



## RELATIONSHIP BETWEEN ENVIRONMENTAL FINANCIAL ACCOUNTING PRACTICES AND CORPORATE FINANCIAL RISK: EVIDENCE FROM LISTED COMPANIES IN VIETNAM'S SECURITIES MARKET



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### ABSTRACT

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This research assesses the relationship between the level of environmental financial accounting practices (EFAP) and corporate financial risk (CFR). Data was collected from companies listed on Vietnam's securities market for five years from 2013 to 2017. The sample included two groups of companies: one, which followed EFAP and second which did not follow these practices. Based on quantitative research method, this study measured the relationship between levels of EFAP and CFR. The results reveal a close relationship between the EFAP and CFR levels of the current year and that of the following years(s). In addition, the results also point out that, there is a difference in financial risk between both the groups. The study recommends that enterprises should strengthen the environmental financial accounting practices to prevent financial risks in order to gain competitive advantage.

**Contribution/Originality:** This research has examined the impact of the level of EFAP on CFR and found out that the level of EFAP in any current year can avoid the financial risk of not only that year but also prevents the financial risk of the following year.

### 1. INTRODUCTION

It is a global phenomenon that businesses involved in environmental related activities exploit resources to achieve the goal of maximizing profits. Their main concern is to protect the ozone layer, thus avoiding environmental damage and depletion of resources. Such environmental concern is of all stakeholders such as managers, shareholders and potential investors. They always wanted to know what efforts enterprises make towards environmental protection and sustainable development. Disclosure of environmental accounting information is considered as a tool to help businesses strengthen the confidence of related parties, increase the prestige and brand of enterprises in production and business activities.

Such a close integration and consensus on environmental issues help businesses create opportunities to approach investment sources in the world. Owing to the competition getting more intense, the advantage will belong to enterprises that grasp opportunities and satisfy the stakeholders. The trend that countries around the world are increasingly interested in includes sustainable development, green development, green technology and

like. While the publication of environmental accounting information helps businesses strengthen their stakeholders' confidence, the lack of such information can result in less of opportunities for business cooperation capital investment for sustainable development which can adversely affect financial risk management in business.

In general, there is a lack of knowledge and awareness about Environmental financial accounting practices (EFAP) of companies listed in the Vietnam securities market (Nguyen *et al.*, 2017; Nguyen *et al.*, 2018). Previous research results indicate that most companies fail to meet the demand for information on environmental accounting as expected by stakeholders, hence there is a need to improve the level of EFAP. Even though the number of studies on EFAP is high, an empirical examination of the relationship between EFAP and CFR in the emerging markets context is limited. The lack of empirical studies on this issue could be one of the factors in explaining why companies listed in the Vietnam securities market are less involved in promoting their EFAP to various stakeholder groups (Tien *et al.*, 2017). Thus, by using Environmental information disclosure on annual report as measurement of EFAP, this study has made an effort to fill the gap by empirically examining the relationship between EFAP and CFR in Vietnam context.

The remainder of the paper is organized as follows: In Section 2, Literature Review; the next part talks about Theoretical Background and Research Hypotheses; Section 4, presents the Research Methodology; Results and Discussion about the relationship between EFAP and CFP are presented in Section 5. Conclusion and Recommendations are explained in Section 6.

## 2. LITERATURE REVIEW

Globally, there has been witnessed an imbalance between economic development and environmental protection owing to which enterprises have started to focus on their sustainable development strategy. Since, environmental accounting information is referred to by stakeholders for making business cooperation decisions and investments, it is therefore imperative to promote the publication of environmental accounting information in the interest of both research and business (NI, 2017). In recent years, research publications on environmental accounting information in general and on social responsibility and financial risk in particular have increased rapidly. Related studies are summarized as follows:

