

-RESEARCH ARTICLE-

## FACTORS AFFECTING PERFORMANCE OF SMALL AND MEDIUM-SIZED ENTERPRISES IN VIETNAM

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—Abstract—

The paper aims to determine the factors affecting the performance of Vietnam's small and medium-sized enterprises (SMEs) in the Ho Chi Minh City area from 2009 to 2019. The authors examine seven statistically significant variables that positively affect SMEs' performance at 5% by using the quantitative method (ordinary least squares regression model - pooled OLS, fixed effect model, random effect model, and generalized least squares). These variables are as follows: firm age, firm size, leverage ratio, revenue growth, gross domestic product (GDP) growth, inflation rate, and quality of local governance. Moreover, the study also applies the trade-off theory, SMEs using the out resources from banks and other outsiders lead to efficient firm performance such as revenue growth and using higher financial leverage will result in higher firm performance including saving up on taxes and improved business efficiency. Furthermore, there is the existence of homoscedasticity and no-autocorrelation in the model when using generalized least squares. These tests confirm that the model estimation is both unbiased and reliable. One of the most significant contributions of this study to the existing literature on the subject is the confirmation that macroeconomic and firm-specific variables affect the performance of SMEs. The results are highly variable from an econometric standpoint, both, in the long and short run.

**Keywords:** SMEs, performance, ROE, FGLS, Vietnam.

JEL Classification: D20, L25

## 1. INTRODUCTION

Small and medium-sized enterprises (SMEs) are the fastest growing business sector in many countries, including developing countries, as evidenced by the fact that they are the growth engine of many emerging economies, or least developed countries (Savlovski & Robu, 2011). The Organization for Economic Cooperation and Development (OECD) estimates that SMEs make up 90% of businesses and employ 63% of the world's workforce (Munro, 2013). According to the Asian Development Bank-ADB (2015) report, SMEs account for a large proportion of the total number of businesses in a country, region, and globe-wide, potentially employing more than 50% of the total workforce. The number of social workers and large volumes of jobs for workers globally (up to 65%). Concerning economic growth, many statistical results worldwide demonstrate the critical role of SMEs in contributing to the economic growth of the region/country. SMEs contribute about 50% of GDP and represent many areas of business: 50% is distributive trade, 10% in manufacturing, 10% in services, and 30% in agriculture.

Past studies have identified a number challenges confronting SMEs in a globalized environment (Mwika, Banda, Chembe, & Kunda, 2018; Subhan, Mehmood, & Sattar, 2013). SMEs have low mortgage assets, which leads to difficulties in accessing capital

from outside (Kamal & Flanagan, 2014; Lampadarios, 2015; Muriithi, 2017). In addition, the management and operation capacity of managers or business owners is often lacking in knowledge and experience in terms of firm operation or conflicts of interest (El Kalak & Hudson, 2016; Kamal & Flanagan, 2014; Muriithi, 2017). In addition, SMEs are often family-led business ventures, therefore, there are some barriers in management wherein the owner often assumes the management role (Islam, Khan, Obaidullah, & Alam, 2011). In addition, SMEs often have insufficient market information due to lack of investment in technology, and therefore they do not have economies of scale to compete with large enterprises (El Kalak & Hudson, 2016; Kamal & Flanagan, 2014). Besides, Kamal and Flanagan (2014) also said that SMEs operating in rural areas will find it difficult to recruit workers, especially skilled and specialized sources. In addition, according to Mahzan and Yan (2014); Mahzan (2014), Muriithi (2017), several policy and legal barriers such as business establishment regulations, tax laws, etc. also make it difficult for small and medium enterprises to realize their own potential. In addition, SME's face several challenges in the emerging market, including a lack of managerial capabilities and difficulties accessing quality management and technology (Mwika et al., 2018; T.-L. Nguyen, 2019; Wafa, Noordin, & Kim-Man, 2005).

In addition, Vietnamese SMEs face additional constraints, including a lack of capital, a low level of management, reliance on manual labor, obsolete production technology lines, and a lack of competitiveness (Tran & Nguyen, 2019). As with other emerging and developing economies, Vietnam's SME sector faces some international integration constraints. Currently, market challenges, lack of competitiveness, weakness in technology, difficulties in accessing capital, and limitations in human resources make it difficult for SMEs to perform at their best. (Tuan, 2020; Vu, Nguyen, & Ngo, 2020). According to T.-L. Nguyen (2019), SMEs must place a premium on management competence to succeed. Otherwise, SMEs will fail. In addition, Vietnamese SMEs fail to pay considerable attention to business operations and risk management (Ha Le & Tran, 2018). In addition, the lack of experienced human resources, management, and administration capacity is also one of the major factors that make small and medium enterprises in Vietnam unable to meet their long-term development (B. Nguyen, Mickiewicz, & Du, 2018)

In Vietnam, in recent years, SMEs have made important contributions to socio-economic development. The number of small and medium enterprises accounts for about 97% of the total number of enterprises operating in Vietnam, contributes over 45% to the national GDP and about 30% to the total budget revenue, and employs approximately 5 million employees (Investment, 2020). SMEs have close links, exploit, and mobilize all potentials of localities, create a healthier competitive market, create positive spillover effects for the economy (Vu et al., 2020). Therefore, in the current business management context, the evaluation of efficient performance, such as performance measurement, is an essential requirement (Bititci, Carrie, & McDevitt, 1997; Koufopoulos, Zoumbos,

Argyropoulou, & Motwani, 2008), providing valuable information that allows managers to monitor performance results, progress reports, and accurately identify challenges to business (Waggoner, Neely, & P. Kennerley, 1999). The importance of finance for the growth of SMEs, especially SMEs' financial structure has been under-explored compared to the large firms (S. Kumar & Rao, 2015). In fact, financial constraints have almost twice the effect on the annual growth of small firms when compared to large firms (Beck, Demirgüç-Kunt, & Maksimovic, 2005). Moreover, several studies demonstrate SMEs' consequential role in the economic development and growth of countries. However, in terms of empirical assessment, majority of past studies look at the performance of SMEs at the microeconomic (organizational) level, explaining the relationships of SMEs' performance with their internal environment factors or with a combination of internal and external factors.

