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Relationship between Corporate Social Responsibility (CSR) and Financial Performance in the Healthcare Industry in Vietnam

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ABSTRACT: This study aims to understand the relationship between corporate social responsibility and the financial performance of companies in the healthcare sector in Vietnam. The sample size of the study is 242, including data collected from 22 listed companies in the healthcare industry in Vietnam, during the period from 2012 to 2022. By using Stata software research methods and tests, research results show that corporate governance, human rights, and community have a significant impact on the financial performance of healthcare businesses in Vietnam, while employee relations and environment have no impact on financial performance. From there, this study makes several recommendations that healthcare companies should have reasonable regulations to adjust the gender balance on the board of directors and develop a code of ethics on human rights associated with CSR activities, thereby implementing training programs to improve the quality of human resources, and needing to allocate investment costs in production technologies appropriately to optimize operating performance and profits of the business.

KEYWORDS: Corporate Social Responsibility,Financial performance, Healthcare industry Vietnam

1. INTRODUCTION

1.1. Healthcare industry in Viet Nam background

The healthcare industry is one of the key industries in Vietnam and receives a lot of attention and investment from the state, the investment level in 2022 has increased by more than 50 billion VND compared to the previous year, reaching 120,112 billion VND (Tuyet, 2022). Thanks to that investment, the infrastructure at hospitals, clinics, and medical centers is improved and more modern, as well as advanced medical technologies are applied to increase efficiency and access to healthcare services (Trung Nguyen, 2023).

The healthcare industry in Vietnam is considered one of the industries with high development potential. According to the World Economic Outlook of the International Monetary Fund (IMF), Vietnam's economy is on the rise, reaching 406.45 billion USD in total GDP by 2022 and is the 5th largest economy in Southeast Asia, leading to the rapid growth of middle class, combined with people's increasing awareness of health care, has led to a demand for products such as vitamins, functional foods, cough medicine, etc. are still at a high level (International Trade Administration, 2021; Tran, 2023). Accordingly, spending on health care in Vietnam accounts for 4.6% of the country's GDP, reaching 28.5 billion USD by 2022 (International Trade Administration, 2021).

The Vietnamese government's "Doi Moi" policy for economic and social reform, it has breathed a new breeze into the healthcare sector. This policy allows the application of market-oriented principles while still ensuring environmental commitments and access to healthcare services for people (Trung Nguyen, 2023). To comply with the government's policy, companies in this field need to ensure the application of CSR in business activities, in addition to the main mission of providing medical services. From there, businesses can both improve the health and welfare of the community and promote ethical business behavior and environmental sustainability, leading to increased corporate visibility and improved financial performance (Trung Nguyen, 2023).

1.2. Identify the issue

CSR has been considered a strategy to help businesses improve brand image and reputation through activities such as charity, solving environmental and social issues with the government and local communities (Vikas, 2023). Therefore, this concept is increasingly accepted and widely applied in businesses. From there, the application of CSR will contribute to increasing

environmentally friendly production activities as well as sustainable development in the business environment and the country's economy (Vikas, 2023).

CSR also requires businesses to fulfill their responsibilities to the environment, stakeholders, and society so it also plays a role in helping businesses connect stakeholders (Vatsa, 2023). Moreover, applying CSR is also a sign of ethical corporate behavior, showing that the risk of financial reporting fraud is less likely to occur, thereby minimizing investment risks and improving the financial situation (Heyward, 2020). They use it to meet the requirements and needs of stakeholders, as well as the environmental aspect of CSR that helps ensure environmental responsibility, thereby reducing operating and production costs (Homayoun et al., 2023). Thanks to that, businesses can enhance customer loyalty, gain the trust of shareholders, and reduce unnecessary costs, enhancing their competitive advantage, and ultimately they can improve their financial performance in the most sustainable way (Ngo and Le, 2023).

Especially in the healthcare industry, CSR focuses on solving social problems such as increasing access and affordability of healthcare services for low-income people, and medical examinations for people in remote areas. In addition, businesses that apply CSR will receive favor from the government, non-profit organizations, and healthcare organizations, thereby promoting close cooperation as businesses will have the additional capital needed to promote medical research and innovation and the quality of human resources, leading them to gain customer satisfaction and loyalty, as well as business cooperation with these agencies can also address challenges in the healthcare industry in general (Tehemar, 2012).

In the context of the concept of CSR becoming increasingly popular and widely applied by businesses, having the most in-depth and detailed view of CSR and influencing factors is extremely necessary, especially in the case of very few research articles on this topic in the healthcare industry from 2012 to 2022, it almost only focuses on implementation in other fields such as banking, retail, manufacturing, etc. Therefore, this study will partly address this gap, provide an overview and academic perspective on CSR, and help businesses implement CSR most sustainably.

2. LITERATURE REVIEW

2.1. Corporate Social Responsibility (CSR)

In recent years, CSR has changed in the direction of being integrated into the strategic business activities of enterprises (Arco-Castro et al., 2020). CSR is no longer just aimed at enhancing competitive advantage but it has become part of core business activities to promote innovation of company policies in all areas, with a focus area being the environment (García-Sánchez and Araújo-Bernardo, 2019). Cherian et al. (2019) measured CSR based on community, employees, environment, and governance factors. The research article by Okafor, Adeleye, and Adusei (2021) also used similar criteria such as environment, corporate governance, and employee relations, in addition, the author also used climate change, spending on CSR activities, and human rights. to measure CSR. In the study of Cavaco and Crifo (2014), the authors used the factors of human rights, community, corporate governance, environment, and human resources to measure CSR. Therefore, this research will measure CSR using the factors of environment, employee relations, corporate governance, human rights, and community.

