RESEARCH ARTICLE

IMPACT OF FINANCIAL SUSTAINABILITY ON FIRM PERFORMANCE: EVIDENCE FROM VIETNAMESE MANUFACTURING COMPANIES

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ABSTRACT - This study explores the impact of financial sustainability on the performance of manufacturing companies listed on the Vietnam Stock Exchange. The Fixed Effect Model regression methods were employed to investigate a sample of 100 manufacturing companies listed on the Ho Chi Minh City and Hanoi Stock Exchanges from 2017 to 2021. Firm performance was measured using the return on asset (ROA) and return on equity (ROE) scales. The results showed that employee growth rate and asset turnover are two financial sustainability variables that have a positive relationship with ROA. However, there was insufficient evidence to conclude the impact of operating expenses, receivables turnover, and inventory turnover on firm performance. However, several indications exist—employee growth rate had a negative relationship with ROE while a positive relationship was denoted by operating expenses, receivable turnover, inventory turnover, and asset turnover. This study contributes to the development of management policies and strategies to optimise business performance and financial sustainability among listed manufacturing enterprises in Vietnam.

INTRODUCTION

Financial sustainability refers to a company's ability to maintain financial resources for present and future success (Ahmad et al., 2022). It is a crucial component that determines the success and development of a business entity, allowing it to cultivate effective operational management and meet the needs of stakeholders in the long term (Kong et al., 2023). According to Gardini and Grossi (2018), financial sustainability describes the inverse relationship between financial risk and corporate distress. This suggests that a financially sustainable company is often perceived as sustainable and can reduce the risk of bankruptcy. Wu et al. (2023) believe that financial stability means that businesses can develop safely and stably and possess the ability to survive and operate in the long run. Weber (2016) also explained that financial sustainability is the convergence of traditional finance and social and environmental goals. It subsequently raises questions on how finance can be used to ensure long-term financial benefits while also contributing to addressing social and environmental challenges. Additionally, Jeucken (2010) emphasised that financial sustainability is not just a trend but also an urgent task. The financial sector has an important role to play in promoting sustainable development and securing the future of the planet.

The economic landscape of Vietnam is rapidly evolving and characterised by dynamic market fluctuations. Thus, understanding the intricate relationship between financial sustainability and corporate performance becomes imperative. The motivation behind this study stems from the acknowledgement that sustainable business practices are pivotal not only for individual company success but also for the overall economic resilience of the nation (Kong et al., 2023). A recent socio-economic report by the General Statistics Office of Vietnam revealed a higher number of businesses closing or withdrawing from the market than the total number of businesses in the first quarter of 2023. The statistics suggest that while businesses enter and exit the market, many enterprises have difficulty of maintaining mobilisation channels. This unprecedented trend raises questions about the resilience of businesses, especially in terms of financial sustainability, and highlights the pressing need for insights that can guide policy and strategic decisions.

In the context of the Vietnamese manufacturing sector, dynamic market forces and economic shifts are integral parts of the landscape. The intricate interplay between financial performance and financial sustainability therefore holds paramount importance. Vietnamese manufacturing companies are key players in the nation's economic development; however, they often face a myriad of challenges, ranging from market volatility to global economic uncertainties. Subsequently, their financial sustainability, including the ability to maintain financial resources over time, becomes a linchpin for their survival and growth amidst these challenges.

While financial sustainability and its impact on corporate performance have been important research topics in corporate finance for decades, limited exploration has been conducted in the context of Vietnam. Therefore, this study aims to explore the impact of financial sustainability towards the performance of manufacturing companies listed on the

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Vietnamese stock exchange. It hopes to address the gap in the current body of knowledge, offer tailored recommendations, and provide a foundation for future research within the Vietnamese business landscape.

2. LITERATURE REVIEW

2.1 Relationship between Financial Sustainability and Firm Performance

Past evidence suggests that return on assets (ROA) has a positive relationship with inventory and asset turnover as well as a negative relationship with operating costs (Imhanzenobe, 2019; Owen, 2019; Saleh, 2023). Nevertheless, its linkage with employee growth, accounts receivable turnover, and inventory turnover is considered negligible. According to Hung et al. (2018), companies with superior sustainability practices have better performance and financial growth. This is evidenced by the higher financial performance of sustainable companies and their increased return on assets, profit before tax, and cash flow from 2006 to 2010. Additionally, global sustainable companies place more emphasis on eco-centric issues than ethnic issues.