The primary objective of this study is to ascertain the factors affecting the performance of Vietnamese SMEs from 2009 to 2019 in the Ho Chi Minh City area. To accomplish this goal, the study addresses the following question: "What factors influence the performance of SMEs in the Ho Chi Minh City area?" The research is novel and unique in that it examines the performance of SMEs from a new angle, employing a macroeconomic perspective and using firm-specific variables.

## **2. LITERATURE REVIEW AND EMPIRICAL STUDIES**

### **2.1 Literature Review**

SMEs broadly includes both micro and small and medium enterprises. According to Muriithi (2017) and Tuan (2020), there is no universally accepted definition for small and medium-sized businesses. Therefore, each country and organization have its own SMEs definition. Tewari, Skilling, Kumar, and Wu (2013) state that when identifying small and medium-sized businesses, governments and organizations frequently use the following primary criteria: number of employees; annual revenue/assets/level of investment; and industry of operation (ownership).

The Small Business Administration (SBA) defines small and medium-sized businesses (SMEs) in the United States as those with fewer than 500 employees and an annual revenue of less than \$7 million (for industry production revenue below 35.5 million). Similarly, Canada defines SMEs as businesses with fewer than 500 employees and annual revenue of less than \$50 million. The European Union defines SMEs as businesses with fewer than 250 employees and an annual revenue of fewer than 50 million euros or a balance sheet total of fewer than 43 million euros. These countries and organizations classify small and medium-sized businesses based on their employee count and revenue/assets. Meanwhile, the World Bank classifies small and medium-sized businesses based on a broader range of loan size criteria. WB defines small and medium-sized businesses as those with fewer than 300 employees, less than \$15 million in assets or annual sales, and a loan size of less than \$1 million (less than \$2 million in

advanced countries). To define SMEs in the context of Vietnam, according to the Government's Decree 39/2018/ND-CP dated March 11, 2018, small and medium-sized enterprises are classified according to two sets of criteria: their field of operation and numbers of employees, annual revenue, and income; or/and capital (Government, 2018).

According to Hashim and Abdullah (2000), small and medium-sized enterprises frequently share the following characteristics: the board of directors is not independent (business managers are typically business owners); capital is contributed primarily by an individual or a small group of individuals with economic and blood ties, and the operating area is small. In addition, the business is typically relatively small in comparison to the industry. As a result, small and medium-sized businesses frequently have a straightforward operating structure, as the owner frequently doubles as the enterprise manager (Adams, Khoja, & Kauffman, 2012; Lampadarios, 2015). According to Lampadarios (2016), there are several differences between SMEs and large firms regarding capital contribution, board of director independence, and ownership. These characteristics enable SMEs to gain market penetration advantages by anticipating customer needs and trends (Keskin, 2006). In addition, due to its small size, it is adaptable in terms of its operation models and can therefore, address risks or capitalize on opportunities (Eggers, 2020). Finally, due to the organization's compact structure, business owners are frequently the executives who oversee the swift and flexible execution of price, market share, and customer decisions (Eggers, 2020; Keskin, 2006).

Small and medium-sized businesses contribute significantly to economic and social cohesion by creating jobs and supporting national economic growth (Keskgn, Gntürk, Sungur, & Kgrgg, 2010; R. Kumar, 2017; Muriithi, 2017). Small and medium-sized enterprises contribute to the growth of private ownership and business skills, create jobs, are adaptable to changing market supply and demand conditions, diversify economic operations, and contribute significantly to export activity (Keskgn et al., 2010). Small and medium-sized enterprises have made significant contributions to socio-economic development in recent years in Vietnam. Small and medium-sized enterprises create synergies, exploitations, and mobilizations of their potential communities. Thereby, fostering a more competitive market and generating a positive spillover effect on the economy (Vu et al., 2020). Small and medium-sized enterprises will continue to play a critical role in developing the national economy in the coming years, promoting innovation and innovation activities (T.-L. Nguyen, 2019).

Theoretically, firm performance is defined as the process of optimizing the organization's and stakeholders' profits to meet the needs of a group of affected individuals through the organization's activities (Nnamani, Onyekwelu, & Ugwu, 2017). Measuring performance is critical in today's business management environment (Bititci et al., 1997; Koufopoulos et al., 2008), as it enables managers to effectively monitor results, progress reports, and accurately identify business problems (Waggoner et al.,

1999). Thus, research shows that performance plays an important role in corporate governance, which is the basis for managers to use for formulating policies aimed at improving the business performance of the enterprise. However, through the review of studies in Vietnam, it was found that the number of studies focusing on SMEs is limited (Q. N. Nguyen & Mai, 2011) (Vu et al., 2020) and in particular, there is no research focusing on SMEs in Ho Chi Minh City. Besides the research of B. Nguyen et al. (2018) also study the impact of quality factors.

Most past studies focus on examining the impact of internal factors in enterprises and yield only inconsistent results. Factors such as enterprise size and revenue growth rate generally have a positive impact on performing enterprises (Đặng, 2015; Nguyễn, 2020; Q. N. Nguyen & Mai, 2011) however, in a separate study focusing on oil and gas enterprises, no such statistical significance is found (Tùng, 2016). Some additional factors are also found to have the same impact as financial structure (Doan, 2010). Besides, factors that negatively affect performance include capital structure and the ratio of long-term assets to total assets (Đặng, 2015; Nguyễn, 2020), the ratio of expenses to operating income (Nguyễn, 2020), financial structure factors and receivables' management (Tùng, 2016).