2.2. Financial performance

Enterprise financial performance refers to the organization's financial results during operating period 1 and is often reflected in index accounting details in the main financial statements (Fwamba, 2017). Financial performance is very important for investors and creditors because it helps them analyze, compare, and evaluate business performance, thereby they can make investment or lending decisions most effectively. In addition, for managers, financial performance helps them have the deepest insight into the strengths and weaknesses of the business from which they can plan to adjust their operating methods to grow their business (Luther, 2023). Besides, financial performance is also a measure of the business's financial strength and credit reputation. When business performance is better, it proves that the company is making a lot of profits and is fully capable of paying loans, thereby attracting many domestic and foreign investors who can easily make loans, and vice versa (Luther, 2023). According to research on the link between CSR and financial success by Cherian et al. (2019) and Rahman and Naveed (2022), indicators such as ROA, ROE, and profit after tax were used for the study. ROA and ROE are the two most popular variables used by researchers in their articles (Cavaco and Crifo, 2014; Waworuntu, Wantah, and Rusmanto, 2014; Kamatra and Kartikaningdyah, 2015; Fabac, Calopa and Sestanj-Perić, 2016; Okafor, Adeleye, and Adusei, 2021; Rahman and Naveed, 2022). Therefore, this research will use the variables return on equity (ROE), profit after tax (PAT), and return on assets (ROA), and use the net profit margin (NPM) variable to measure financial performance.

2.3. Firm age

Firm age has been used a lot in previous research articles and the authors all use the company's age since its establishment to measure firm age (Homayoun et al., 2023; Rasheed, Mukhtar, and Jamil, 2022; Okafor, Adeleye and Adusei, 2021). Atmeh, Shaban, and Alsharairi (2020) used firm age as one of the control variables that can impact CSR. Sahraou and Kaboré (2021) studied the same topic as the above research articles and also used the control variable firm age to see how financial performance was affected by CSR. Singh and Chakraborty (2021) used firm age as a control variable to study and test the link between corporate social responsibility and corporate financial performance in developed economies.

2.4. Firm size

Firm size is also a typical and most commonly used control variable in CSR studies (Jayachandran, Kalaignanam, and Eilert, 2013; Hossain et al., 2015; Rasheed, Mukhtar, and Jamil, 2022). According to previous research articles, firm size is measured by the company's total assets (Cho, Chung, and Young, 2019; Liu, 2020; Zhang and Liu, 2023; Homayoun et al., 2023). Nawaiseh (2015) researched the relationship between CSR and financial performance, and the author used firm size as a control variable to assist in evaluating this link. Andi, Isnaeni, and Widiyanti (2019) believe that the size of the company will determine its ability to carry out social responsibility activities; the larger the company, the more resources it has to invest in CSR and bring profits for businesses. Therefore, the author used firm size as a control variable to study the impact of CSR on financial performance.

2.5. Leverage

The study on the relationship between CSR and the financial performance of listed companies in Vietnam used leverage to evaluate this relationship, and it shows that there is a relationship between CSR and debt level, calculated by debt to total assets (Ho and Yekini, 2014). Singh, Kabir, and Huang (2014) argue that companies can take advantage of financial leverage, but when this level is too high, it will lead to a decline in equity returns. Hou (2018) researched the relationship between CSR and sustainable financial performance with the control variable being financial leverage. Cho, Chung, and Young (2019) also used leverage as a control variable and it was measured by dividing total debt by the market value of equity. Sahraou and Kaboré (2021) use the degree of financial leverage to evaluate the impact of CSR on the financial performance of companies in France. The results of this study show that companies with lower levels of leverage have increasingly improved financial performance.

2.6. Book-to-market ratio

Xie (2015) uses book-to-market as a control variable to examine the association between CSR and financial performance. The results show that the higher the book-to-market, the less concerned the business is about social responsibility. Bird, Duppati, and Mukherjee (2016) in a study with the same topic on CSR and financial performance of listed companies in India also used the control variable as book-to-market (BM). In their study on the relationship between CSR and the financial performance of companies in Taiwan, Lin et al. (2019) also used the book-to-market ratio as a control variable. Cho, Chung, and Young (2019) also used the book-to-market (BM) index as one of the control variables in their research on the impact of CSR on the financial performance of businesses in Korea, and it is measured by dividing total equity by the market value of equity.

2.7. Hypothesis Development

2.7.1. Net profit margin (NPM) and Corporate Social Responsibility (CSR)

Kamatra and Kartikaningdyah (2015) examine how corporate social responsibility affects financial success through research in the mining and chemical industry, period 2009 to 2012, and demonstrated that CSR has a positive effect on net profit margin (NPM). Sekhon and Kathuria (2019) conducted research on the impact of CSR on the corporate profits of 137 leading companies in India during the period 2008 to 2017, the results demonstrate that CSR has no effect on net profit margin (NPM). Devie et al (2019) studied the relationship between CSR, financial performance, and risk of 40 companies in the natural resources sector listed from 2008 to 2016 in Indonesia. The authors demonstrated that CSR has a strong correlation with NPM. Nayak and Patjoshi (2020) showed that CSR and NPM have a positive relationship in their study on the correlation of CSR contributions to effective financial results. The research was conducted on companies in the automobile industry in the period from 2014, 2015 to 2017, 2018. Aritonang and Rahardja (2022) researched the impact of CSR on the financial performance of 123 companies in the non-cyclical and basic materials consumer industry, from 2015 to 2019. The results show that CSR has a positive effect extreme to NPM. Therefore, the following hypothesis is established:

