit.

Regarding the validity of the constructs, this research examined the validity of convergence and divergence. Convergent validity is the degree to which the standards of a specific variable share a high amount of variation in general. The construct was validated with convergence, in which their construct loadings and average variance extracted coefficients (AVE) had better be over the 0.5 level. At the same time, construct reliabilities (CR) should exceed the 0.7 value. As the figures in Table 2 indicate, the loadings and AVEs all surpass the 0.5 value. In addition, CRs obtain the values >0.7 threshold. Therefore, it can recommend all the measured dimensions are convergent within their representative variables. Discriminant (divergent) validity is the degree to that a variable is actually different from other variables. The measurement model is considered to be discriminant, when the cross-loadings should be >0.3 threshold, and simultaneously AVEs should be over and above the squares of corresponding interconstruct correlation (SIC). The findings show that, all the cross-loadings exceed the 0.3 value, demonstrating the discriminant validity of the constructs. Additionally, the SIC of 0.1918 is not greater than the AVEs of

Table 1: Reliability of instruments

Factor	Dimension	Total correlation	α if dimension is excluded	α
ENR	ENR1	0.599	0.886	0.893
	ENR2	0.614	0.884	
	ENR3	0.747	0.872	
	ENR4	0.716	0.875	
	ENR5	0.645	0.882	
	ENR6	0.716	0.875	
	ENR7	0.629	0.884	
	ENR8	0.698	0.877	
ORR	ORR1	0.656	0.908	0.895
	ORR2	0.687	0.907	
	ORR3	0.646	0.908	
	ORR4	0.698	0.906	
	ORR5	0.655	0.908	
	ORR6	0.661	0.908	
	ORR7	0.688	0.906	
	ORR8	0.660	0.908	
	ORR9	0.665	0.908	
	ORR10	0.655	0.908	
	ORR11	0.704	0.906	

0.5496 and 0.5189, pointing out the observed dimensions are more in common with their own variables they are related to than they do with the other variables. Generally, the measurement model achieves sufficient convergence and divergence.

6. EMPIRICAL RESULTS

6.1. Assessment of Causal Links

To evaluate the causal effects in the research model, this research applied multiple analyses of regression to estimate Models from 1 to 3, generating the outcomes in Table 3. The current study is based on the indicators stipulated by Hair et al. (2011) to assess the research model. As can be seen in Table 3, all the three Models obtain the goodness of fit. The values of F range from 23 to 218 at the 0.01 significance level. Moreover, the coefficients of the explained variance (R²) get the values from 0.327 to 0.738, indicating the amounts of variance explained by independent variables are from 32.7% to 73.8%. The coefficients of Durbin-Watson take the values of 1.848, 1.741 and 1.854, belonging to their interval between du and (4 – du); which reveal no autocorrelation. Additionally, the

coefficients of χ^2 from the Breusch–Pagan test gain the values of 0.521, 0.934 and 0.612 with the estimates of $P\chi^2$ equal to 0.789, 0.297 and 0.398, which all exceed the 0.05 significance level, so indicating no heteroskedasticity. Furthermore, the estimators of VIF all obtain the values <2 level, showing no multicollinearity.

In Model 1, the regression of organizational performance on environmental responsibility was estimated. As Model 1 indicates, only INE of the four controlling variables is statistically related to organizational performance with the 0.01 significance level. Environmental responsibility positively affects organizational performance with the 0.05 significance level and the 0.075 coefficient of β . Therefore, the results offer support for Hypothesis 1. Model 2 regressed environmental performance on environmental responsibility. Similarly, to Model 1, only INE positively influences environmental performance with the 0.01 significance level. Environmental responsibility imposes a positive impact on environmental performance with the 0.01 significance level and the 0.319 coefficient of β , which is in support of Hypothesis 2. In Model 3, organizational performance was regressed on both environmental responsibility and environmental performance. Likewise, only INE imposes a positive influence on organizational performance with the 0.01 significance level. Environmental performance is a positive determinant of organizational performance with the 0.05 significance level and the 0.072 coefficient of β . These findings provide support for Hypothesis 3.