Business performance is measured by different metrics based on three perspectives: accounting, marketing, and operations. However, for a long time, managers worldwide have used financial evaluation (from an accounting perspective) to represent corporate performance. For example, Neely (2002) identify most techniques and methods for evaluating corporate performance based on financial aspects in use during the early 20th century. In this study, for measuring firm performance, the authors use the accounting-based (financial performance) model. It clarifies how the measure of performance that reflects results of governance activities takes precedence over market metrics (marketing perspective) when the relationship between corporate governance and firm performance is studied (Hutchinson & Gul, 2004). In addition, many researchers often use profitability indicators when measuring business efficiency, namely financial performance, including Return on Assets (ROA), Return on Capital. Equity (ROE), the Dividend rate on share price (D.Y.), Return on Sales (ROS), Return on Investment (ROI), Gross profit margin, Earnings Per share (EPS), Extraordinary Earnings, Operating Cash Flow (OCF) Etc. Among them, according to research by Al-Matari, Al-Swidi, and Fadzil (2014), two indicators reflecting operational efficiency in terms of accounting are commonly used by researchers i.e. ROA (accounting for 46%) and ROE (accounting for 27%).

However, in this paper, the authors use ROE as a measurement of SMEs' performance. Because ROE is a two-part ratio that combines the income statement and balance sheet, and net income is compared to shareholders' equity. The figure represents the total Return on equity capital and demonstrates the firm's ability to profit from equity investments. In other words, it quantifies the profits generated by each dollar of



shareholders' equity. A company has a high stable ROE that can be interpreted as demonstrating effective capital allocation. This ratio varies according to the size and risk appetite of the business. Besides, the study applies the trade-off theory first proposed by [Kraus and Litzenberger \(1973\)](#) which states that a firm's capital structure is determined through the balance between benefits and costs of debt to evaluate using efficient resources of SMEs business. Given the character of SMEs, there are some challenges such as capital, liabilities, and opportunities in using their own resources. According to this theory, high financial leverage will help businesses save a large amount in taxes and improve business efficiency. This theory shows a positive relationship between capital structure and firm performance ([Strebulaeu, 2007](#)).

## 2.2 Empirical Studies

Similarly, [Vătavu \(2014\)](#) uses OLS, fixed and random effect models, and the Generalized Method of Moments (GMM) to discover that size affects firm profitability positively, whereas debt to equity is found to have a negative effect. [Berger and Bonaccorsi di Patti \(2006\)](#) prove that leverage increase has a beneficial effect on firms' profitability in the U.S banking sector.

[Abdissa and Fitwi \(2016\)](#) explore the factors affecting the performance of SMEs in the manufacturing, trade, and service sectors in the Bench Maji, Sheka, and Kefa zones. The study employs a variety of research methods. First, a proportional number of samples from the study area was selected using stratified simple random sampling. Second, we gathered data from both primary and secondary sources. Their results have shown that the following nine factors are statistically significant: Poetical; Social; Land available; Technological factor; Infrastructural factor; Marketing factors; Financial factor; Management factor; Entrepreneurial factor. Finally, [Odusanya, Yinusa, and Ilo \(2018\)](#), conducting a GMM analysis on 114 non-financial firms in Nigeria between 1998 and 2012, found a positive relationship between size and profitability but a negative relationship between leverage and profitability.

[Matar, Al-Rdaydeh, Al-Shannag, and Odeh \(2018\)](#) examine the impact of macroeconomic and firm-specific factors on corporate performance. Conducted between 2007 and 2016, this review uses a sample of Jordanian industrial and service firms. Macroeconomic factors such as Gross Domestic Product (GDP), inflation rate (INF), and interest rate (I.R.) are used to demonstrate macroeconomic factors. In contrast, firm-specific factors such as firm size, financial leverage, investment, liquidity, and sales growth have been used for the firm-specific factors demonstration. As a result, the resulting organizational performance can be assessed using the Return on Asset (ROA) and Market to Book Value metrics (MBV). In addition, panel data regression is used to examine the relationship between the factors mentioned above and corporate performance. The subsequent findings indicate that GDP and INF affect corporate performance, whereas I.R. has a negligible effect. By contrast, only the accounting-based measure ROA is influenced by firm-specific variables. As a result, these findings

have helped solidify existing knowledge pertaining to the factors affecting the organizational performance of publicly traded Jordanian firms. Moreover, a firm's grasp and effective use of this information enables implementing strategies aimed at achieving and sustaining economic growth.

Additionally, [Ibhagui and Olokoyo \(2018\)](#) state that the adverse effect of debt on firm performance is most significant for small businesses. The evidence of a negative impact diminishes as the business grows, eventually disappearing as the business grows and the firm grows. This research was based on a sample of 101 publicly traded companies in Nigeria for the period between 2003 and 2007. Other related literature has also adequately addressed firm performance and its impact on the stock market ([Chen & Ibhagui, 2019](#)). They found that R & D has a positive effect on firm performance. After evaluating the relationship between research and development (R & D) and firm performance from 2002 to 2017, we used the ordinary least square (OLS), Fixed, and Random Effects Models on 476 firms listed on Nasdaq. As corporations that rely on internet and digital technologies appear to be the global stock market's driving forces, R & D is becoming more attractive for businesses and has assumed a critical role in ensuring the success and sustainability of businesses.

[Cicea, Popa, Marinescu, and Cătălina Ștefan \(2019\)](#) examine the effect of specific economic and social factors on small and medium-sized businesses' short and long-term performance (SMEs). The performance of SMEs is quantified using their value-added (V.A.), expressed as a percentage of the total V.A. generated by enterprises. The study focuses on European Union (E.U.) member countries that the authors selected using a cluster analysis procedure. Three types of tests are determined short- and long-term influences: stationarity, cointegration, and causality between the indicators identified as influencing factors and the variable measuring SME performance. The research is novel and unique in that it approaches the performance of SMEs from a new angle, employing an econometric framework within a macroeconomic context. The results are varied from an econometric standpoint, both in the long and short run, but they also have an economic explanation. Their findings show that only four of the nine variables affecting SMEs' performance have not unidirectional causal relationships with it, such as the Corruption Perceptions Index (CPI), Funds absorption rate (FAR), the Unemployment (U.R.), and GDP. Additionally, cointegration relationships occur more frequently (in the long run), and the coefficients resulting from the estimation of regression equations, applied to the series' residuals, can be interpreted with a confidence level of 90% to 95%.