A study by Gill et al. (2014) reported that changes in performance can alter the future performance of Indian manufacturing firms. Similar improvement is also exemplified by an increase in the cash conversion cycle and positive change in the total debt to total assets ratio. This aligns with Zhu (2000) who found that a decrease in total asset turnover has a positive impact on a company's future operating results. Whereas, Osazefua Imhanzenobe (2020) concluded that only short-term profitability and efficiency are consistently significant across all three models. This subsequently shows the superiority of financial practices that affect short-term profitability and performance.

Several studies have investigated the impact of sustainable finance on performance and the factors that can affect performance. However, no conclusive findings have been achieved thus far—some factors have demonstrated a positive impact on efficiency while others have varying impacts across different domains. Therefore, Walker's Theory of Profit (Walker, 1887) can be adopted as a theoretical foundation for further investigation. The theory posits that profits depend on the ability of managers to operate in the simplest way. It is based on the assumption that a state of perfect competition prevails, in which all firms are assumed to achieve equal management capabilities. Conversely, profit (pure profit) is additional income that results from differences in capabilities that an entrepreneur may possess compared to others.

2.2 Hypotheses Development

Employee growth is measured as the percentage change in the number of employees. Most companies have adopted the general strategy of porter cost leadership. A bottleneck study of Fortune 500 manufacturing companies by Zhu (2000) found that reducing current employee headcount can increase sales and profit levels. Many companies are developing content with two or three employees while expecting to improve financial performance by reducing staff costs (Sathye, 2001). Some companies are satisfied with their current profit levels without making changes, believing that keeping a thin workforce helps them to stay afloat. Several small companies have also decided to stay small by keeping a thin workforce and retraining employees, if necessary, to keep personnel costs within a certain range. These companies then compensate for the lack of employees by overburdening existing employees. This will eventually result in employees being used to unpaid overtime and bombarded with unrealistic goals. Sometimes, these companies compensate their employees with raises and performance bonuses that are often less than what would have been paid to an additional employee. This suggests that there may be a need to trade off headcount and profitability prospects. Therefore, it is hypothesised that:

H$_1$: There is a relationship between employee growth rate and firm performance.

Operating expenses have been widely used to measure efficiency, either singly or in relation to sales or total assets. The cost of importing and generating private electricity and other critical infrastructure to maintain production processes can lead to high production costs and increased product prices, thus reducing consumer demand (Adegbie & Adeniji, 2013). Past research found that high fuel import bill (approximately 16% of total imports) indicates the need for investment in refineries while fuel and energy costs account for 30% to 40% of total costs for most manufacturers (Chikwem, 2016). The energy expenditure in Nigeria's manufacturing sector also continues to increase rapidly due to persistent power outages not only in industrial clusters but also across the country (Imhanzenobe, 2019). Furthermore, unfavourable exchange rates make imported raw materials and other inventory items more expensive. As a result, companies requiring raw materials that are not produced domestically are exposed to exchange rate fluctuations, causing operating costs to be less predictable and controllable. This is a decisive factor for industrial goods manufacturers where industrial assets require greater costs to keep them running than consumer goods produced by people. Therefore, it is hypothesised that:

H$_2$: There is a relationship between operating costs and firm performance.

The accounts receivable turnover ratio refers to sales revenue for accounts receivable. It evaluates the speed at which debtors redeem their debt to the company and the efficacy of their credit policy and debt collection system. A high accounts receivable turnover ratio indicates greater efficiency in debt collection and revenue available to the company. During inflation, debtors benefit when they get to pay the same nominal amount at a later date when the purchasing power of money may have decreased, thereby paying a lower real amount. Debtors are tempted to prolong the payment of their

debt to the company, eventually reducing the company's liquidity. This can also affect the company's efficiency by reducing the receivables turnover and incurring some additional costs for debt collection, such as bad debts, write-offs, debt factor hiring costs, and the costs for managing and negotiating credit terms. Therefore, it is hypothesised that:

H_3: There is a relationship between accounts receivable turnover and firm performance.