H1: CSR has a positive relationship with net profit margin (NPM)

2.7.2. Profit after tax (PAT) and Corporate Social Responsibility (CSR)

Ojo, Ojo, and Onewo (2020) studied the relationship between CSR and after-tax profits of Nigerian listed companies in the banking and manufacturing industries for 10 years (2010 to 2019). The results showed that there was a positive relationship between CSR

and profit after tax. Lee and Yang (2021) conducted an assessment of the impact of CSR on the financial performance of companies in Taiwan over 4 years (from 2013 to 2017), it showed that CSR has a negative impact on profitability, which is measured by profit after tax. The study was conducted to evaluate and examine whether there is any relationship between CSR and the effective financial performance of businesses in Pakistan in the oil and gas industry by Rahman and Naveed (2022) over 6 years (2014 to 2019) show that a negative relationship is found between CSR and profit after tax (PAT). Therefore, the following hypothesis was developed:

H2: CSR has a negative relationship with profit after tax (PAT)

2.7.3. Return on Assets (ROA) and Corporate Social Responsibility (CSR)

Wagle (2020) showed that CSR has a negative impact on ROA in a study on the relationship between CSR and the financial performance of 27 commercial banks in Nepal, for about 4 years, from 2015 to 2019. Liu et al (2021) have proven that CSR has a positive impact on ROA through a study on the relationship between CSR and the financial performance of Fintech companies in the period from 2009 to 2018. Kludacz-Alessandri and Cygańska (2021) also showed that CSR had a positive effect on ROA for 219 companies in 32 countries in 2020 when researching CSR's effect on the energy industry's financial performance. Aziz and Haron (2021) also showed similar results to the above study, showing that there is a positive relationship between CSR and ROA. This is the result after the authors conducted a study on the impact of CSR Disclosure on the financial performance of 175 companies in Malaysia from 2007 to 2017. Rahman and Naveed (2022) conducted research in the oil and gas sector from 2014 to 2019 on the topic of the impact of CSR on corporate finances. The results show that CSR has a positive influence on ROA. Therefore, the following hypothesis was developed:

H3: CSR has a positive relationship with return on assets (ROA)

2.7.4. Return on equity (ROE) and Corporate Social Responsibility (CSR)

Kamatra and Kartikaningdyah (2015) conducted a study on the effect of corporate social responsibility on the mining and basic industrial chemicals company's financial performance in the period from 2009 to 2012, it shows the result that CSR does not affect ROE. Different from the above study, Szegedi, Khan, and Lentner (2020) showed that CSR has a positive relationship with ROE. This is the result of a research article on the impact of CSR on the financial performance of banks listed on the stock exchange for 10 years (from 2008 to 2018). Bag and Omrane (2020) with a study on CSR and its impact on the financial performance of 100 listed companies in India, shows that CSR and ROE have a positive relationship. Okafor, Adeleye, and Adusei (2021) found that CSR has a significant positive impact on ROE after conducting research on the impact of CSR on the financial health of businesses of technology companies in the United States during the period 2017 to 2019. Research by Rahman and Naveed (2022) also conducted on a similar topic but was conducted in the oil and gas industry in Pakistan, in the period from 2014 to 2019 also showed similar results to the above study, showing that CSR has a positive relationship with ROE. Aritonang and Rahardja (2022) conducted research evaluating CSR's impact on the financial success of companies in the consumer the non-cyclical and basic materials sector, from 2015 to 2019. The results showed that CSR has a positive impact on ROE. Therefore, the following hypothesis was posed:

H4: CSR has a positive relationship with return on equity (ROE)

3. RESEARCH METHOD

For this study, the researcher used all secondary data, starting from 2012 to 2022. This research sample includes information from 22 companies in the healthcare sector in Vietnam listed on two major stock exchanges, the Hanoi Stock Exchange (HNX) and the Ho Chi Minh Stock Exchange (HOSE). The regression model below evaluates the relationship between CSR and financial performance.

$$FPi,t = \alpha + \beta 1.1(ER)i,t-1 + \beta 1.2\,(ENV)i,t-1 + \beta 1.3\,(CGV)i,t-1 + \beta 1.4\,(HR)i,t-1 + \beta 1.5\,(COMM)i,t-1 + \beta 1.6\,(SIZE)i,t-1 + \beta 1.7\,(AGE)i,t-1 + \beta 1.8\,(LEV)i,t-1 + \beta 1.9\,(BM)i,t-1 + \xi i,t$$

In there:

FP: financial performance, which is measured by net profit margin (NPM), profit after tax (PAT), return on assets (ROA), and return on equity (ROE), are the dependent variable

α is the intercept

β1.1, β1.2, β1.3, β1.4, β1.5, β1.6, β1.7, β1.8, β1.9 are the slope coefficients

ξi,t: the error term

ERi,t-1, ENVi,t-1, CGVi,t-1, HRi,t-1, COMMi,t-1 are the independent variables

SIZEi,t-1, AGEi,t-1, LEVi,t-1, BMi,t-1 are the control variables

All data in this study are taken from financial statements, annual reports, audited development reports, and homepages of selected companies. Table 1 presents the definitions of the variables used in this study.