[Tunyi, Agyei-Boapeah, Areneke, and Agyemang \(2019\)](#) investigate the relationships between firms' internal capabilities, national governance quality (NGQ), and performance in Africa using a dataset of 11,183 firm-year observations (1,490 unique firms from 15 African countries over 17 years). Their study shows how the interconnections between firms' internal and external environments influence corporate performance. Some variables include the ratio of cash flow from operating activities



minus investment costs of fixed assets over total assets; leverage ratio; liquidity ratio; firm size; firm age; property plant and equipment; effective management; market size; GDP Growth, and other national macroeconomic variables. To be specific, they discover that (1) firms' internal capabilities (as measured by financial resource availability and growth prospects) are critical enablers of performance in both weak and strong institutional environments, (2) individual firms perform well in environments where their peers perform well, and (3) NGQ directly improves aggregate firm performance and, in turn, individual firm performance. The findings emphasize the critical role of financial resource availability and growth prospects at the firm level in determining corporate success in this challenging institutional environment.

[Qalati, Yuan, Khan, and Anwar \(2021\)](#) discuss how dynamic business environment has increased competition among SMEs, necessitating active interaction between owners, and internal and external stakeholders. Thus, this study aims to examine the effect of technology, organization, and environment on SMEs' performance. Additionally, it considers the mediating effect of social media adoption. Items are developed to quantify the various purposes for which social media is used in organizations, thereby allowing for social media usage measurement. This article conducts an empirical investigation using a closed-ended questionnaire. We observe and analyze 423 responses using a quantitative method called structural equation modeling. Study findings indicate that technology, organization, and environment all contribute significantly to SME performance. More importantly, social media adoption positively mediates the relationship between technology, organization, environment, and performance of small and medium-sized businesses. Additionally, the study assists organizations in recognizing the benefits of social media use and clarifies the rationale for an organization's investment in social media.

### 2.3 Empirical studies

On the basis of previous studies, this paper identifies a number of factors that affect SMEs' performance. These factors are:

- **Firm age:** firm age refers to the duration of an entity's existence. Hence the study uses the year of incorporation as the definition of the age of the company. Firm age is defined as the number of years since the company's incorporation, even though some believe that listing age should be used to define the firm's age ([Shumway, 2001](#)). According to this author, listing age is more cost-effective because the listing is a watershed moment in the life of the business. [Jovanovic \(1982\)](#) concludes that business owners and/or managers must invest time and effort into learning about their real business opportunities. Typically, younger firms are more proactive and have a more nuanced understanding of the risks associated with the various investment alternatives that arise ([Lumpkin & Dess, 1996](#); [Shane & Venkataraman, 2000](#)). [Stierwald \(2009\)](#) has demonstrated that firm age has a positive effect on profitability. While [Salman and](#)

Yazdanfar (2012); Mehari and Aemiro (2013) have shown that the age of a firm has an inverse relationship with profitability.

The proposed hypothesis is that firm age affects SMEs' performance positively.

- **Firm size:** The term "firm size" refers to "a firm's capability and the variety and number of manufacturing capabilities or the quantity and variety of services that a firm can offer its customers concurrently" (Luttmer, 2010). Exogenous variables such as firm size have frequently been used to explain financing decisions (Michael J Barclay, Smith, & Watts, 1995; Michael J. Barclay & Smith Jr., 1995). Dang, Li, and Yang (2018) analyze three firm size measures using natural logarithms: total assets, total sales, and market value of equity. According to Hall and Weiss (1967), size is in fact associated with higher profit rates. Additionally, a number of authors (Gschwandtner, 2005; Hardwick, 1997; Wyn, 1998) assert that increased firm size is necessary for increased profitability. Larger firms have a greater capacity to benefit from economies of scale; a greater capacity to diversify their activities and products; and a greater capacity to implement strategies aimed at increasing potential competitors' barriers to entry.

Vijayakumar and Tamizhselvan (2010) discover a positive correlation between firm size and profitability. The authors use a variety of different measures of size (sales and total assets) and profitability in their study, which are based on a simple semi-logarithmic specification of the model (profit). Similarly, Lee (2009) also examines the relationship between firm size and profitability.

Therefore, we suggest the following hypothesis in this study: size has a positive effect on SMEs' performance.

- **Financial leverage:** Leverage ratio is an indicator of optimal capital structure, showing that banks have equity ratios and creditors. Leverage ratios are used to determine the degree of financial risk assumed by a business. The debt-to-assets ratio indicates the proportion of assets financed by debt by comparing total liabilities (short-term + long-term debt) to total assets (Drake & Fabozzi, 2010). Financial leverage in the industry will be measured using commonly used leverage ratios, such as the gearing ratio (percentage), the debt equity ratio (percentage), and the debt equity ratio. The ratio of total liabilities to total assets is referred to as leverage (Akhtar, Javed, Maryam, & Sadia, 2012). It can be viewed as complementary to equity holders' residual claim. However, leverage may not be a reliable indicator of a firm's near-term default risk (Rajan & Zingales, 1995).

Onaolapo and Kajola (2010); Salim and Yadav (2012); and Iavorskyi (2013) found that there is a relationship between leverage ratio and financial performance of a firm. However, depending on the circumstances of a particular country, the coefficient of linear expansion of leverage ratio on firm performance may be positive or negative.

As a result, the author proposes the hypothesis that leverage ratios have a positive effect on the performance of SMEs.

- **Liquidity ratio of firm:** Liquidity ratios provide insight into a business's ability to meet its immediate obligations. Liquidity measures a company's ability to meet its short-term obligations using assets that can be converted into cash the quickest. The current ratio and the quick ratio are two of the most frequently used liquidity ratios (Drake & Fabozzi, 2010). According to Fama and Jensen (1983) and Myers and Rajan (1995), when firms have an excess of liquidity, managers can invest in projects that maximize their personal gains, reducing the firm's profitability. However, Ang (1991) concludes that excessive liquidity negatively influences SME profitability because of SMEs' ownership and management. Deloof (2003) and Honjo and Harada (2006) demonstrate the importance of SME liquidity for increased SMEs' profitability.

Based on the above discussion, liquidity ratio impacts SMEs' performance positively.