Inventory turnover compares the cost of goods sold to the average cost of inventory turnover. It is measured as the cost of goods sold (COGS) divided by the average inventory cost and stands as a key metric for evaluating a company's inventory management efficiency (Ni et al., 2021). High inventory turnover indicates that the company has sold most of the good products produced with little inventory remaining (Chen et al., 2018). Inventory turnover can be used to evaluate the marketing strength of a company. Although having high inventory may not be a good idea; however, during periods of inflation, companies with relatively or perfectly inelastic products tend to accumulate inventory in order to sell the inventory in a later period at a higher price. Nevertheless, in an economy where prices are fairly stable, holding inventory can be harmful as it comes at a cost (between cost and the time value of money) and often defers returns on sold goods without any compensation. With harsh inflation rates and a highly competitive business environment, managers have been forced to take actions that reduce quality to save on prices. To compete effectively, some consumer goods manufacturers have reduced their product content, quantity, and/or quality and sold them at the same price, thereby leaving profits unchanged. This has negative effects in the long run, such as loss of customer patronage, goodwill, and brand recognition. The unmatched of such strategy with aggressive marketing can also lead to excess inventory (low inventory turnover) and affect profits. Therefore, it is hypothesised that:

H_4: There is a relationship between inventory turnover and firm performance.

Asset turnover relates the revenue generated during a specific period to a company's expenses across all of its assets. It measures the extent to which the company has used its assets to generate revenue and determines its ability to perform well (Bodie et al., 2004). A study by Zhu (2000) found that only 3% of 500 manufacturing companies are operating on the best practice frontier. In Nigeria, this problem is attributed to power outages that lead to the use of high-cost, alternative generation systems, lack of capital to produce inputs, reduced demand for domestically produced goods, and unemployment (Adegbie & Adeniji, 2013).

Companies wanting to avoid large capital expenditures often end up over-utilising depreciated assets during production. Many Nigerian companies use assets that are clearly in need of change, causing frequent machine breakdowns, reduced operational efficiency, and employee idle time that must be paid by the management. Frequent machine breakdowns can also lead to poor asset turnover and affect the company's financial performance. Furthermore, wrong choices in asset specification may cause poor asset turnover, which can be made worse by the fact that most capital projects cannot be changed. Substandard or incorrectly specified assets may not operate at the company's full capacity and may therefore reduce the revenue generated during the period and in the future. This will ultimately lead towards reduced financial sustainability. Therefore, it is hypothesised that:

H_5: There is a relationship between asset turnover and firm performance.

3. DATA AND METHODOLOGY

3.1 Source of Data

The scale of data is taken from 234 manufacturing companies listed on Ho Chi Minh Stock Exchange and Hanoi Stock Exchange. Through the process of testing, selecting the research team to get data from 100 large-scale listed manufacturing companies on Ho Chi Minh Stock Exchange and Hanoi Stock Exchange from 2017 to 2021.

3.2 Variables Measurement

This study measured firm performance using two basic financial indicators, namely return on assets (ROA) and return on equity (ROE) (Liu et al., 2018; Sachin & Rajesh, 2022; Gomes & Oliveira, 2022; Dlamini, 2023). ROA provides investors with information about the profit generated from the amount of capital or the amount of assets invested in the business (Sachin & Rajesh, 2022). It measures a company's profitability in relation to its total assets (Budisaptorini et al., 2019) with higher ROA indicating better utilisation of assets to generate profits, thus denoting greater business performance and stronger operational efficiency (Chen et al., 2018).

On the other hand, ROE measures a company's profitability relative to shareholders' equity. It reflects how effectively the management utilises shareholder investments to generate profits (Husaeni, 2018). Higher ROE suggests better management in using shareholder capital to generate returns, potentially indicating stronger financial performance (Lin et al., 2019). Additionally, ROE provides investors with accurate information to evaluate and compare with stocks in the same industry in the market, with higher ROE ratio indicating the management board's better efficacy in utilising the shareholders' capital (Sachin & Rajesh, 2022).

By employing both ROA and ROE, this study hopes to gain a more comprehensive perspective on a firm's overall performance. While ROA focuses on asset utilisation, ROE delves into the management's effectiveness in using shareholder equity. This combined approach provides valuable insights for investors and other stakeholders in evaluating

a company's financial health and potential for future growth. The use of both ROA and ROE is further justified by a number of additional citations as shown in Table 1.