Table 1: Variables definitions

Variables	Description	Types	Sources
Net profit margin (NPM)	Net profit/revenue	Dependent	Kamatra and Kartikaningdyah (2015); Sekhon and Kathuria (2019); Devie et al. (2019); Nayak and Patjoshi (2020); Aritonang and Rahardja (2022)
Profit after tax (PAT)	Net profit before tax - operating expenses - interest - taxes	Dependent	Ojo, Ojo, and Onewo (2020); Lee and Yang (2021); Rahman and Naveed (2022)
Return on assets (ROA)	Net profit/total assets	Dependent	Wagle (2020); Liu et al (2021); Kludacz-Alessandri and Cygańska (2021); Aziz and Haron (2021); Rahman and Naveed (2022)
Return on equity (ROE)	Net profit/equity	Dependent	Kamatra and Kartikaningdyah (2015); Szegedi, Khan, and Lentner (2020); Bag and Omrane (2020); Okafor, Adeleye, and Adusei (2021); Rahman and Naveed (2022), Aritonang and Rahardja (2022)
Employee Relations (ER)	Ensure labor health and safety, welfare, compensation, training, and working hours for employees	Independent	Cavaco and Crifo (2014); Okafor, Adeleye, and Adusei (2021)
Environment (ENV)	Efficient energy use, environmental and climate change policy, waste and natural resource management.	Independent	Cavaco and Crifo (2014); Okafor, Adeleye, and Adusei (2021)
Corporate Governance (CGV)	Assess whether the business has female members on its board of directors	Independent	Cavaco and Crifo (2014); Okafor, Adeleye, and Adusei (2021)
Human rights (HR)	Promote diversity, equity, and inclusion, do not engage in acts of harassment, or discrimination based on race, region, religion, gender, or belief.	Independent	Cavaco and Crifo (2014); Okafor, Adeleye, and Adusei (2021)
Community (COMM)	Product quality and safety, philanthropy and community development, product sustainability, and efficient supply chains.	Independent	Cavaco and Crifo (2014); Okafor, Adeleye, and Adusei (2021)

Firm size (SIZE)	The natural log value of the company's total assets (lntotalasset)	Control	Cho, Chung, and Young (2019); Zhang and Liu (2023); Homayoun et al.(2023)
Firm age (AGE)	The number of years in operation since the company's founding	Control	Atmeh, Shaban, and Alsharairi (2020); Sahraou and Kaboré (2021); Rasheed, Mukhtar, and Jamil (2022); Homayoun et al.(2023)
Leverage (LEV)	Total liabilities/ total assets	Control	Ho and Yekini (2014); Hou (2018); Sahraou and Kaboré (2021)
Book-to-market (BM)	Total equity/ the market value of equity	Control	Xie (2015); Bird, Duppati, and Mukherjee (2016); Cho, Chung, and Young (2019)

Source: Author (2024)

4. RESULTS AND DISCUSSION

4.1. Data description

Table 2: Descriptive statistics

Variable	Obs	Mean	Std. dev.	Min	Max
NPM	242	0.0070	1.4203	-21.928	0.9179
PAT	233	93812.4	147487	-38909	988455
ROA	233	0.0852	0.0867	-0.4716	0.4227
ROE	233	0.1435	0.1280	-0.5858	0.7684
ER	217	0.9954	0.0679	0	1
ENV	217	0.8157	0.3887	0	1
CGV	217	0.8111	0.3924	0	1
HR	217	0.3088	0.4630	0	1
COMM	217	0.9539	0.2101	0	1
SIZE	233	13.2678	1.1297	9.8212	15.7611
AGE	242	31.7273	15.8533	0	64
LEV	233	0.3996	0.2018	0.0006	0.9143
BM	193	1.5892	2.0087	0.0001	14.5024

Source: Author (2024)

From Table 2, it can be seen that ER and COMM are the two issues that companies are most concerned about and account for the majority, with average scores of 0.9954 and 0.9539 respectively, much higher than the HR aspect (with an average score of 0.3088). Additionally, the average value of the ENV variable is 0.8157, and the lowest and highest values are 0 and 1, respectively, CGV also has little variation among the selected companies, with a standard deviation of 0.3924.

The NPM index of 22 companies in the healthcare sector listed on 2 major stock exchanges is 0.0070 million VND, with a standard deviation of 1,4203 million VND, showing a relatively large difference in performance between companies. Likewise, the ROA of the selected companies is 0.0852%, with a standard deviation of 0.0867%, and the average ROE is 0.1435%, with a standard deviation of 0.1280%. However, for PAT, the smallest value is -38,909 million VND and the largest value is 988,455 million VND, with a very large standard deviation of 147,487 million VND.

The average AGE of the 22 listed companies in the healthcare sector is 31,7273 years. In contrast, the average SIZE of the selected companies is 13,26738, and the lowest and highest values are 9,8212 and 15,7611, respectively. Similarly, the average BM index is 1.5892, the average leverage index is 0.3996, the smallest value is 0.0006, the largest value is 0.91463, and a relatively low standard deviation of 0.2018. From the above analysis, the researcher finds that companies with more developed financial status will invest more in CSR activities than companies with low financial performance.

4.2. Research Results

4.2.1. Pearson test

To test the correlation between coefficients, I used the Pearson test model, which shows the relationship between variables in the model. The model is meaningful when the correlation between variables is not too large, less than 0.05 (5%).