- Studies that examine the effects of social responsibility on company risk include Ayadi *et al.* (2015) whose results indicate that a company with strong CSR records is engaged in higher risk-taking. The study also points out that high managerial risk-tolerance are necessary for undertaking risky yet profitable investment decisions. Another study by Harjoto and Laksmana (2016) finds that stronger CSR performance is associated with smaller deviations from optimal risk taking levels. The research findings reveal a distinct mechanism through which CSR makes an impact on firm value and finds a positive indirect impact of CSR on firm value through risk taking. Hence, this study claims that CSR is positively associated with firm value because it reduces excessive risk taking and risk avoidance. Cai *et al.* (2016) also examine the relationship between corporate environmental responsibility and risk in US public firms. The research was conducted for testing the risk-reduction, resource-constraint, and cross-industry variation hypotheses. This study also supported the risk-reduction hypothesis, but not the resource-constraint hypothesis, along with the notion that the top management in US firms are generally risk-averse and that their CER engagement facilitates their risk management efforts. Several other studies have examined different aspects of risk reduction by participating in social responsibility activities. One of these aspects is that risk management can reduce company risk by reducing the potential for a financial, social and environmental crisis that could affect the company's cash flow. Qiu *et al.* (2016) assert that by creating moral or goodwill, enterprises can provide insurance-like protection to maintain financial efficiency. To conclude, most studies have examined the empirical relationship between corporate social responsibility and company risk finding an inverse relationship between these two variables.

- There are a few studies on the relationship between social responsibility and system risk like equity costs. Al-Hadi *et al.* (2017) used data from 651 companies and argue that environmental performance at the company level is inversely related to systemic risk (in which system risk is measured by the CAPM model) and results reveal lower share capital costs. Dutta and Nezlobin (2017) using data sheets of S&P 500 companies, confirm that social responsibility has an inverse relationship with system risk in which system risk includes market risk. The study also points out that businesses have social responsibility because higher societies have lower capital costs. Their threshold growth rate is higher when the firm's cash flows are more persistent, or when other firms in the economy are growing at low rates. While current shareholders always prefer maximum public disclosure, future shareholders' welfare decreases (increases) in the precision of public disclosure if the firm's growth rate is below (above) the threshold, the study added.

Mixed results are seen in the studies on research stock market efficiency of social responsibility shares. Monti *et al.* (2018) carried out a study based on a large panel of listed firms from 52 countries for the period 2002-2015. It used GMM estimators that allowed considering both autoregressive memory in risk measures and possible endogeneity of CSR. The study showed that CSR has a risk-reducing effect on risk. This effect is stronger in civil-law countries with low security regulation and disclosure requirement levels and in countries where financial information is less widespread. Firms in high-impact or high-profile industries benefit more from CSR than firms in other industries. Similar benefits apply to firms that are not cross-listed but a financial crisis increases the risk-reducing effect of CSR. Monti *et al.* (2018) also examined the relationship between corporate social responsibility and company value (a system risk measured by CAPM model), and concluded that investment in social responsibility can bring financial benefits to the company as well as better long-term growth prospects. For example, waste reduction companies will avoid consumer disaster / litigation / boycott, and thus increase their brand value and prestige, or increase motivation of their workers and their wealth and enhance customer attraction and retention. Qiu *et al.* (2016) checked the relationship between corporate social responsibility and corporate risk, where the company risk includes total risk equal to the standard deviation of the daily rate of return and risk of non-systematic equilibrium with the standard deviation. Findings of the study reveal that staffing and governance-related diversity have a positive effect on corporate risk, while community strengths have a negative (positive) effect on financial risk.

Hence, there are a lot of research studies on the relationship between level of environmental financial accounting practices and corporate financial risk. However, most of these studies have been conducted in developed countries around the world. These results are selected and studied for the current study. The Vietnamese securities market is an emerging market, with its own characteristics, but enterprises have not paid much attention to the environmental financial accounting practices. A research was therefore necessary to study the sustainable development of businesses in the context of global integration.

### 3. THEORETICAL BACKGROUND AND RESEARCH HYPOTHESES

#### 3.1. Theory of the Relationship between the Level of the Environmental Financial Accounting Practices and Financial Risk

Many large corporations in the world such as Formosa, British Petroleum Corporation (BP) and Volkswagen's largest automobile manufacturing group have collapsed due to fraudulent information disclosure related to environmental protection. Such failures and continuous business scandals emphasize upon the need to practice environmental financial accounting in order to meet the information needs of users and to avoid financial risk. In order to explain the need of environmental financial accounting practices, and the relationship between environmental financial accounting practices and financial risk, scientists often use the following theoretical propositions:

- *Friedman's trade-off hypothesis:* According to this hypothesis, implementing social responsibility is the most effective way for businesses to increase profits. Although, when companies engage in social and environmental activities, they incur additional costs and face a reduced income, but in return, their businesses improve and

their reputation attracts investors (Dowling and Pfeffer, 1975). According to this theory, the higher the level of implementation of environmental and social responsibilities, the higher will be the business efficiency, and lesser would be the scandals businesses may encounter.