- **Investment on fixed assets:** Firms' productive capacity is enhanced through investment in fixed assets such as land, buildings, plant and machinery, fixtures and fittings, and motor vehicles. Profits can be generated by investing in these assets over the long term. This category of assets does not change frequently, and they are acquired to increase production and sales. Therefore, assets play a significant role in determining a firm's efficiency and profit margin. Since a business acquires plant and machinery, as well as other productive fixed assets, in order to generate sales (Olatunji & Adegbite, 2014). As a result, the efficiency of fixed asset use should be measured in terms of sales. Pandey (1999) asserted that the fixed assets turnover ratio reflects a firm's efficiency in utilizing its fixed-asset investment. Additionally, it indicates the sufficiency of sales concerning capital expenditure on fixed assets. Khalid (2012) investigated the relationship between proxies for asset quality management and the profitability nexus. The multiple regression model was used to determine and confirm there is a positive correlation between bank asset quality and operating performance. Moreover, according to Matar et al. (2018) and Tunyi et al. (2019), investment on PPE is measured by Cash flows from investment on fixed assets divided by total assets of SMEs.

The hypothesis is proposed as follows: investment on PPE has inverse relationship to SMEs' performance.

- **Revenue growth:** Revenue growth can be defined as an increase in the average annual sales of a business's products or services (Matar et al., 2018). Revenue growth is a necessary condition for businesses to succeed. This is the process of amassing assets such as capital, labor, facilities, and investment to expand business activities. Obviously, enterprises with higher revenue growth rates than the industry average are typically those with industry leadership, large-scale assets, and, as a result, stable profitability and increased activity ("Factors Affecting Profitability of Vietnamese Real Estate Firms: Employing Fixed Effect and Random Effect Model," 2020). The growth rate of a

variable is the percentage change in that variable over a specified period. Growth is typically defined for investors as compound annual growth in revenue, earnings, dividends, or even macro corporate concepts such as gross domestic product (GDP) and retail sales. The growth prospects for the company's investment on fixed assets will influence its financing decisions (Eka, 2018). Khatab, Masood, Zaman, Saleem, and Saeed (2011) demonstrated that revenue growth increases ROA and Tobin's Q while decreasing ROE. Bseides, Lechner, Soppe, and Dowling (2016) and Parida, Lahti, and Wincent (2016), all support the conclusion that revenue growth influences firm performance.

The proposed hypothesis is revenue growth affect the performance of SMEs positively.

#### - **Macro-economic factors:**

**First, gross domestic product (GDP):** GDP is a macro factor affecting organizations participating in the financial market. GDP growth is defined as the annual percentage growth of gross domestic product at market prices based on a constant local currency (Waqas et al., 2017). As a result, economic growth is positively related to net income (Tuyêt, 2017). GDP has a significant positive effect on ROA's business performance (Matar et al., 2018). Hailegebreal (2016); Linh (2020) conducted research on the beneficial effect of GDP on the performance of firms, including SMEs.

The hypothesis is proposed as follows: GDP has positive relationship to SMEs' performance.

**Inflation:** along with GDP, inflation is another factor that affects firms' performance significantly. The inflation rate is the annual percentage growth of several popular indexes of money prices, most commonly measured by the percentage increase in the consumer price index (Investment, 2020). The inflation rate represents the growth rate of the price level of the economy. Research by Chaibi and Ftiti (2015) has noted that macroeconomic factors have a significant impact on the economic environment where business entities and business entities are involved in currency activities. Also, Mileris (2012) found that macroeconomic factors also influence the quality of loan portfolio management in banks, besides GDP, inflation, interest rates, money supply, index of the manufacturing industry. Matar et al. (2018) observe a similar inverse relationship between inflation and the return on assets (ROA) of service and industrial enterprises in Jordan from 2007 to 2016. Ehlers (2007); Sitharam and Hoque (2016) and Ipinnaiye, Dineen, and Lenihan (2017) discover that inflation has an effect on SMEs' performance.

Therefore, the hypothesis is proposed as follows: inflation has negative effect on SMEs' performance.

**The interest spread:** The interest rate is the amount (fee) charged by the lender to the borrower (Crowley, 2007). In other words, interest is the cost of borrowing money. Money supply and demand determine the interest rate (Keynes, 1960). According to Ho

and Mohd-Raff (2019), interest rates have a positive effect on operating efficiency. Zulfiqar and Din (2015) also report on the beneficial effect of interest rates in terms of operating efficiency (ROA, ROE) (2015). Zeitun, Tian, and Keen (2007) make a similar statement in their 1989–2003 study of 167 firms in Jordan. This is because higher interest rates make it more difficult for businesses to obtain loans, which influences the operation of the business. Sitharam and Hoque (2016) discover that interest rates influence the performance of small and medium-sized businesses. Nyumba, Muganda, Musiega, and Masinde (2015), Abdullahi and Sulaiman (2015); Rokas (2012) have all demonstrated that interest rates negatively affect the performance of SMEs.

Hence, the proposed hypothesis is that the interest spread impacts on SMEs' performance negatively.

**The national governance quality:** Huther and Shah (2005) describe governance as “a multifaceted concept encompassing all aspects of the exercise of authority through formal and informal institutions in the management of the resource endowment of a state”. Local governance refers to the way in which local stakeholders interact with each other in order to influence the outcomes of public policies (Bovaird, 2003). From a local perspective, B. Nguyen et al. (2018) examine aspects of local governance that influence the performance of more than 300,000 SMEs in Vietnam from 2006 to 2012. They use a new economic institution/transaction cost framework. As with Davidsson and Henrekson (2002), Stenholm, Acs, and Wuebker (2013); Charron and Lapuente (2013), the findings indicate that the quality of local governance has a significant effect on enterprise performance, with small firms being more influenced than large firms (Du & Mickiewicz, 2016).

Therefore, the hypothesis is suggested that national governance quality affect SMEs' performance positively.

### 3. METHODOLOGY AND PROPOSED MODEL

#### 3.1 Methodology

This study uses panel data that has been regressed using four methods: pooled OLS, FEM, REM, and FGLS, all of which are implemented in Stata 20. A model with constant coefficients, such as the pooled regression model, includes both, intercepts, and slopes. At the same time, the fixed-effect model captures differences in the regression model's constant and intercept terms that vary across cross-sectional units. In this model, the intercept term represents the fixed firm effect. To determine which is the most appropriate regression method, the F test must be used (if the p-value of the FEM model is less than 5 per cent, the FEM model is selected).