Table 3: Pearson test result

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) NPM	1.0000												
(2) PAT	0.0645	1.0000											
(3) ROA	0.1087	0.4210*	1.0000										
(4) ROE	0.1172	0.3194*	0.9182*	1.0000									
(5) ER	-0.0025	-0.0204	0.0481	0.0577	1.0000								
(6) ENV	0.1448*	0.1612*	0.2234*	0.2214*	0.1431*	1.0000							
(7) CGV	-0.0249	0.1670*	0.2260*	0.1641*	-0.0328	0.0438	1.0000						
(8) HR	0.057	0.4533*	0.3831*	0.2683*	0.0455	0.3177	0.2461	1.0000					
(9) COM	0.2972*	0.0705	0.2567*	0.2010*	-0.0150	0.4057	0.0624	0.1469	1.0000				
(10) SIZE	0.1438*	0.6086*	0.2517*	0.1891*	-0.1188	0.2980	0.2022	0.3032	0.2418	1.0000			
(11) AGE	0.0742	0.1567*	0.1996*	0.1972*	0.1200	0.2281	0.1197	0.3662	0.3392	0.0081	1.0000		
(12) LEV	-0.1123	-0.3506	-0.3565	-0.0917	0.09	-0.0077	-0.2004	-0.2690	0.0278	-0.2561*	0.1228	1.0000	
(13) BM	-0.0453	-0.2671	-0.2721	-0.1637	-0.0782	-0.1566	-0.3240	-0.3159	-0.1242	-0.1024	-0.0916	0.2065	1.0000

Note: If the significance level of autocorrelation between variables is less than 0.05, it will be marked (*).

Source: Author (2024)

The results of Table 3, show that the correlation coefficient between independent variables is relatively high, most of them are above 0.05. Therefore, this model has a multicollinearity phenomenon

4.2.2. Hausman test

Table 4: Hausman test results of equation (1)

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	Fixed	Random	Difference	Std. err.
ER	1.5795	0.2882	1.2913	.
ENV	-0.0454	0.0354	-0.0808	0.2892
CGV	-0.5196	-0.4024	-0.1172	0.3562
HR	-0.0721	-0.2374	0.1653	0.2807
COMM	0.8233	1.8544	-1.0311	0.4263
SIZE	0.6920	0.0963	0.5957	0.4237
AGE	-0.2032	0.0098	-0.2130	0.0638
LEV	-8.5456	-1.5759	-6.9697	1.2581
BM	-0.0983	-0.0107	-0.0876	0.0517

b = Consistent under H0 and Ha; obtained from xtreg.
B = Inconsistent under Ha, efficient under H0; obtained from xtreg.
Test of H0: Difference in coefficients not systematic
chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 32.82
Prob > chi2 = 0.0001
(V_b-V_B is not positive definite)
Source: Author (2024)

After running the Hausman test model, the results in equation (1) in Table 4 show that the p-value = 0,0001, less than 5% (0.05). Therefore, the fixed effects model will be more suitable to conduct research.

Table 5: Hausman test results of equation (2)

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	Fixed	Random	Difference	Std. err.
ER	-46026.54	-38485.9	-7540.61	4453.088
ENV	1184.147	-1975.42	3159.562	2192.608
CGV	7776.922	7103.537	673.3849	2694.134
HR	17171.03	19543.42	-2372.384	1860.062
COMM	-73766.48	-84225.2	10458.74	6306.956

SIZE	29238.72	43247.52	-14008.8	8213.309
AGE	3543.07	1681.165	1861.905	1446.341
LEV	-47000.79	-79210.4	32209.59	20643.91
BM	-2454.064	-2848.39	394.3214	479.4551

b = Consistent under H0 and Ha; obtained from xtreg.
B = Inconsistent under Ha, efficient under H0; obtained from xtreg.
Test of H0: Difference in coefficients not systematic
chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 7.17
Prob > chi2 = 0.6192
(V_b-V_B is not positive definite)
Source: Author (2024)

Different from equation (1), the Hausman test result in equation (2) in Table 5 produces p = 0.6192, greater than 0.05. Therefore, hypothesis H0 is accepted and the random effects model (REM) is chosen as the research model.

Table 6: Hausman test results of equation (3)

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	Fixed	Random	Difference	Std. err.
ER	0.0508	0.0345	0.0163	.
ENV	0.0300	0.0201	0.0099	0.0043
CGV	0.0457	0.0366	0.0091	0.0065
HR	-0.0032	0.0016	-0.0048	0.0040
COMM	-0.0222	0.0122	-0.0344	0.0093
SIZE	0.0466	0.0053	0.0413	0.0141
AGE	-0.0092	0.0004	-0.0096	0.0023
LEV	-0.2041	-0.1101	-0.0939	0.0364
BM	-0.0022	-0.0015	-0.0008	0.0009

b = Consistent under H0 and Ha; obtained from xtreg.
B = Inconsistent under Ha, efficient under H0; obtained from xtreg.
Test of H0: Difference in coefficients not systematic
chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 39.06
Prob > chi2 = 0.0000
(V_b-V_B is not positive definite)
Source: Author (2024)

In equation (3), the Hausman test results in Table 6 also show a p-value of less than 0.05 (0.0000). Similar to equation (1), hypothesis H0 is also rejected and the fixed effects model (FEM) is selected as the research model.