- *The theory of supply and demand of McWilliams and Siegel:* This theory postulates the need of companies to fulfill their social responsibilities in order to increase business efficiency and minimize risks from related parties' lawsuits (Guthrie and Parker, 1989). Stakeholders have the right to receive information related to social and environmental responsibility, so enterprises must implement environmental accounting to meet such needs.
- *Social impact theory built by Cornell and Shapiro:* According to this theory, improving environmental protection and social responsibility attracts investors' attention (Guthrie and Parker, 1989). Therefore, the expected benefits from implementing social responsibility exceed the implementation cost. This theory supports the positive relationship between social responsibility and financial efficiency and the negative relationship between social responsibility and financial risk. Enterprises are aware that by improving corporate social responsibility they improve their business reputation, improve relationships with financial institutions, and reduce the company's risk.
- *Stakeholder theory:* The Stakeholder Theory is derived from the perspective of economic interests of stakeholders in all actions. According to Freeman, all stakeholders are affected by business behaviors, including those of shareholders, suppliers, customers, employees, competitors, social workers, lawmakers, academics, indigenous peoples, labor organizations, local administration and the government. Based on stakeholder theory, Ullmann (1985) explains that if a stakeholder controls an important source of business, the business will find a way to satisfy its needs. Environmental financial accounting practices are considered an effective governance strategy that addresses relationships and satisfies needs of stakeholders. On the other hand, the study by Chiu and Wang (2014) shows that return on equity ROE is positive and debt to equity ratio is reverse to the disclosure of Environmental financial accounting practices.

### 3.2. Study on the Relationship between the Level of the Environmental Financial Accounting Practices and Financial Risk.

Stakeholder theory (Dowling and Pfeffer, 1975; Ullmann, 1985) postulates that investing in environmental and social responsibility helps organizations reduce their risk. By creating a corresponding source of capital among stakeholders, social responsibility provides organizations with a beneficial protection equivalent to an insurance policy. As a result, social responsibility makes companies less vulnerable and more resilient to potential depletion. In particular, consumers are less likely to stay away from the company's products. Following negative incidents, such as environmental catastrophes, companies with higher social responsibilities are expected to be less affected than their direct competitors. Orlitzky and Benjamin (2001); Magness (2006); Chidoko and Mashavira (2014); Khan *et al.* (2017); Olaoye and Olanipekun (2018) assert that social responsibility generates goodwill among stakeholders in mitigating negative attitudes. Greater loyalty from the customer can help companies absorb external shocks and give the company more time to make adjustments to its operations.

Public perception of a company that does not practice well with environmental responsibility can increase the severity of a reaction. It increases the chances of a company being held accountable if there are more negative results. In particular, the company may also be pressurized to control the damage to its image by spending heavily on advertising and public relations. Due to poor social responsibility, companies cannot also maintain the loyalty of their customers and employees. Customers can switch to another provider while employees can leave the company when such hardships take place in the company. Godfrey (2005) asserts that managers tend to use social responsibility activities to ensure support from local communities and politicians. By preventing hostile takeovers,

social responsibility can exacerbate the risk. With the negative impact on business results of the company, it may not be surprising if the company faces a higher risk in such a situation.

Recent empirical studies have found a negative correlation between corporate social responsibility and corporate financial risk. The study of Monti *et al.* (2018) for instance, viewed that social responsibility is associated with reduced systematic risk. Harjoto and Laksmana (2016) showed that improved environmental risk management is associated with lower capital costs and especially lower equity cost. The cost of debt increases because businesses take advantage of lower risk to increase their leverage. Chakraborty *et al.* (2018) determined that good social responsibility is associated with a higher credit rating of the business. Chakraborty *et al.* (2018) states that managers tend to use social responsibility activities to ensure support from local communities and politicians, reducing the risk that businesses may encounter. Last, but not the least, Cai *et al.* (2016) found a negative relationship between the advantages of social responsibility and systemic risk. If businesses pay more attention to issues related to community, employment and environmental issues, the risk to the system tends to decrease. Hence, environmentally responsible firms experience lower risk. From this argument, the first hypothesis of the current research is stated as follows:

*H1a: There is a negative relationship between the disclosure level of the environmental accounting information and the financial risk of the company in the current year.*

*H1b: There is a negative relationship between the disclosure level of environmental accounting information and the financial risk of the company in the following year.*

### *3.3. Comparison of the Financial Risk of Listed Companies That Disclose Environmental Accounting Information with Other Listed Companies That Do Not*