Individual effects are distributed randomly across cross-sectional units in a random effect model, and the regression model is specified with an intercept term representing an overall constant term to capture the individual effects (Adamson & Seddighi, 2000).

The Hausman test is commonly used to determine whether to use a FEM or REM model (if the p-value of Hausman test is less than 5 percent, then select the FEM model). Following the appropriate model selection, tests of variance change are conducted (using the Modified Wald test for the FEM model and the Breusch-Pagan Lagrangian test for the REM model) (Wooldridge, 2002). If a model for autocorrelation and variance variation exists, the FGLS (Feasible Generalized Least Squares) model used in this model can control both, the autocorrelation and the heteroskedasticity phenomena.

### 3.2 Samples

The primary source of the data is taken from Ho Chi Minh Stock Exchange (HOSE). Information is carefully collected from 300 SMEs listed on the HOSE from 2009 to 2019. Out of the 180,000 SMEs in Ho Chi Minh city, 300 SMEs fully met the sample size criteria and were determined based on the following formula of Yamane (1967).

$$n = \frac{N}{1 + Ne^2}$$

n: the number of samples to be determined for the study

N: population

e<sup>2</sup>: the level of precision

As a result, all other listed firms for which did not meet the requirement were eliminated. The criteria included (1) revenues; (2) numbers of employees during the sample period.

### 3.3 Proposed Model

The proposed model is as follows:

$$roe_{it} = \alpha_0 + \sum \alpha_i specific\_variables_{it} + \sum \alpha_k Macroeconomics_{it} + \varepsilon \dots \dots \dots (1)$$

The dependent variable used for the study is firm performance measured by an accounting-based measurement; Return on equity (ROE) is defined as the Net Income divided by total equity.

The proposed model will be modified from the Equation [1] as follows:

$$roe_{it} = \alpha_0 + \alpha_1 age_{it} + \alpha_2 size_{it} + \alpha_3 lev_{it} + \alpha_4 liq_{it} + \alpha_5 ppe_{it} + \alpha_6 rev_{it} + \alpha_7 gdp_{it} + \alpha_8 inf_{it} + \alpha_9 int_{it} + \alpha_{10} pic_{it} + \varepsilon \dots \dots \dots (2)$$

The details of each variable in Model [2] are explained concretely in Table 1. In which, the dependent variable (roe) and the firm related independent variables are determined from the financial statements. Other independent variables stem from World Bank and General Statistics Office of Vietnam.



Table 1. Summary the Variables in The Model

No.	Variable(s)	Index	Explanation	Sources
<b>Dependent variable</b>				
1	Return on equity	roe	net profit/total stockholders' equity	
<b>Independent variables</b>				
2	firm age	age	Age is calculated as one plus the difference between the investigation year and the firm's birth year.	Loderer & Waelchli (2009); Tunyi et al. (2019)
3	firm size	size	The log of the ratio of the firm's assets	Mwangi & Murigu (2014); Agyei-Boapeah et al. (2018); Matar et al. (2018); Tunyi et al. (2019)
4	leverage ratio	lev	total debts/total assets	Roden & Lewellen (1995); Hadlock & James (2002); Margaritis & Psillaki (2010); Matar et al. (2018); Vaidya & Patel (2019)
5	liquidity ratio	liq	measured by current ratio (current assets/ current liabilities)	French & Taborda, (2018); Matar et al. (2018); Tunyi et al. (2019)
6	Investment on fixed assets	ppe	Cash flows from investment on fixed assets /total assets	Matar et al. (2018); Tunyi et al. (2019)
7	Revenue growth of firm	rev	Logarithm differences of firm's sales revenues	Matar et al. (2018)
8	gross domestic product growth	gdp	$gdp = \frac{gdp_t - gdp_{t-1}}{gdp_{t-1}}$	Matar et al. (2018); Tunyi et al. (2019)
9	inflation rate	inf	$inf = \frac{inf_t - inf_{t-1}}{inf_{t-1}}$	Matar et al. (2018); Tunyi et al. (2019)
10	interest rate spread	interest	Logarithm difference between the lending rate and borrowing rate	Ozgur & Gorus (2016); Matar et al. (2018)
11	national governance quality	pic	Provincial Competitiveness Index (PCI)	Svensson (2003); Clarke & Xu (2004); Tunyi et al. (2019)

Source: Authors' collection

#### 4. RESEARCH RESULTS AND DISCUSSIONS

The table below presents the descriptive statistics analysis for the model. [Table 2](#) shows the statistics descriptive for all variables in the model. The Return on equity (roe) has a mean value of 0.07 while its maximum is 25.72 and the minimum value is -14.81. The minimum of "lev", "ppe", and inf is 0.01, and the maximum of these factors is 16.49, 0.95, and 0.19, respectively. Likewise, with the same minimum value, "liq" creates a significant gap value with a maximum value of 26674.52. In addition, "rev" also shows the value from -182.08 in minimum to 228.66 in maximum. Furthermore, almost the surveyed firm age was established over one year while their firm size fluctuates from 20.04 to 30.03. Finally, the mean of these macro factors includes "gdp", "interest", and "pci" and their values are 0.06, 0.03, and 4.14, respectively.

In the regression model, the correlation between independent variables implies multicollinearity that can influence the accuracy and reliability of the results. Therefore, this phenomenon needs to be tested.

The multicollinearity phenomenon occurs when two or more predictors in the model are correlated ([Trung, 2021](#)). Multicollinearity was measured by variance inflation factors (VIF) and tolerance. According to [Hair, Sarstedt, Ringle, and Mena \(2012\)](#), if the VIF value exceeds 4.0 or tolerance less than 0.2, there is a multicollinearity problem. However, some other authors argued that multicollinearity would occur when the VIF value exceeds 10 ([Montgomery, Peck, & Vining, 2021](#)).