6.2. Assessment of Mediation

In contrast, environmental responsibility in Model 3 has no effect on organizational performance; and furthermore its coefficient of β decreases from 0.075 down to 0.052, which can suggest a mediation of environmental performance in the causal link from environmental responsibility to organizational performance. For the robustness of mediating influence, this research employed the procedures as Goodman (1960) recommended for testing the statistical significance for the mediation of environmental performance between environmental responsibility and organizational performance. The outcomes are presented in Table 4, which indicates that, the mediation of environmental performance in the causal link from environmental responsibility to organizational performance is statistically significant with the 0.05 level, and t_{indirect} of 1.968, in support of Hypothesis 4. These findings suggest that, if being entered into the research model of organizational performance

Table 2: Validity of instruments

Factor	Dimension	Loading	CR	AVE	SIC
ENR	ENR1	0.657	0.9067	0.5496	
	ENR2	0.666			
	ENR3	0.793			
	ENR4	0.768			
	ENR5	0.743			
	ENR6	0.796			
	ENR7	0.721			
	ENR8	0.773			
ORR	ORR1	0.691	0.9222	0.5189	0.1918
	ORR2	0.740			
	ORR3	0.703			
	ORR4	0.745			
	ORR5	0.710			
	ORR6	0.723			
	ORR7	0.733			
	ORR8	0.701			
	ORR9	0.729			
	ORR10	0.707			
	ORR11	0.739			
KMO		0.921			
Chi-squared		4008.144			
P value		0.000			

Table 3: Multiple regression analyses to test causal hypotheses

Model	1			2			3		
	ORR			ENR			ORR		
Variable	β	Se	VIF	β	Se	VIF	β	Se	VIF
(C)	1.480	0.219		1.752	0.317		1.354	0.227	
ORK	0.023	0.040	1.039	-0.020	0.058	1.039	0.025	0.040	1.039
OLE	0.001	0.003	1.004	-0.003	0.004	1.004	0.001	0.003	1.006
OSE	0.012	0.011	1.113	0.007	0.016	1.113	0.011	0.011	1.114
INE	0.846**	0.032	1.412	0.196**	0.046	1.412	0.832**	0.033	1.476
ENY	0.075*	0.037	1.393	0.319**	0.054	1.393	0.052	0.039	1.518
ENR							0.072*	0.035	1.294
Durbin-Watson		1.848			1.741			1.854	
$\chi^2/P\chi^2$		0.521/0.789			0.934/0.297			0.612/0.398	
R ²		0.735			0.327			0.738	
F/P _F		218/0.000			23/0.000			184/0.000	

*,**Significance at the 0.05, 0.01 levels

Table 4: Mediation analyses

Cause	Mediator	Effect	t_{indirect}	Se	P_t
ENY	ENR	ORR	1.968	0.011	0.049

and environmental responsibility, environmental performance entirely transmits the causal impact of environmental responsibility on organizational performance. In the joint research model, environmental responsibility has no direct effect of organizational performance, but has indirect impact on organizational performance through the transmission of environmental performance.

7. DISCUSSION AND CONCLUSIONS

Social and economic growth probably causes several hazards to the nature environment. The relationship between the social and economic development of a country and the nature environment are manifold. The environment is both a place to supply natural resources to enterprises and also a sink to contain waste discharged from the enterprises. Therefore, the enterprises should pay more attention to the nature environment, because reduced environmental quality will have negative effects on business development. This research attempted to explore the extent of responsibility enterprises take to the nature environment. In particular, it investigated the links among environmental responsibility, environmental performance and organizational performance in Vietnam's context as a fast-growing emerging country.