There is a lot of empirical support for the view that companies should be penalized if their businesses conflict with social values. This is especially true when the conflict arises between pursuing organizational profits and the goal of environmental protection. Thus, one of the ways that companies adopt for risk management in the process of operating and improving financial performance is to engage in socially responsible behavior. Numerous empirical studies have demonstrated that company risk includes the total risk (measured by standard deviation of return) and market risk (measured by the CAPM model). Such companies that disclose environmental accounting information differ from companies that do not make such a disclosure. Companies with environmental accounting disclosures are often at a lower risk than companies that do not disclose environmental accounting information. Cai *et al.* (2016) demonstrated that companies with environmental accounting disclosures secure trust and image with stakeholders, reducing the number of cases, litigation, controversy, and boycott of the company products. Therefore, these companies usually have lower accounting and market risks. Monti *et al.* (2018) argued that when a company participates in social responsibility, it maximizes shareholder value, enhances its credibility, and ensures long-term viability. Therefore, investors and managers of companies must pay attention to CSR activities in developing their investment strategies and regulatory policies. Oikonomou *et al.* (2012) used the S&P 500 corporate data table, to confirm that social responsibility is inverted with systematic risk, wherein systemic risk consists of market risk (measured by the standard deviation of stock profit,  $\beta$  share) and accounting risk (measured by long-term debt/asset ratio, debt/equity ratio, ROA volatility). From this point of view, the study states the second hypothesis as follows:

*H2: There is financial risk differences between listed companies with disclosure of environmental accounting information and companies listed without environmental accounting information.*

## 4. RESEARCH METHODOLOGY

### 4.1. Data Collection

*Group 1:* This group includes listed Companies with environmental financial accounting practices: The selected companies meet two criteria: (i) having a complete set of annual accounting data for five years (2013 – 2017) (ii) Companies must disclose environmental accounting information in their annual report or sustainability report. The final sample for this study was unbalanced table data, as shown in [Table 1](#).

**Table-1.** Research sample statistics.

No.	Industry	Number of listed companies with environmental financial accounting practices				
		2013	2014	2015	2016	2017
1	Agriculture - Forestry - Fishery	1	6	12	14	25
2	Extractive	5	12	14	16	27
3	Community utilities	2	3	6	8	12
4	Construction and real estate	0	0	5	6	11
5	Manufacturing	2	4	9	14	30
Total		10	25	46	58	105

Source: Retrieved from <http://finance.vietstock.vn>.

*Group 2:* This group includes listed companies without **environmental** financial accounting practices: These companies meet two criteria: (i) a complete annual accounting data sheet for five years (2013-2017). ii) Companies correspond to the size, sector and time of listing with Group 1 companies.

For the current study, however, the data for only group 1 companies has been focused upon. The companies in group 2 only serve as comparative benchmarks and were not significant due to their nonconformance of EFAP in the given time period. .

### 4.2. Variable Measurements

- Level of Environmental Financial Accounting Practices (EFCP)

Global Reporting Initiative's (2013) Sustainable Development Report Guidelines contain 34 items required for disclosure of mandatory environmental accounting information in 12 relevant categories as shown in [Table 2](#):

**Table-2.** The number of Items for Disclosure.

No.	Category	Number of Items	No.	Category	Number of Items
1	Material	2	7	Information on label of products and services	2
2	Energy	5	8	Compliance	11
3	Water	3	9	Transportation	1
4	Biodiversity	4	10	Overall	1
5	Emissions	7	11	Supplier's Review of the Environment	2
6	Wastewater and Waste	5	12	Environmental complaints mechanism	1

Source: Composer from: <https://www.globalreporting.org>.

[Table 3](#) presents how a company publishes relevant information in their annual report for assessing the score of the level of environmental financial accounting practices (EFAP).

Table-3. Way to Assess the Level of environmental financial accounting practices.