**Table 2. Statistics Descriptive**

Variable	Obs	Mean	Std. Dev.	Min	Max
roe	1,715	0.07	1.25	-14.81	25.72
age	1,715	1.96	0.53	0.69	3.83
size	1,715	25.88	1.19	20.04	30.03
lev	1,715	0.48	0.86	0.01	16.49
liq	1,715	32.65	659.71	0.01	26674.52
ppe	1,715	0.17	0.20	0.01	0.95
gdp	1,715	0.06	0.01	0.05	0.07
inf	1,715	0.06	0.05	0.01	0.19
interest	1,715	0.03	0.00	0.02	0.03
rev	1,715	0.44	9.35	-182.08	228.66
pci	1,715	4.14	0.04	4.09	4.21

Source: Results from Stata

In this paper, VIF is less than 4.0, hence in the model, the estimates of regression coefficients are reliable and stable (Table 3). That leads to the outcome from this table which vividly indicates the absence of multicollinearity. Multiple regression analysis reveals the relationship between several independent or explanatory variables and a dependent variable. Ayele (2012) have examined the effect of determinants on companies' profitability using Classical linear regression.

**Table 3. VIF**

Variable	VIF	1/VIF
age	1.94	0.515901
inf	1.76	0.56955
gdp	1.56	0.641848
interest	1.25	0.802247
lev	1.03	0.972339
ppe	1.03	0.974012
size	1.02	0.982929
pci	1.02	0.984319
rev	1.01	0.986904
liq	1.01	0.987415
Mean VIF	1.29	

Source: Results from Stata

Multiple regression analysis reveals the relationship between several independent or explanatory variables and a dependent variable. Ayele (2012) have examined the effect of determinants on companies' profitability using Classical linear regression. The authors will perform regression methods sequentially pooled OLS, FEM, and REM, and corresponding tests such as the F-test, Hausman test, and Breusch and Pagan Test to choose between pairs of models pooled OLS-FEM; FEM-REM; pooled OLS-REM.

As shown in Table 4, the FEM model is suitable for the research model.

The next section of this paper will show the results of the autocorrelation and heteroskedasticity phenomenon. This step is implemented to ensure accurate estimation results.

**Table 4. Results of Choosing FEM Model**

Test	F	Hausman Test	Breusch and Pagan test
Selection	OLS & FEM	FEM & REM	OLS & REM
Hypothesis	Null hypothesis: OLS model: $y_{it} = a + b'X_{it} + \varepsilon_{it}$ and alternative the FE model: $y_{it} = a + b'X_{it} + \alpha_i + \varepsilon_{it}$ (Robert, 2009).	Hausman test: the null hypothesis is that the preferred model is random effects (Greene, 2008).	The null hypothesis in the L.M. test is that variances across entities is zero.
p-value	Prob > F = 0.0000	Prob>chi2 = 0.0000	Prob > chibar2 = 1.0000
$\alpha$	5%	5%	5%
Action	Reject H0	Reject H0	Accept H0
Selection	FEM	FEM	REM
Conclusion	FEM is chosen.		

The p-value of the Test for autocorrelation is 0.7532, which is greater than 5%. Therefore, we do not have enough evidence to reject H0. Hence, the model does not have an autocorrelation phenomenon (Table 5).

The p-value of the Test for heteroskedasticity is 0.000, which is less than 5%. Therefore, we have enough evidence to reject H0.

**Table 5. Test for Autocorrelation in Panel Data**

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F (1, 171) = 0.099
Prob > F = 0.7532

Source: Results from Stata

However, heteroskedasticity still exists in FEM (Modified Wald test for GroupWise heteroskedasticity in Table 6). Therefore, we employ Feasible Generalized Least Square Methods (FGLS) by using the weighted least square method so we can test for heteroscedasticity of the error terms.

**Table 6. Test for Heteroskedasticity**

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of roe
chi2(1) = 295.40
Prob > chi2 = 0.0000

Source: results from Stata

As shown in [Table 7](#), there are seven statistically significant variables at 5%, including firm age, firm size, leverage ratio, revenue growth, gross domestic product growth, inflation rate, and quality of local governance (measured by the Provincial Competitiveness Index). Moreover, using generalized least squares, disturbances are said to be homoscedastic and have no autocorrelation. It means that the estimation is efficient and unbiased. All the above variables are found to positively affect SMEs' performance.

**Table 7. Regression Results (Pooled\_OLS, FEM, REM, FGLS)**

	OLS	FEM	REM	FGLS
Models	ROE			
<b>age</b>	0.279***	0.0143	0.279***	0.2793***
<b>size</b>	0.351***	0.862***	0.351***	0.3512***
<b>lev</b>	0.0361***	-0.0102	0.0361***	0.0361***
liq	-0.0001	-0.0002***	-0.0001	-0.0001
ppe	0.12	0.654*	0.12	0.1200
<b>rev</b>	0.116***	-0.0083	0.116***	0.1156***
<b>gdp</b>	0.934***	0.0656	0.934***	0.9336***
<b>inf</b>	6.288***	-0.681	6.288***	6.2883***
interest	-7.773	-4.418	-7.773	-7.7729
<b>pci</b>	0.752***	-8.500***	0.752***	0.7523***
<b>_cons</b>	-12.98***	12.76***	-12.98***	-
N	1715	1715	1715	1715
* p<0.1, ** p<0.05, *** p<0.01				

Source: Results from Stata

According to the results, firm age and size positively affect SMEs' performance, which is confirmed by [Meyer \(2006\)](#); [Aidis, Estrin, and Mickiewicz \(2008\)](#); [Du and Girma \(2012\)](#); [Giordani \(2015\)](#). Therefore, a positive coefficient implies that with an increase in the two above variables, SMEs' performance also increases, and inversely. However, because young and small businesses have yet to amass sufficient resources to build

operational capability, their profitability cannot be improved. Besides, young, and small firms must deal with a severe asymmetrical information problem. Hence, they cannot enhance their success in terms of creating profitability.