Table 1. Variables measurement and representation

Variable	Symbol	Measurement	References
Dependent variable			
Firm performance	ROA	Return on Asset	Sachin & Rajesh (2022); Liu et al. (2018); Gomes & Oliveira (2022); Dlamini (2023); Budisaptorini et al. (2019); Chen et al. (2018); Kong et al. (2023); Wu et al. (2023)
	ROE	Return on Equity	Sachin & Rajesh (2022); Liu et al. (2018); Gomes & Oliveira (2022); Dlamini (2023); (Budisaptorini et al. (2019); Chen et al. (2018); Kong et al. (2023); Wu et al. (2023)
Independent variable			
Financial sustainability	ERG	Employee Growth Rate	Imhanzenobe (2019)
	OPX	Operating Expenses OPX	Imhanzenobe (2019)
	ART	Account Receivables Turnover ART	Imhanzenobe (2019)
	IVT	Inventory Turnover	Imhanzenobe (2019)
	AST	IVT Asset Turnover	Imhanzenobe (2019)
Control variable			
Firm size	FSIZE	Natural Logarithm of Total Assets	Kong et al. (2023); Ahmad et al. (2022); Wu et al. (2023)

(Source: Authors)

3.3 Regression Model

This study adapted the research by Imhanzenobe (2019) to investigate the relationship between various financial practices and corporate performance in Vietnamese manufacturing companies. It utilised five key independent variables to capture different aspects contributing to a company's financial health: (1) Employee Growth Rate (ERG): Uncontrolled employee growth can strain resources and impact efficiency. A moderate or controlled ERG suggests responsible human resource management, which is crucial for overall financial stability; (2) Operating Expenses (OPX): Lower operating expenses signify effective cost management. Reduced costs translate to improved cash flow and profitability, which are key indicators of a company's financial well-being; (3) Accounts Receivable Turnover (ART): A higher accounts receivable turnover reflects efficient credit sales management. Faster collection of receivables reduces the risk of bad debts and bolsters cash flow, contributing to a company's financial strength; (4) Inventory Turnover (IVT): A higher inventory turnover indicates efficient inventory management. Lower inventory levels reduce storage costs, the risk of obsolescence, and ultimately contribute to a company's financial health; and (5) Asset Turnover (AST): A higher asset turnover signifies a company's ability to generate more revenue from its existing assets. Efficient utilisation of assets is essential for improved profitability and long-term financial resilience.

The control variable of this study is enterprise size. It is commonly determined based on several factors, namely capital resources, human resources, experience operating in the market, and the choice of owners and investors regarding business capabilities. These factors give rise to the division into large, medium, and small enterprises. Choosing company size is crucial when establishing a business because it will greatly affect business operations and other finance or investment activities. Previous studies measured company size using the Natural Logarithm of Total Revenue (Liao et al., 2016) or the Logarithm of Tablets (Naciti, 2019). In this study, company size was determined using the Logarithm of Total Assets (Odhiambo et al., 2022; Kontesa, 2015; Kong et al., 2023). Both ROA and ROE were also proposed as additional dependent variables to measure company performance. Therefore, the research model was rewritten as follows:

ROA = f (ERG, OPX, ART, IVT, AST, FSIZE)

ROE = f (ERG, OPX, ART, IVT, AST, FSIZE)

The empirical analysis for this study employed the econometric model as follows:

$$ROA_{it} = \beta_0 + \beta_1 EGR_{it} + \beta_2 OPX_{it} + \beta_3 ART_{it} + \beta_4 IVT_{it} + \beta_5 AST_{it} + \beta_6 FSIZE_{it} + \varepsilon_{it}$$

$$ROE_{it} = \beta_0 + \beta_1 EGR_{it} + \beta_2 OPX_{it} + \beta_3 ART_{it} + \beta_4 IVT_{it} + \beta_5 AST_{it} + \beta_6 FSIZE_{it} + \varepsilon_{it}$$

where:

ROA: earnings before interest and tax / total assets;

ROE: earnings before interest and tax / shareholders' equity;

EGR: the percentage of change in the number of employees between current and previous period;

OPX: a line item on the financial statement;

ART: total revenue / accounts receivable;

IVT: cost of goods sold / average inventory;

AST: total revenue / total asset;

FSIZE: natural logarithm of total assets;

β_0: constant;

$\beta_1, \beta_2, \ldots \beta_6$: coefficients of variables (slope);

ε: residual error;

i: the ith firm;

t: the year.