How the company public relevant information on the annual report	Score
The published information is both quantitative and qualitative	4
The disclosure is only qualitative and non - quantitative	3
Quantitative information is for both object and value, no qualitative information	2
Quantitative information is only for value, no object and no qualitative information	1
No information disclosure	0

The level of environmental financial accounting practices is calculated for each item, then calculated on average for each category and calculated for the total level of environmental financial accounting practice of each enterprise by the following formula:

$$\text{EFCP of firms X} = \frac{\sum_{i=1}^{34} Y_i}{34} \quad (Y_i: \text{Score of item } i)$$

- Financial Risk and Control Variables

Corporate financial risk is often measured by the standard deviation of the rate of return through the volatility of stock prices over a given period of time. This study only considers the overall risk of the company (reflected by the stock price fluctuations of the company in the market) but ignores market risk (VN - index). Applying the results of previous studies such as Barone and Braghò (1996); Oikonomou *et al.* (2012); Becchettia *et al.* (2018) in this study, the company's financial risk is determined according to the following formula:

$$\text{FR} = \sqrt{\frac{1}{250-1} \sum_{t=1}^{250} (r_t - E_r)^2} * \sqrt{250}$$

Inside: FR: Financial risk

$r_t$ : Return on stock at day t

$$r_t = \frac{P_t + D_t + \gamma(P_t - \rho) - P_{t-1}}{P_{t-1}}$$

(P: The price of the stock; D: The dividend;  $\gamma$ : The rate of stock dividend;  $\rho$ : The preferred price of additional shares)

$E_r$ : Average yield

$$E_r = \sum_{t=1}^n r_t = \frac{r_1 + r_2 + \dots + r_n}{n}$$

Control variables: In order to examine the relationship between social responsibility practice and financial performance, previous studies have used control variables besides independent variables such as: management competence, company size, quick ratio, business cycle, listing period, percentage of state capital, financial leverage, independent Auditing (Simpson and Kohers, 2002; Al-Tuwaijri *et al.*, 2004; Boaventura *et al.*, 2012; Qiu *et al.*, 2016). These studies have demonstrated that business size, financial leverage, listing period, independent auditing have a significant effect on financial performance. Besides, due to data collection limitations, this study has included only 4

control variables to consider the relationship between EFAP and CFP including: Business Size (BS); Financial leverage (FL); Listing period (LP); and Independent Auditing (IA). They are stated in Table 4:

Table-4. The way to evaluate the Control Variables.

Code	Control Variable	How to evaluate
BS	Business Size	Log (Total Assets)
FL	Financial leverage	Total long-term debt divided by total assets
LP	Listing period	Number of years from the beginning of listing to the end of 2017
IA	Independent Auditing	= 1, independent auditor of Big 4; = 0, the rest

To examine the relationship between the level of environmental financial accounting practices and the corporate financial risk of an enterprise, we studied the following regression models: (1) Financial risk is seen a dependent variable, while the level of environmental financial accounting practices and four control variables are independent variables. (2) Additional latency factors were used to assess the impact of previous year's environmental financial accounting practices on financial risk of the current year. The study chose a one-year lag (t-1) that was not distant in time due to the inadequate sample size. The research model is written as follows:

$$FR_{jt} = \beta_0 + \beta_1 EFCP_{jt} + \beta_2 BS_{jt} + \beta_3 FL_{jt} + \beta_4 LP_{jt} + \beta_5 IA_{jt} + \epsilon_{jt}$$

$$FR_{jt} = \mathcal{L}0 + \mathcal{L}1 EFCP_{jt-1} + \mathcal{L}2 BS_{jt} + \mathcal{L}3 FL_{jt} + \mathcal{L}4 LP_{jt} + \mathcal{L}5 IA_{jt} + \mathcal{L}_{jt}$$

## 5. RESULTS AND DISCUSSION

### 5.1. Descriptive Statistics

Figure 1 gives an overview of the level of environmental financial accounting practices by listed companies in Vietnam from 2013 to 2017. During the study period, increasing market volatility is not only evidenced by the number of listed companies with disclosure of environmental accounting information (from 10 companies in 2013 to 105 companies in 2017) Table 1, but also by looking at the level of environmental financial accounting practices. This is a good sign to demonstrate that Vietnamese firms are paying attention to the release of information on environmental indicators, especially after the detailed guidance of Circular No. 155/2015/TT-BTC on 06 October 2015. This is shown by the mean value of the environmental accounting disclosure indicators in 2016, 2017 compared to previous years.