Table 7: Hausman test results of equation (4)

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	Fixed	Random	Difference	Std. err.
ER	0.0752	0.0448	0.0304	.
ENV	0.0512	0.0334	0.0178	0.0078
CGV	0.0590	0.0449	0.0141	0.0113
HR	-0.0085	-0.0047	-0.0037	0.0073
COMM	-0.0496	-0.0087	-0.0409	0.0156
SIZE	0.0573	0.0025	0.0549	0.0231
AGE	-0.0158	0.0005	-0.0163	0.0037
LEV	-0.2266	-0.0537	-0.1730	0.0601
BM	-0.0062	-0.0028	-0.0035	0.0015

b = Consistent under H0 and Ha; obtained from xtreg.

B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 34.46

Prob > chi2 = 0.0001

(V_b-V_B is not positive definite)

Source: Author (2024)

Similar to equations (1) and (3), the results of the Hausman test model for equation (4) in Table 7 also produce p value = 0.0001, less than 5%, so I also reject hypothesis H0 and choose the fixed effects model (FEM) as a model for research.

4.2.3. Lagrange test and Wald test

The Lagrange test will be used for the random effects model and the Wald test will be used for the fixed effects model.

a. Lagrange test

The Lagrange test is performed with the hypothesis: H0: The variance of the error across entities is unchanged. Stata is used to test the phenomenon of heteroscedasticity using the Lagrange test for equation (2) with the following results in Table 8:

Table 8: Lagrange test results for equation (2)

Breusch and Pagan Lagrangian multiplier test for random effects

pat[id,t] = Xb + u[id] + e[id,t]

Estimated results:

	Var	SD = sqrt(Var)
pat	2.53E+10	159036.6
e	1.72E+09	41479.49
u	1.30E+10	114127.4

Test: Var(u) = 0

chibar2(01) = 594.54

Prob > chibar2 = 0.0000

Source: Author (2024)

The results show that in equation (2), Prob > = 0, α=0.05, leading to the hypothesis H0 is rejected. This means that equation (2) causes the error variance to change across entities.

b. Wald test

The Wald test is also performed with the following hypothesis: H0: Variance across entities is unchanged. This study uses Stata to test the phenomenon of heteroscedasticity using the Wald test for equations (1), (3), and (4) with the following results in Table 9:

Table 9: Wald test results for equations (1), (3), and (4)

Equation (1)	Equation (3)	Equation (4)
Modified Wald test for groupwise heteroskedasticity in fixed effect regression model H0: sigma(i)^2 = sigma^2 for all i chi2 (22) = 1.3e+32 Prob>chi2 = 0.0000	Modified Wald test for groupwise heteroskedasticity in fixed effect regression model H0: sigma(i)^2 = sigma^2 for all i chi2 (22) = 2793.37 Prob>chi2 = 0.0000	Modified Wald test for groupwise heteroskedasticity in fixed effect regression model H0: sigma(i)^2 = sigma^2 for all i chi2 (22) = 5398.62 Prob>chi2 = 0.0000

Source: Author (2024)

The results show that hypothesis H0 is rejected when in both equations (1), (3), and (4), the resulting p-value coefficient is less than 0.05 (Prob > = 0). This shows that all three equations (1), (3), and (4) have heteroscedasticity.

4.2.4. Wooldridge test

Wooldridge test was implemented with the following hypothesis: H0: there is no serial autocorrelation. After running the Wooldridge test, the results are given corresponding to the four equations (1), (2), (3), and (4) as follows:

Table 10: Wooldridge test results of equation (1)

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(1,19) = 0.201
Prob > F = 0.6589

Source: Author (2024)

Table 11: Wooldridge test results of equation (2)

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(1,19) = 25.7051
Prob > F = 0.0001

Source: Author (2024)

Table 12: Wooldridge test results of equation (3)

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(1,19) = 0.425
Prob > F = 0.5223

Source: Author (2024)

Table 13: Wooldridge test results of equation (4)

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(1,19) = 0.004
Prob > F = 0.9528

Source: Author (2024)

Based on Table 11, equation (2) results in the coefficient Prob > F = 0.0001, less than 0.05, leading to hypothesis H0 being rejected and autocorrelation occurring in equation (2).

Contrary to the results in Equation (2), the Wooldridge test results of Equation (1), equation (3), and Equation (4) in Tables 10, 12, and 13 both have the value Prob > F > 5%, Prob > F = 0,6589, Prob > F = 0.5223, and Prob > F = 0.9528, respectively. This shows that there is no autocorrelation in equations (1), (3) and (4) because the hypothesis H0 is accepted.

4.2.5. Model testing results

In this study, to examine the impact of CSR on corporate financial performance, three regression methods for panel data include: ordinary least squares (OLS), fixed effects model (FEM), and random effects model (REM) were used. The results show that the fixed effects model (FEM) is suitable for most of the equations for research, only equation (2) is suitable for the REM after comparing all 3 regression models, OLS, FEM and REM, and Hausman test. Besides, the feasible generalized least square (FGLS) method will be used to overcome the defects of the model with the following results:

Table 14: Summary of data regression results of equations (1) and (2)