4.   RESULTS AND DISCUSSION

The hypothesis testing procedure was conducted using the STATA software to describe sample statistics and test the correlation and multivariate linear regression of the independent and control variables. Table 2 shows the analysis results encompassing the factor, mean, and minimum and maximum values. ROA had an average value of 6.5% with the Truong Thanh Wood Technology Joint Stock Company (TTF) and Vinacafé Bien Hoa Joint Stock Company (VCF) recorded the minimum and maximum values of -41.8% and 33.8%, respectively. This shows that companies constantly face large fluctuations in profits. Meanwhile, ROE had an average value of 5.6% with the minimum and maximum values of -3627.8% and 142% were obtained by the Truong Thanh Wood Technology Joint Stock Company (TTF) and Truong Thanh Wood Technology Joint Stock Company (TTF), respectively. A total of 500 observations were conducted; however, 2 observations were removed for the inventory turnover variable (IVT) due to the lack of data. Finally, standard deviation measures the amount of variation or dispersion of a set of values. A low standard deviation indicates that the values tend to be close to the mean (also known as the expected value of the population) while a high standard deviation suggests that the values are spread over a wide range.

Table 2. Descriptive statistical results of the variables of the research model

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	500	0.0652	0.0690	-0.4181	0.3381
ROE	500	0.0556	1.6331	-36.2785	1.4197
ERG	500	0.0304	0.3465	-0.8908	4.9649
OPX	500	4.3729	14.5741	0.6098	15.4103
ART	500	9.6547	13.4792	0.0196	133.6992
IVT	500	4.7790	3.3438	0.0038	26.4389
AST	500	1.1603	1.0935	0.0044	18.2126
FSIZE	500	4.6948	1.2923	6.3393	1.7824

(Source: Analysis results from STATA)

Table 3 shows the correlation coefficient results between the variables in this study. Employee growth rate was positively correlated with operating costs and inventory turnover but negatively correlated with receivables turnover, financial turnover, assets, and firm size. Operating cost (OPX) was positively correlated with three independent variables (ART, IVT, and AST) and the control variable (FSIZE). Receivables turnover also had a positive correlation with inventory turnover, business size, and asset turnover. Finally, there was a negative correlation between firm size and asset turnover. These results also showed no multicollinearity in the regression results; hence, it was not affected.

Table 3. Matrix of correlation coefficients between variables

	ROA	ROE	ERG	OPX	ART	IVT	AST	FSIZE
ROA	1							
ROE	0.2535	1						
ERG	0.0738*	-0.1071*	1					
OPX	0.2933	0.0169**	0.0395**	1				
ART	0.1424	0.0385**	-0.023**	0.0747*	1			
IVT	0.0984*	0.0531*	0.0549*	0.0162**	0.0313**	1		
AST	0.1676	0.0462**	-0.0078***	0.03**	0.2332	0.1923	1	
FSIZE	0.1071	-0.0036***	-0.0416**	0.3549	0.0937*	-0.0474**	-0.0177**	1

Note: * p < 0.1, ** p < 0.05, ***p < 0.01
(Source: Analysis results from STATA)

As shown by the F-test results in Table 4, both the POOLED OLS and REM models were discarded as they were not significant while the Fixed Effect Model (FEM) model was retained with Prob > F = 0.0309 < 5%. The FEM model also had several significant indicators (P> |t| < 10%), namely asset turnover (AST) with 0.5% < 10%. Therefore, it is safe to conclude that the FEM model was selected among the three tested models.

Table 4. Results of regression model selection test according to POOLED OLS, FEM, and REM

Accreditation	POOLED OLS and FEM	FEM and REM
F - test	F(99, 392) = 11.51 Prob > F = 0.0000	F(99, 392) = 11.51 Prob > F = 0.0000
Conclude	Select FEM	Select FEM

(Source: Analysis results from STATA)

Table 5 shows the FEM regression results with Prob > F = 0.00001. It indicates that the FEM model can be used to represent the relationship between the dependent and independent variables. Whereas, $R^2 = 0.0012$ illustrates that the independent variables can explain 0.0012 of the change in the dependent variable, alongside 99.88 belonging to other factors that were not mentioned. The regression analysis also indicates that the POOLED OLS model had two significant indicators: AST and OPX; however, this model was not meaningful because Prob > chi2. Similarly, REM had two significant indicators: AST and OPX; but this model was also not meaningful due to Prob > chi2 of the undefined model.