The empirical findings reveal empirical evidence on a positive influence of environmental responsibility on organizational performance. This research simultaneously finds out that environmental responsibility is also a vital positive determinant of environmental performance that in turn augments organizational performance for the enterprises. Especially, it comprehensively analyzed the imperative role that environmental performance plays to the research model. The results statistically confirm the mediation of environmental performance interfering in environmental responsibility and organizational performance, in which environmental performance fully transmits the impact of environmental responsibility on organizational performance. When entered into the research model, environmental performance will make environmental responsibility have no direct influence on organizational performance.

The findings may be useful for executive officers in businesses as well as researchers by providing them with a deeper understanding of the complex relationships of environmental responsibility and performance with organizational performance, in which environmental performance is highlighted as a vital mediator. Hence, they can offer better and deeper analyses on the correlation among factors relevant to environmental issues. The results could allow business managers in Vietnam in particular and in other developing countries in general, to make suitable decisions on the extent of environmental responsibility their enterprises should take in order to improve environmental performance and then gain better organizational performance. The empirical results were produced from Vietnam's context, and they are expected to apply for other similar developing countries. Nevertheless, operating conditions

can be different among developing economies. Therefore, they should apply the findings of this study to their businesses with care.

8. ACKNOWLEDGMENT

I would like to thank Tra Vinh University for financially supporting to conduct this research (as articulated in Contract No 201/HĐ.HĐKH-ĐHTV) and I am also grateful to the respondents for their help in gathering the research data.

REFERENCES

- Angelia, D., Suryaningsih, R. (2015), The effect of environmental performance and corporate social responsibility disclosure towards financial performance (Case study to manufacture, infrastructure, and service companies that listed at Indonesia stock exchange). *Procedia-Social and Behavioral Sciences*, 211, 348-355.
- Baron, R.M., Kenny, D.A. (1986), The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- Berry, M.A., Rondinelli, D.A. (1998), Proactive corporate environmental management: A new industrial revolution. *Academy of Management Executive*, 12(2), 38-50.
- Bowden, A., Fox-Rushby J.A., Nyandieka L., Wanjaw J. (2002), Methods for pre-testing and piloting survey questions: Illustrations from the KENQOL survey of health-related quality of life. *Health Policy and Planning*, 17(3), 322-330.
- Bragdon, J.H., Marlin, J. (1972), Is pollution profitable. *Risk Management*, 19(4), 9-18.
- Brooks, C., Oikonomou, I. (2018), The effects of environmental, social and governance disclosures and performance on firm value: A review of the literature in accounting and finance, *The British Accounting Review*, 50(1), 1-15.
- Cai, L., He, C. (2014), Corporate environmental responsibility and equity prices. *Journal of Business Ethics*, 125(4), 617-635.
- Chuang, S.P., Huang, S.J. (2018), The effect of environmental corporate social responsibility on environmental performance and business competitiveness: The mediation of green information technology capital. *Journal of Business Ethics*, 150(4), 991-1009.
- Cohen, M.A., Fenn, S., Naimon, J.S. (1995), *Environmental and Financial Performance: Are they Related?* Washington, DC: Investor Responsibility Research Center, Environmental Information Service, USA.
- Delaney, J.T., Huselid, M.A. (1996), The impact of human resource management practices on perceptions of organizational performance. *Academy of Management Journal*, 39(4), 949-969.
- Dias-Sardinha, I., Reijnders, L. (2005), Evaluating environmental and social performance of large Portuguese companies: A balanced scorecard approach. *Business Strategy and the Environment*, 14(2), 73-91.
- Dilla, W., Janvrin, D., Perkins, J., Raschke, R. (2019), Do environmental responsibility views influence investors' use of environmental performance and assurance information? *Sustainability Accounting, Management and Policy Journal*, 10(3), 476-497.
- Elkington, J., Rowlands, I.H. (1999), Cannibals with forks: The triple bottom line of 21st century business. *Alternatives Journal*, 25(4), 42-43.
- Goodman, L.A. (1960), On the exact variance of products. *Journal of the American Statistical Association*, 55(292), 708-713.
- Guenster, N., Bauer, R., Derwall, J., Koedijk, K. (2011), The economic value of corporate eco-efficiency. *European Financial Management*, 17(4), 679-704.
- Gunningham, N. (2009), *Corporate Environmental Responsibility*. Ashgate, UK: Hampshire.

- Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E., Tatham, R.L. (2011), *Multivariate Data Analysis*. New Jersey, USA: Prentice Hall.
- Hart, S., Ahuja, G. (1996), Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance. *Business Strategy and the Environment*, 5(1), 30-37.
- Hart, S.L., Dowell, G. (2011), A natural-resource-based view of the firm: Fifteen years after. *Journal of Management*, 37(5), 1464-1479.
- Hertin, J., Berkhout, F., Wagner, M., Tyteca, D. (2008), Are EMS environmentally effective? The link between environmental management systems and environmental performance in European companies. *Journal of Environmental Planning and Management*, 51(2), 259-283.
- Holtbrügge, D., Dögl, C. (2012), How international is corporate environmental responsibility? A literature review. *Journal of International Management*, 18(2), 180-195.
- Hutchinson, C. (1992), Corporate strategy and the environment. *Long Range Planning*, 25(4), 9-21.
- Huyhn, Q.L. (2017), Corporate governance on the corporate characteristics managerial accounting link. *American Journal of Applied Sciences*, 14(5), 560-568.
- Jo, H., Kim, H., Park, K. (2015), Corporate environmental responsibility and firm performance in the financial services sector. *Journal of Business Ethics*, 131(2), 257-284.
- Kao, M.R., Liu, C.Y., Huang, Y.C., Chang, N.J. (2010), A research of the relationship among business green management, environmental performance and competitive advantage. *Journal of Management and Systems*, 17(2), 255-278.
- Karagozoglu, N., Lindell, M. (2000), Environmental management: Testing the win win model. *Journal of Environmental Planning and Management*, 43(6), 817-829.
- Khanifah, K., Udin, U., Hadi, N., Alfiana, F. (2020), Environmental performance and firm value: Testing the role of firm reputation in emerging countries. *International Journal of Energy Economics and Policy*, 10(1), 96-103.
- Kim, Y., Statman, M. (2012), Do corporations invest enough in environment responsibility? *Journal of Business Ethics*, 105(1), 115-129.
- Konar, S., Cohen, M. (2001), Does the market value environmental performance? *Review of Economics and Statistics*, 83(2), 281-289.
- Koo, C., Chung, N., Ryoo, S.Y. (2014), How does ecological responsibility affect manufacturing firms' environmental and economic performance? *Total Quality Management and Business Excellence*, 25(9-10), 1171-1189.
- Landis, J.R., Koch, G.G. (1977), The measurement of observer agreement for categorical data. *Biometrics*, 33(1), 159-174.
- Latan, H., Jabbour, C.J.C., de Sousa Jabbour, A.B.L., Wamba, S.F., Shahbaz, M. (2018), Effects of environmental strategy, environmental uncertainty and top management's commitment on corporate environmental performance: The role of environmental management accounting. *Journal of Cleaner Production*, 180, 297-306.
- Le, Y., Hollenhorst, S., Harris, C., McLaughlin, W., Shook, S. (2006), Environmental management: A study of Vietnamese hotels. *Annals of Tourism Research*, 33(2), 545-567.
- Lee, K.H., Cin, B.C., Lee, E.Y. (2016), Environmental responsibility and firm performance: The application of an environmental, social and governance model. *Business Strategy and the Environment*, 25(1), 40-53.
- Li, D., Cao, C., Zhang, L., Chen, X., Ren, S., Zhao, Y. (2017), Effects of corporate environmental responsibility on financial performance: The moderating role of government regulation and organizational slack. *Journal of Cleaner Production*, 166, 1323-1334.
- Martínez-Ferrero, J. (2014), Consequences of financial reporting quality on corporate performance: Evidence at the international level. *Estudios de Economía*, 41(1), 49-88.