	Equation (1) (NPM)				Equation (2) (PAT)		
	OLS	**FEM**	**REM**	**FGLS**	**OLS**	**FEM**	**REM**
ER	0.288	1.580	0.288	0.0948	56344.3	-46026.5	-38485.9
	[0.18]	[1.01]	[0.18]	[0.07]	[0.48]	[-1.03]	[-0.86]
ENV	0.0354	-0.0454	0.0354	0.00244	-39556.0	1184.1	-1975.4
	[0.10]	[-0.10]	[0.10]	[0.04]	[-1.58]	[0.09]	[-0.16]
CGV	-0.402	-0.520	-0.402	-0.0956**	-36026.4	7776.9	7103.5
	[-1.33]	[-1.11]	[-1.33]	[-2.16]	[-1.63]	[0.58]	[0.54]
HR	-0.237	-0.0721	-0.237	-0.0168	75856.5***	17171.0	19543.4*
	[-0.78]	[-0.17]	[-0.78]	[-0.41]	[3.43]	[1.45]	[1.67]
COMM	1.854**	0.823	1.854***	-0.0703	-98882.9**	-73766.5***	-84225.2***
	[3.08]	[1.12]	[3.08]	[-0.14]	[-2.25]	[-3.48]	[-4.16]
SIZE	0.0963	0.692	0.0963	0.00434	77299.3***	29238.7**	43247.5***
	[0.89]	[1.58]	[0.89]	[0.25]	[9.76]	[2.33]	[4.55]
AGE	0.00977	-0.203***	0.00977	0.000572	2004.2***	3543.1*	1681.2
	[0.97]	[-3.15]	[0.97]	[0.44]	[2.71]	[1.91]	[1.45]
LEV	-1.576**	-8.546***	-1.576**	-0.386***	-107355.5**	-47000.8	-79210.4**
	[-2.28]	[-5.95]	[-2.28]	[-2.85]	[-2.13]	[-1.14]	[-2.22]
BM	-0.0107	-0.0983	-0.0107	-0.0128	-12423.4***	-2454.1	-2848.4
	[-0.18]	[-1.23]	[-0.18]	[-1.57]	[-2.79]	[-1.07]	[-1.27]
--_cons	-2.716	-0.907	-2.716	0.24	-859888.6***	-281062.8**	-392258.4***
	[-1.20]	[-0.20]	[-1.20]	[0.17]	[-5.20]	[-2.16]	[-3.26]
N	192	192	192	192	192	192	192
R-sqr	0.124	0.236			0.530	0.286	

Source: Author (2024)

Table 15: Summary of data regression results of equations (3) and (4)

	Equation (3) (ROA)				Equation (4) (ROE)			
	OLS	**FEM**	**REM**	**FGLS**	**OLS**	**FEM**	**REM**	**FGLS**
ER	0.0443	0.0508	0.0345	0.0844	0.0455	0.0752	0.0448	0.1
	[0.59]	[0.86]	[0.56]	[1.03]	[0.39]	[0.79]	[0.45]	[0.83]
ENV	0.00257	0.0300*	0.0201	0.00137	0.0132	0.0512*	0.0334	0.000311
	[0.16]	[1.78]	[1.23]	[0.15]	[0.53]	[1.88]	[1.28]	[0.02]
CGV	0.00680	0.0457**	0.0366**	-0.00426	0.00522	0.0590**	0.0449*	-0.00528
	[0.48]	[2.59]	[2.23]	[-0.63]	[0.24]	[2.08]	[1.72]	[-0.51]
HR	0.0205	-0.00322	0.00155	0.0151*	0.0136	-0.00848	-0.00474	0.0143
	[1.44]	[-0.21]	[0.10]	[1.86]	[0.61]	[-0.34]	[-0.20]	[1.15]
COMM	0.0345	-0.0222	0.0122	-0.00972	-0.00153	-0.0496	-0.00868	-0.032
	[1.22]	[-0.80]	[0.46]	[-0.41]	[-0.03]	[-1.11]	[-0.21]	[-0.85]
SIZE	0.00758	0.0466***	0.00532	0.0127***	0.0159**	0.0573**	0.00249	0.0184***
	[1.48]	[2.83]	[0.63]	[3.42]	[2.02]	[2.16]	[0.19]	[2.96]
AGE	0.00197***	-0.00920***	0.000411	0.00133***	0.00310***	-0.0158***	0.000517	0.00217***
	[4.13]	[-3.77]	[0.53]	[4.83]	[4.20]	[-4.02]	[0.43]	[5.00]
LEV	-0.145***	-0.204***	-0.110***	-0.159***	-0.0729	-0.227**	-0.0537	-0.0883**
	[-4.45]	[-3.77]	[-2.75]	[-7.23]	[-1.45]	[-2.60]	[-0.85]	[-2.50]
BM	-0.00483*	-0.00225	-0.00149	-0.000751	-0.00391	-0.00622	-0.00277	0.000257

	[-1.68]	[-0.75]	[-0.52]	[-0.44]	[-0.88]	[-1.28]	[-0.60]	[0.08]
-cons	-0.112	-0.233	-0.0483	-0.142	-0.212	-0.112	0.0108	-0.214
	[-1.05]	[-1.36]	[-0.37]	[-1.40]	[-1.29]	[-0.41]	[0.05]	[-1.36]
N	192	192	192	192	192	192	192	192
R-sqr	0.358	0.191			0.216	0.151		

Source: Author (2024)

Based on the results of Table 14, shows that only two variables, corporate governance (CGV) and leverage (LEV), affect the net profit margin (NPM) in equation (1). Meanwhile, for equation (2), the variables human rights (HR), community (COMM), firm size (SIZE), and leverage (LEV) are statistically significant at 10%, 5%, and 1% for the profit after tax (PAT) variable, the remaining variables are not statistically significant for the PAT variable.