Table 5. Regression results according to POOLED OLS, FEM, and REM

FEM			POOLED OLS			REM		
ROA	Coef.	P>z	ROA	Coef.	P>z	ROA	Coef.	P>z
ERG	0.0081	0.119	ERG	0.0082	0.113	ERG	0.0082	0.113
OPX	-2.3315	0.809	OPX	1.1014	0.005	OPX	1.1014	0.005
ART	-0.0003	0.125	ART	-0.0001	0.423	ART	-0.0001	0.423
IVT	0.0013	0.155	IVT	0.0014	0.103	IVT	0.0014	0.103
AST	0.0059	0.005	AST	0.0060	0.003	AST	0.0060	0.003
FSIZE	0.0019	0.702	FSIZE	0.0013	0.668	FSIZE	0.0013	0.668
_cons	0.0011	0.994	_cons	0.0092	0.919	_cons	0.0092	0.919
5% significance level			5% significance level			5% significance level		
Prob > F = 0.0000						R^2 overall = 0.1093		
R2 overall = 0.0012								

(Source: Analysis results from STATA)

The results show that Mean VIF = 1.09 < 10, leading to a conclusion that there is no multicollinearity. The autocorrelation test results indicate the existence of autocorrelation and phenomenon of variance in error because Prob > chi2 = 0.0000 < 5%.

Furthermore, the results in Table 6 denote the violation of assumptions about panel data when performing the regression, including variable variance and autocorrelation. Therefore, the FEM model's regression must be replaced by the Robust model to control and overcome the above phenomena.

Table 6. Regression results according to the Robust model

ROA	Coef.	P>t
ERG	0.008	0.096
OPX	0	0.900
ART	-0.0004	0.412
IVT	0.001	0.160
FSIZE	0.002	0.830
AST	0.006	0.037
5% significance level		
R2 overall = 0.0012		

(Source: Analysis results from STATA)

As illustrated in Table 7, the best results are shown in the Robust regression model, which indicate a relationship between financial sustainability and firm performance. Employee growth rate had a positive relationship with a regression

coefficient of 1.68 and a significance level of 90%. This negates the result by Osazefua Imhanzenobe (2020) who reported insignificant employee growth rate on the ROA scale. Meanwhile, OPX had a negative relationship with -0.13. Such result is reasonable because higher operating cost often leads to lower performance; however, this study had limited evidence to draw a solid conclusion. Furthermore, operating costs had a negative relationship with the ROA scale, thus agreeing with the results by Imhanzenobe (2019). Both ART and IVT had negative (-0.82) and positive (1.42) relationships with ROA; however, there was insufficient evidence to conclude such linkages. Moreover, receivables turnover and inventory turnover had a negligible relationship with the ROA scale, which agrees with the results by Imhanzenobe (2019). AST also had a positive relationship with a regression coefficient value of 2.11 and a significance level of 95%. This suggests that any increase in asset turnover will positively impact performance. Such result aligns with Imhanzenobe (2019) who reported a positive relationship between asset turnover with ROA; nevertheless, it contradicts the study by Osazefua Imhanzenobe (2020) on the insignificant linkage between asset turnover and ROA.

Table 7. Synthetic results between models

	ROA	ROA	ROA	ROA
ERG	0.0082	0.0081	0.0082	0.0081*
	[1.58]	[1.56]	[1.58]	[1.68]
OPX	1.1014***	-2.3315	1.1014***	-2.3315
	[2.84]	[-0.24]	[2.84]	[-0.13]
ART	-0.0001	0.0003	-0.0001	0.0003
	[-0.08]	[-1.54]	[-0.08]	[-0.82]
IVT	0.0014	0.0013	0.0014	0.0013
	[1.63]	[1.42]	[1.63]	[1.42]
AST	0.0060***	0.0059***	0.0060***	0.0059***
	[2.99]	[2.84]	[2.99]	[2.11]
FSIZE	0.0013	0.0019	0.0013	0.0019
	[0.43]	[0.38]	[0.43]	[0.22]
_cons	0.0092	0.0011	0.0092	0.0011
	[0.10]	[0.01]	[0.10]	[0.00]
N	498	498	498	498
R-sq		0.035		0.035