In the paper, we have estimated the effect of leverage on SMEs' performance in the presence of a significant variable - firm size. [Ibhagui and Olokoyo \(2018\)](#) investigated into whether the ultimate effect of leverage on firm performance is size-dependent and whether the type of impact leverage has on a firm's performance is size-dependent. Their findings indicate that leverage negatively affects firm performance – a fact that is most pronounced and significant for small firms and evidence of this adverse impact diminishes as the firm grows, eventually disappearing when the firm reaches its estimated threshold size. This result still concurs with previous studies showing a significant correlation between leverage ratio and performance (measured by profitability). Previous empirical studies have studied this connection in several ways, including those by [Ruland and Zhou \(2005\)](#); [Chandrakumarmangalam and Govindasamy \(2010\)](#), however, these authors conclude that leverage promotes firm performance. However, they argue that leverage significant benefits, with returns exceeding average interest costs. In addition, earlier studies as [Modigliani and Miller \(1958\)](#) and [Jensen \(1986\)](#) show how profitable firms use leverage to signal quality and that increases in leverage are followed by increased profitability.

The coefficient of the revenue growth variable equals 0.1156, which is positive. This implies that if revenue grows by 1%, ROE will increase by 0.1156%. The findings are supported by [Salman and Yazdanfar \(2012\)](#). SME companies can create more jobs because they are small and therefore, easier to launch and operate. If the SME has a better ROI, there will be more profit. Based on [Campos \(2012\)](#), [Piza et al. \(2016\)](#) found that SMEs can create more jobs in the long term with an increase in sales revenues. Managers in corporations aim to increase revenue and ensure growth for the long term, even if this results in lower profits ([Baumol, 1959](#)). Therefore, maximization of sales, replaced by maximizing profit, adds to the current context of oligopoly theory in Baumol's research.

Furthermore, GDP is one of the key macroeconomic variables considered in this study, and its prominence may be attributed to recent performance issues ([Alabdullah, Yahya, & Ramayah, 2014](#)). Thus, most theoretical predictions are consistent with the empirical findings that GDP positively affects both firm performance indicators. Besides, due to GDP's comprehensive representation of the entire economic landscape, it is frequently referred to as a pertinent indicator for any economic element. As a result, a GDP that is strong and stable is conducive to achieving superior firm performance. Besides this, corroborating [Ehlers \(2007\)](#) research results emphasize inflation and GDP with the scope of research distinguished from country-specific research. According to [Cant and Wiid \(2013\)](#), inflation has a detrimental effect on small businesses. Increased demand will impede the growth of small and medium-sized businesses ([Ehlers, 2007](#)). According to



Anyanwu (2001) the economy is in a state of inflation. The numbers above indicate that a higher percentage of the budget must be allocated to locally produced goods for the economy to remain viable over time when demand exceeds supply. As it results from both private and public sector spending and short-term losses, increased production may result in price increases. Increases in prices in this manner will result in inflation unless they are carefully managed. The GDP, inflation rate, and national governance quality are statistically significant variables that positively affect SMEs' performance. The result is consistent with the findings from the research of Rokas (2012); Issah and Antwi (2017); Matar et al. (2018); Pervan, Pervan, and Ćurak (2019). So, GDP and inflation can indeed enhance SMEs' performance. Research has found that economic growth helps the development of SMEs' profitability. Meanwhile, the inflation rate is a significant benefit to small and medium-sized businesses (Ajagbe, 2012; Beck et al., 2005) as it allows them to adjust the price of goods while holding operating expenses constant. The research highlights the importance of economic conditions in accounting models.

Svensson (2002), Clarke and Xu (2004), and Tunyi et al. (2019) discover a positive correlation between the quality of national governance and the performance of SMEs. According to their explanation, firms may purposefully structure operations to report low profitability to limit their liability and exposure to corrupt bureaucrats in low-quality national governance environments. On the other hand, strong national governance reduces firm risk and uncertainty, protects firms and their investors, and incentivizes firms to invest in growth-enhancing and long-term projects, resulting in improved firm performance. The findings imply that business performance is strongly influenced by the quality of national governance and short- and medium-term policies that can be amended and improved (Charron & Lapuente, 2013; Parks & Oakerson, 2000; Savitch & Vogel, 2000). As a developing country, Vietnam has many young and small businesses that are typically geographically constrained to their local business environments, which are strongly shaped by local governance structures that can affect SMEs' performance.

## 5. CONCLUSION AND LIMITATIONS

The authors examined seven statistically significant variables that positively affect SMEs' performance at 5% using the quantitative method. These variables include firm age, firm size, leverage ratio, revenue growth, GDP growth, inflation rate, and quality of local governance (as measured by the Provincial Competitiveness Index). Additionally, the homoscedasticity and no autocorrelation are defined using generalized least squares, showing that the estimation is both, reliable and unbiased. One of the significant contributions of this study to the existing body of literature on the subject is the confirmation that macroeconomic and firm-specific variables affect the performance of SMEs.

There are some implications that the authors highlight for SMEs to improve business performance. In terms of micro elements such as firm age, firm size, leverage, and

revenue growth of firm are found to have a significantly positive impact on firm performance. Under trade-off theory, SMEs using the out resources from banks and outsiders lead to efficient firm performance such as increased revenue growth. For this reason, SMEs need to take advantage of capital from banks or supporting fund organizations so that new businesses have enough potential to innovate production technology and improve production processes and business activities optimally. Besides, SMEs are encouraged to actively participate in business associations to access information on policies and programs to support small and medium-sized enterprises of the Government, the State and credit institutions. The research results show that macro factors, such as gross domestic product growth, inflation rate and Provincial Competitiveness Index, also have a notable impact on the performance of SMEs. Therefore, to promote the SME sector, the Government needs to expand regulations and policies to encourage enterprises to develop mechanism to support SMEs in accessing investment capital to expand their production and business activities. In addition to this, the government should continue to create a favorable business environment by creating a safe and conducive business environment, as well as simplifying licensing procedures, reducing taxes etc.

However, despite the major contributions of the present study, it is necessary to outline its limitations to be able to overcome through future research efforts. One of these research limitations is the relatively short period for which complete data sets are available which means that the study is unable to consider and study the impact of COVID19 on SME businesses. Additionally, the model omits some key macroeconomic variables during its analysis, such as unemployment rate, exchange rate, and general government expenditure.

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