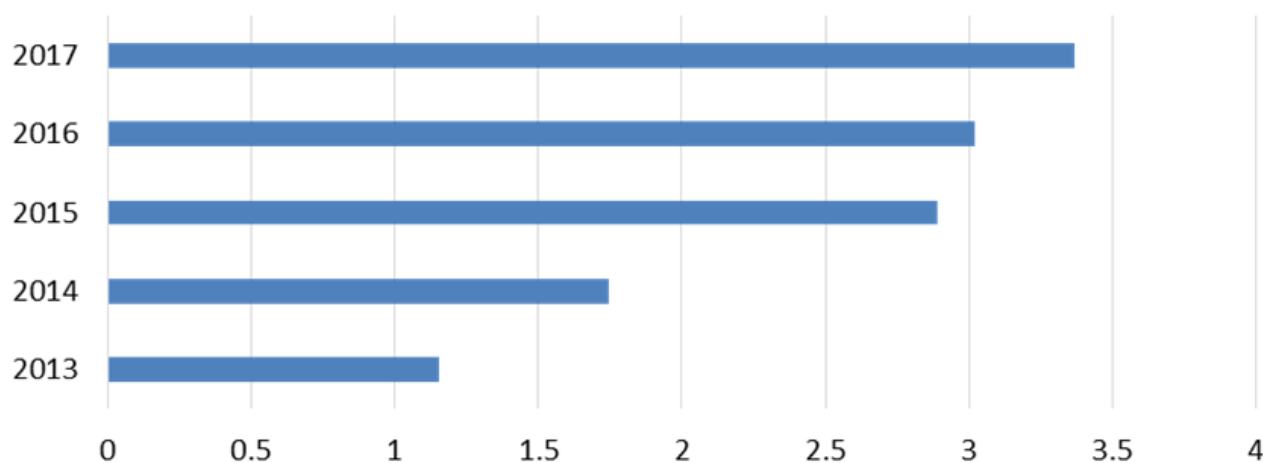


Figure-1. Volatility of the index of the environmental financial accounting practices of listed companies for the period 2013 – 2017.

Source: Composed from: synthesis of the author.

Table 5 presents basic statistical analysis describing parameters of independent variables and dependent variables. Tauchen (1986) suggests that the condition for estimation of reliability for performing regression analysis is  $n > 200$ . According to Joe *et al.* (2011) there should be 15-20 observations for a variable to be estimated. Combined



with these principles, the sample size chosen by the author with 244 observations Table 1 is reasonable. The results of the study ensure the reliability as shown in Table 5. These results reveal that the level of environmental financial accounting practices is 2.879 and it ranges from 1.008 to 3.687. The size of the business ranges from 10.329 to 18.327, indicating that the size of the firms in the sample differs widely. The period of listing on the stock market is 14.391 years on average and fluctuates from 9.865 to 17.710, which proves that the listed firms in the sample are not too young.

Table-5. Statistical Analysis.

	FR	EFAP <sub>t</sub>	EFAP <sub>t-1</sub>	BS	FL	LP	IA
Number of Observations	244	244	139	244	244	244	244
Mean value	0.376	2.879	2.667	15.265	0.410	14.391	0.405
Standard Deviation	0.097	2.705	2.605	5.184	0.317	7.059	0.419
Minimum value	0.078	1.008	1.105	10.329	0.219	9.865	0.000
Maximum value	0.765	3.687	3.287	18.327	0.683	17.710	1.000

### 5.2. Evaluation of Correlation between Variables

Table 6 presents the results of the correlation coefficient test between the variables and the results of the multi-collinearity test. The purpose of the correlation analysis is to examine the tendency of the relationship between independent variables and dependent variables in the model. The previous year's and the current year's levels of environmental financial accounting practices are positively correlated with FR, which means that the higher the level of environmental financial accounting practices, the lower is the financial risk in both present and future. However, to confirm whether the results are accurate or not, we conducted multivariate regression analysis.

Table-6. Correlation and Multi-collinearity Test.

	FR	EFAP <sub>t</sub>	EFAP <sub>t-1</sub>	BS	FL	LP	IA	VIF (t)	VIF (t-1)
FR	1.000							-	-
EFAP <sub>t</sub>	-0.103	1.000						2.324	-
EFAP <sub>t-1</sub>	-0.467	0.231	1.000					-	2.013
BS	-0.326	-0.252	-0.079	1.000				1.325	1.201
FL	0.218	-0.327	-0.132	0.133	1.000			2.198	1.856
LP	-0.305	0.428	0.267	0.189	0.154	1.000		1.907	1.813
IA	-0.304	0.185	0.112	0.231	0.123	0.137	1.000	1.837	1.902

Table 6 shows the results of the multi-collinearity test, revealing that the correlated pairs are simultaneously less than 0.8 and the VIF of the independent variable is less than 5, which proves that there is no multi-collinearity. Moreover, in order to increase the reliability of the regression results, the study also examined whether there was a change in variance in the research model by making use of the White's General test. The test results show that the p value is greater than 0.05, so with a significance level of 5% the H0 hypothesis on the uniformity of the variance is acceptable. That is, the pattern does not exist in the phenomenon of variance. With the above analysis, we assert that the current research data was appropriate to perform multivariate regression analysis and examine the relationship between the level of environmental financial accounting practices and corporate financial risk.