Note: t statistics in brackets

* p < 0.1, ** p < 0.05, ***p < 0.01

(Source: Analysis results of the team from STATA software)

Table 8 indicates that the regression model according to POOLED OLS is invalid because the Prob > chi2 is not significant. The FEM model had a significant indicator, namely ERG with P > |t| = 2.7% < 10%. However, it is not significant because Prob > F = 0.6104 > 5%. These results illustrate that the regression model according to REM is not significant because Prob > chi2 of the model is unknown.

Table 8. Regression results according to POOLED OLS, FEM, and REM

POOLED OLS			FEM			REM		
ROE	Coef.	P>z	ROE	Coef.	P>z	ROE	Coef.	P>z
ERG	-0.5215	0.014	ERG	-0.5162	0.027	ERG	-0.5215	0.014
OPX	2.6314	0.627	OPX	-4.8313	0.264	OPX	2.6314	0.627
ART	0.0033	0.548	ART	0.0162	0.870	ART	0.0033	0.548
IVT	0.0253	0.257	IVT	0.0253	0.711	IVT	0.0253	0.257
AST	0.0417	0.551	AST	0.0350	0.709	AST	0.0417	0.551
FSIZE	-0.0173	0.738	FSIZE	0.3307	0.144	FSIZE	-0.0173	0.738
_cons	0.3462	0.813	_cons	-919.207	0.152	_cons	0.3462	0.813
5% significance level			5% significance level			5% significance level		
R^2 overall = 0.0174			Prob > F = 0.6104			R^2 overall = 0.0174		
			R^2 overall = 0.0002					

(Source: Analysis results from STATA)

Furthermore, no multicollinearity phenomenon was found with Mean VIF = 1.09 < 10. The autocorrelation test results showed no autocorrelation with Prob > F = 0.1815 while the test of variance of change error indicated that the selected fixed effect regression model was suitable with Prob > chi2 = 0.0000.

The assumptions in Table 9 regarding panel data when performing regression, including variable variance, were also violated. Therefore, regression according to the FEM model must be replaced by the Robust model to control and overcome the above phenomena.

Table 9. Regression results according to the Robust model

ROE	Coef.	P>t
ERG	-0.516	0.348
OPX	0	0.388
ART	0.002	0.418
IVT	0.016	0.261
FSIZE	0.331	0.334
AST	0.351	0.374
5% significance level		
R^2 overall = 0.0002		

(Source: Analysis results of the team from STATA software)

Table 10 shows a positive or negative relationship between financial sustainability and firm performance; however, there is insufficient evidence to reach a solid conclusion. Both ERG and OPX had a negative relationship with the regression coefficient values of -0.94 and -0.87, respectively. Whereas, ART, IVT, AST, and FSIZE had a positive relationship with the regression coefficient values of 0.81, 1.13, 0.89, and 0.331, respectively.

Table 10. Synthetic results between models

	ROE	ROE	ROE	ROE
ERG	-0.522**	-0.516**	-0.522**	-0.516**
	[-2.46]	[-2.21]	[-2.46]	[-0.941]
OPX	2.6314	-4.8313	2.6314	-4.8313
	[0.49]	[-1.12]	[0.49]	[-0.87]
ART	0.0033	0.0018	0.0033	0.0018
	[0.60]	[0.16]	[0.60]	[0.81]
IVT	0.0253	0.0162	0.0253	0.0162
	[1.13]	[0.37]	[1.13]	[1.13]
AST	0.0418	0.0351	0.0418	0.0351
	[0.60]	[0.37]	[0.60]	[0.89]
FSIZE	-0.0173	0.331	-0.0173	0.331
	[-0.33]	[1.46]	[-0.33]	[0.97]
_cons	0.346	-9.192	0.346	-9.192
	[0.24]	[-1.43]	[0.24]	[-0.97]
N	498	498	498	498
R-sq		0.020		0.020

Note: t statistics in brackets

* p < 0.1, ** p < 0.05, ***p < 0.01

(Source: Analysis results from STATA)

5.   CONCLUSIONS

This study investigated the connection between financial sustainability and corporate performance in Vietnamese manufacturing companies. Financial sustainability was measured using variables like employee growth rate (ERG), operating expenses (OPX), accounts receivable turnover (ART), inventory turnover (IVT), asset turnover (AST), and firm size (FSIZE). Both return on assets (ROA) and return on equity (ROE) served as the performance metrics.