The results of Table 15 show that in equation (3), there are 4 out of 9 variables that are statistically significant at the 10% level and 1% for the dependent variable ROA, including human rights (HR), firm size (SIZE), firm age (AGE), and leverage (LEV). Meanwhile, the variables employee relations (ER), environment (ENV), corporate governance (CGV), community (COMM), and book-to-market ratio (BM) are not statistically significant for ROA. For equation (4), only three variables, firm size (SIZE), firm age (AGE), and leverage, are statistically significant at the 1% and 5% levels for the dependent variable ROE, the remaining variables are not statistically significant for the ROE variable.

Based on the results obtained in the regression models above, the table of hypothesis testing results has been summarized below:

Table 16: Comments on the direction of impact

Variables	**Impact on NPM**	**Impact on PAT**	**Impact on ROA**	**Impact on ROE**
ER	No impact	No impact	No impact	No impact
ENV	No impact	No impact	No impact	No impact
CGV	Negative impact	No impact	No impact	No impact
HR	No impact	Positive impact	Positive impact	No impact
COMM	No impact	Negative impact	No impact	No impact
SIZE	No impact	Positive impact	Positive impact	Positive impact
AGE	No impact	No impact	Positive impact	Positive impact
LEV	Negative impact	Negative impact	Negative impact	Negative impact
BM	No impact	No impact	No impact	No impact

Source: Author (2024)

The regression model results in Table 16 show that the variables corporate governance (CGV) and leverage (LEV) have a negative impact on the net profit margin (NPM). This means that as the number of female directors on the board and the leverage ratio increase, the net profit margin decreases and vice versa. This result is completely consistent with the research hypothesis of Ningsih et al (2022). Besides, the remaining variables have no impact on NPM, which is consistent with the research results of Sekhon and Kathuria (2019) when the researchers said that there is no relationship between CSR and NPM. Thus, the results of this model are completely contrary to hypothesis 1 that CSR has a positive relationship with net profit margin.

Besides, company size and human rights have a positive impact on profit after tax (PAT). This means that the longer a company operates and the more it focuses on developing policies for female employees and preventing discrimination in the workplace, the more after-tax profits the business will earn and vice versa. This is consistent with the findings of Bihari and Pradhan (2011) and Ojo, Ojo, and Onewo (2020). However, leverage (LEV) and community (COMM) have the opposite impact on PAT, meaning that when the leverage ratio and activities contributing to society increase, the business's profit after tax will decrease and vice

versa. This result is consistent with the research of Babalola and Abiodun (2012), Lee and Yang (2021), and Rahman and Naveed (2022).

For the dependent variable ROA, the variables human rights (HR), firm size (SIZE), and firm age (AGE) all have a positive impact. This shows that the more years of operation and scale a business has, and the more invested in anti-racism, sexism, etc. policies, the higher the (ROA) and vice versa, similar to the research results of Pan et al (2014), Liu et al (2021), Kludacz-Alessandri and Cygańska (2021), Bogdan, Cristina, and Simona (2021), Aziz and Haron (2021), and Rahman and Naveed (2022). In contrast to the above three variables, leverage (LEV) has a negative impact on ROA, meaning that as the leverage ratio increases, the ROA index will decrease and vice versa, consistent with the research results of Hou (2018).

Finally, the two variables firm size (SIZE) and firm age (AGE) both have a positive impact on ROE. This shows that the longer a business operates and the larger its scale, the higher its return on equity (ROE) and vice versa. This result is consistent with the results of Wan Ahamed, Almsafir, and Al-Smadi (2014) and Andi, Isnaeni, and Widiyanti (2019). However, the leverage has the opposite effect on the ROE, meaning that as the leverage ratio decreases, the ROE index increases and vice versa. This is consistent with the research of Singh, Kabir, and Huang (2014) who said that when the leverage ratio is high, equity returns will decrease. In addition, Hou (2018) and Sahraou and Kaboré (2021) also showed research results that companies with low leverage ratios and many CSR activities will have improved financial performance. CSR variables including employee relations (ER), environment (ENV), corporate governance (CGV), human rights (HR), and community (COMM) all have no impact on ROE, which is similar to the research results of Kamatra and Kartikaningdyah (2015).

5. CONCLUSION

This research article studies the relationship between CSR and the financial performance of 22 healthcare companies in Vietnam in the period from 2012 to 2022. Using regression and testing models, the researchers find that CGV has a negative impact on NPM and has no impact on PAT, ROA, and ROE of healthcare companies in Vietnam. We also find that human rights (HR) has a positive impact on the profit after tax (PAT) and return on assets (ROA) of companies in the healthcare industry in Vietnam. Additionally, we also find that the community has a negative impact on profit after tax (PAT) and has no impact on net profit margin (NPM), return on assets (ROA), and return on equity (ROE).

From these results, there are policies that companies can apply later. First, businesses should set clear regulations and criteria for selecting female members on the board of directors and have a council to carefully check and review educational qualifications to avoid affecting decision-making and operational performance and reducing financial performance.

Second, healthcare businesses need to develop codes to promote human rights associated with CSR activities. From there, focus on training activities to improve the quality of the workforce. In addition, businesses also need to have policies to invite foreign experts to share practical experiences and knowledge from countries that have successfully applied them to help employees better understand CSR and realize the importance of CSR in business activities.

Third, businesses need to allocate investment costs to technologies for business activities appropriately, thereby optimizing production activities and business profits, and ensuring two goals: enhancing CSR activities and improving financial efficiency. Moreover, it also helps the company enhance its competitive advantage in the market, especially in the current digital age.

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