### 5.3. Discussion

(1) Relationship between the level of environmental financial accounting practices and corporate financial risk of the current year.

Table 7 presents the results of regression using the least squares (OLS), fixed effects model (FEM) and random effects model (REM). The results show that there are differences between the three methods. Research conducted the Breusch-Pagan Lagrange test; Hausman test; and F\_test, whose results recommend to choose the most reasonable model. The results of Breusch-Pagan Lagrange test suggest rejecting the null hypothesis (Prob =

0.0000), favoring the REM model as more appropriately modeled pooled OLS. Similarly, the Hausman test also rejected the hypothesis  $H_0$  (Prob = 0.0000) that the FEM model was more appropriate than the REM model. At the same time, the F-test also showed that the FEM model was a suitable model (Prob = 0.0000). Therefore, the most appropriate model for measuring this relationship is the FEM model. The results in Table 7 (Sig. = 0.0210 < 0.05) show that the level of environmental financial accounting practices affects the current year's FR.

**Table-7. Regression Results - the case does not consider latency factor.**

	FR		
	OLS	FEM	REM
EFAP <sub>t</sub>	-0.324 (.0236)	-0.268 (.0210)	-0.318 (.0278)
BS	-0.421 (.0017)	-0.654 (.0047)	0.312 (.0068)
FL	-0.317 (.0056)	0.087 (.0287)	-0.376 (.0031)
LP	-0.312 (.0068)	-0.201 (.0021)	-0.168 (.0150)
IA	-0.982 (.0067)	-0.251 (.0021)	-0.584 (.0102)
Number of Obs	244	244	244
Constant	0.315	0.289	0.235
Adj R – squared	0.3145	0.3286	0.3173

The results in Table 7 also show that the relationship between the level of environmental financial accounting practices and the corporate financial risk is reverse relationship (the coefficient between this relationships is -0.268). The results of this research comply with the previous studies such as: Godfrey *et al.* (2009); Oikonomou *et al.* (2012); Cai *et al.* (2016). This suggests that the higher the level of environmental financial accounting practices, the lower is the likelihood of a business experiencing the financial risk of the year.

(2) *The relationship between the level of environmental financial accounting practices and the corporate financial risk of the following year.*

To examine the relationship between the level of environmental financial accounting practices and corporate financial risk of the following years, the study performed a multivariate regression analysis with dependent variables: FR and test. The results of the regression analysis are presented in Table 8. For the results of the Breusch-Pagan Lagrange test, the accepted hypothesis  $H_0$  (Prob = 1.0000) in the pooled OLS model is more appropriate than the REM model. For the Hausman test, rejecting the hypothesis  $H_0$  (Prob = 0.0216) means that the FEM model is more appropriate than the REM model. However, based on F-test results (Prob = 0.4123), it is also assumed that the fit model is pooled OLS. Thus, the final fit model to measure this relationship is the pooled OLS model, with a 5% significance level. The results in Table 8, (Sig. = 0.0109 < 0.05) show that there is a relationship between the level of environmental financial accounting practices of previous year's and the financial performance of the following year.

The results in Table 8 also show that the relationship between the level of environmental financial accounting practices and the corporate financial risk is the reverse relationship (the coefficient between this relationships is -0.423). This suggests that the higher the level of environmental financial accounting practices, the lower the likelihood of a business experiencing the financial risk of following year.

(3) *Comparing financial risk of companies that followed environmental financial accounting practices with those who did not*

The study examined the difference in financial performance between the two groups of companies: the group that followed environmental financial accounting practices and the group which did not follow them. The results are presented in Table 9, which show the financial risk of each group and results of the t-test.

Table-8. Regression Results – The case considers the latency factor.