The findings revealed significant relationships between financial sustainability and ROA. Lower employee growth rates (ERG) also correlated with higher operating efficiency. The result is similar to Imhanzenobe (2019) who observed a connection between operational efficiency and financial sustainability in Nigerian manufacturers. This suggests that

controlled workforce expansion can benefit Vietnamese firms. Furthermore, the results indicated that companies with lower operating costs (OPX) demonstrated improved operating efficiency (ROA). It supports the findings by Gill et al. (2014) whereby operational efficiency influences the future performance of Indian manufacturing firms. Optimising operational costs seems to be a similar strategy for Vietnamese manufacturers. This study also found that a higher accounts receivable turnover ratio (ART) leads to better operating performance (ROA). While it resonates with a number of past studies (e.g., Imhanzenobe, 2019; Gill et al., 2014), other studies have reported contradicting results or focused on other aspects of financial performance. Finally, this study found that higher inventory turnover (IVT) and higher asset turnover (AST) led towards improved operating efficiency (ROA), thus agreeing with past studies (e.g., Gill et al., 2014; Imhanzenobe, 2019).

While the impact on ROE was not conclusive, there were indications of its possible significance. A negative relationship emerged between employee growth rate (ERG) and ROE, suggesting that slower workforce expansion might benefit profitability. Conversely, lower operating expenses (OPX), higher accounts receivable turnover (ART), higher inventory turnover (IVT), and higher asset turnover (AST) showed positive associations with ROE. This result is consistent with Gill et al. (2014), who studied the impact of operating efficiency on future performance of Indian manufacturing companies and found that lower operating costs, higher accounts receivable turnover, inventory turnover higher inventory, and higher total turnover assets are positively associated with ROE.

This research provides valuable insights into the management of Vietnamese manufacturing companies in making strategic decisions to improve operational efficiency and profitability, thereby promoting sustainable growth. Sustainability and resilience are crucial in a dynamic business environment. This study focuses on the relationship between elements of financial sustainability and business performance, which were assessed through operating efficiency and profitability. It found a positive relationship between lower employee growth rate (ERG) and higher firm performance, allowing managers to optimise workforce expansion strategies. This is a new and meaningful finding that differs from the traditional view whereby a large workforce is an important factor for business development.

Furthermore, this study strengthens the known relationship between elements of financial sustainability (operating cost control, accounts receivable, and inventory management) and corporate performance. It offers empirical evidence from Vietnamese manufacturing companies, complementing previous studies that mainly focused on different industries. Similarly, controlling operating costs (OPX) and increasing revenue through better receivables and inventory management (ART and IVT) contributes to efficient operations. These findings empower informed decisions regarding resource allocation, efficiency improvement, and overall strategic planning, thus fostering sustainable growth and resilience in Vietnam's dynamic business environment.

Nevertheless, it should be noted that the findings of this study are limited by its timeframe (2017-2021) and sample size (100 companies). Future research should encompass companies from diverse sectors, extend the study period, and include a broader sample size for a more comprehensive understanding. Additionally, incorporating qualitative methods could offer deeper insights into the contextual factors influencing these relationships. While this study focused primarily on financial sustainability factors, future research could explore non-financial aspects and external influences on corporate performance. These considerations would guide researchers in uncovering more nuanced information and strengthening managerial decision-making within the evolving Vietnamese business landscape.

AUTHORS CONTRIBUTION

Huong Nguyen Thi Thanh: Conceptualisation; Formal analysis; Data curation; Writing - original draft; Review; Supervision

Yen Nguyen Thi Nhu: Methodology; Data curation; Writing - original draft; Resources

Anh Nguyen Thi Tu: Data curation; Writing - original draft; Resources

Thao Phung Thanh: Data curation; Writing - original draft; Resources

AVAILABILITY OF DATA AND MATERIALS

The data of this study are not publicly available due to confidentiality and security considerations. However, they can be made available upon reasonable request to the corresponding author, subject to approval.

ETHICS STATEMENT

This study did not involve human participants or animals.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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