- Melville, N.P. (2010), Information systems innovation for environmental sustainability. *MIS Quarterly*, 34(1), 1-21.
- Miles, M.P., Covin, J. (2000), Environmental marketing: A source of reputational, competitive, and financial advantage. *Journal of Business Ethics*, 23(3), 299-311.
- Nehrt, C. (1996), Timing and intensity effects of environmental investments. *Strategic Management Journal*, 17(7), 535-547.
- Nguyen, H.N. (2014), Policies for Environmentally Sustainable Development: Perspectives from Vietnam. In: *Environmental Policies in Asia: Perspectives from Seven Asian Countries*. World Scientific Publishing: Singapore. p57-72.
- Palmer, K., Oates, W., Portney, P. (1995), Tightening environmental standards: The benefits cost or no-cost paradigm? *Journal of Economic Perspectives*, 9(4), 119-132.
- Porter, M. (1998), *The Competitive Advantage of Nations*. New York, USA: Free Press.
- Porter, M.E., Van der Linde, C. (1999), Green and competitive: Ending the stalemate. *Journal of Business Administration and Policy Analysis*, 73, 215-229.
- Qi, G., Zeng, S., Li, X., Tam, C. (2012), Role of internalization process in defining the relationship between ISO 14001 certification and corporate environmental performance. *Corporate Social Responsibility and Environmental Management*, 19(3), 129-140.
- Ravindra, P.S., Pradeep, K.K. (2012), Greening of industries for sustainable growth: An exploratory study on durable, nondurable and services industries. *International Journal of Social Economics*, 39(8), 551-586.
- Russo, M.V., Fouts, P.A. (1997), A resource-based perspective on corporate environmental performance and profitability. *Academy of management Journal*, 40(3), 534-559.
- Sáez-Martínez, F.J., Díaz-García, C., González-Moreno, Á. (2016), Factors promoting environmental responsibility in European SMEs: The effect on performance. *Sustainability*, 8(9), 898.
- Seuring, S., Muler, M. (2008), From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, 16(15), 1699-1710.
- Sharma, A., Iyer, G., Mehrotra, A., Krishnan, R. (2010), Sustainability and business-to-business marketing: A framework and implications. *Industrial Marketing Management*, 39(2), 330-341.
- Stock, G.G., Hanna, J.L., Edwards, M.H. (1997), Implementing an environmental business strategy: A step-by-step guide. *Environmental Quality Management*, 6(4), 33-41.
- Surroca, J., Tribó, J.A., Waddock, S. (2010), Corporate responsibility and financial performance: The role of intangible resources. *Strategic Management Journal*, 31(5), 463-490.
- Verrecchia, R.E. (1983), Discretionary disclosure. *Journal of Accounting and Economics*, 5(3), 179-194.
- Watson, R.T., Boudreau, M.C., Chen, A.J. (2010), Information systems and environmentally sustainable development: Energy informatics and new directions for the is community. *MIS Quarterly*, 34(1), 23-38.
- Wong, C.W., Miao, X., Cui, S., Tang, Y. (2018), Impact of corporate environmental responsibility on operating income: Moderating role of regional disparities in China. *Journal of Business Ethics*, 149(2), 363-382.
- World Bank. (2012), *The World Bank Annual Report 2012*. Washington DC, USA: The World Bank.
- Xu, X.D., Zeng, S.X., Zou, H.L., Shi, J.J. (2016), The impact of corporate environmental violation on shareholders' wealth: A perspective taken from media coverage. *Business Strategy and the Environment*, 25(2), 73-91.
- Yusof, N.A. (2020), Do environmental, economic and reputational advantages strengthen green practices' impact on environmental performance? *Corporate Social Responsibility and Environmental Management*, 1, 1-13.