	FA		
	OLS	FEM	REM
EFCP <sub>t</sub>	-0.423 (.0109)	- 0.215 (.0214)	-0.675 (.0165)
BS	-0.526 (.1236)	-0.436 (.0154)	0.756 (.0134)
FL	0.165 (.0015)	0.054 (.0143)	-0.456 (.0246)
LP	-0.187 (.0154)	-0.098 (.0145)	0.146 (.0165)
IA	-0.176 (.0056)	-0.343 (.0065)	-0.154 (.0028)
Number of Obs	139	139	139
Constant	0.124	0.124	0.298
Adj R – squared	0.4254	0.3261	0.3096

Table-9. Group financial performance and Bartlett's test for equal variances.

	Group	No	Mean	Std. Dev	Std. Err		
FR	EFCP	105	0.21543	0.4326	0.05342		
	Non – EFCP	105	0.66754	2.2346	0.12187		
	<b>F</b>	<b>Prob&gt;F</b>	<b>SS</b>	<b>df</b>	<b>MS</b>	<b>Bartlett's test</b>	
						<b><math>\chi^2</math></b>	<b>Prob</b>
<b>FR</b>	0.47	0.0000	10.109	243	2.178	101.1365	0.000

The mean value of financial risk for group statistics of listed companies with environmental financial accounting practices (0.215) is lower than for companies without environmental financial accounting practices (0.667). At the same time, t-test results show p-value = 0.000 < 0.05. Thus, the hypothesis H<sub>0</sub> is rejected and accepts the alternative hypothesis. This means that there is a statistically significant difference in FR between listed companies with environmental financial accounting practices and listed companies without environmental financial accounting practices.

Thus, it concludes that if a listed company performs the environmental financial accounting practices in a detailed and transparent manner, it will avoid any financial risk, as well as it will enhance the image and the value of the brand, will promote morale of employees, increase labor productivity, and result in reduced transaction costs to obtain external funding.

## 6. CONCLUSION AND RECOMMENDATIONS

By making use of quantitative and qualitative research methodology, this study assessed the impact of the level of EFAP on CFR of a business. Findings have shown that there exists a relationship between the level of EFAP and CFR of enterprises in listed companies in the Vietnamese securities market. This result is similar to those in a few previous studies (Anh and Binh, 2017; Tien *et al.*, 2017). However, this study contributes new points compared to previous studies such as: (1) Research has examined the impact of the level of EFAP on CFR not only in the current year but also in the following year. As a result, the level of EFAP in the current year is not only meaningful in avoiding the financial risk of that year but also helps to prevent that of the following year. (2) The study has examined and compared the CFR of two groups of companies that follow EFAP and the group of companies that do not follow EFAP the results show that there is a relative difference in the CFR between the two groups since the mean of group 1 is lower than that of group 2. The results again confirm the benefits and implications of implementing environmental accounting. In other words, in the current context, the EFAP will help listed businesses avoid the CFR of enterprises. The higher the level of EFAP, the lower the CFR.

Based on these research findings, some recommendations are proposed for the Vietnamese Securities market in order to promote the level of environmental financial accounting practices:

First, there is a need to raise awareness about corporate environmental responsibility and the benefits of disclosing detailed environmental accounting information in order to boost the financial performance of a business. It is a misconception that focusing on environmental protection activities and bringing transparency of environmental accounting information involves huge cost and might reduce profits. The empirical results of this study have shown that the level of disclosure of environmental accounting information affects the financial risk of enterprises both in the present and in future. Moreover, the disclosure of environmental accounting information is not only to comply with environmental law, and avoid legal complications and financial risk but also to improve the image and enhance the financial efficiency of a business. Second, in the Vietnamese context, the reporting of primary environmental accounting information is still voluntary and free of any general pattern, with only large companies reporting it with responsibility. Hence, the number of companies reporting social responsibility is very low. The findings of this research should encourage companies to prepare annual reports with environmental accounting information rather than focusing only on indicators and also insert social responsibility clause in their disclosure. Investors are not only interested in green development but also in the information related to the implementation of corporate social responsibility. Consequently, it will attract the attention of investors and other stakeholders.

Third, the results also show that, in addition to the level of disclosure of environmental accounting information, other factors such as business size, financial leverage, listing period, independent auditing also affect the financial risk of a business. Therefore, in order to avoid financial risk, enterprises should coordinate and pay attention to these factors in order to achieve the best economic growth. This will also ensure sustainable development and enhance the image of enterprises in the market.

This research faced a few limitations too. First, the study was limited to only financial risk measures and four control variables, while there exists several other indicators to test this relationship. Secondly, the sample size was also limited to only two groups of companies which have deeply affected its results. Nevertheless; these limitations could be suggestive for further research in future.

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