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Article

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Diversification, government support, and firm performance

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Abstract: Many companies have been and are implementing diversification to take advantage of capital, reduce risks, and increase revenue for enterprises. At the same time, government support is considered to have positive implications for companies. This study was conducted to assess the impact of diversification and government support on the firm performance of small and medium enterprises (SMEs) in Vietnam. Data was collected on 1,342 SMEs in Vietnam from 2011 to 2015. The analysis results show that diversification has a positive effect on firm performance (through return on assets). However, diversification has no impact on return on equity. The results show that the resource-based view theory is supported when enterprises implement meaningful diversification. The study also shows that the trade-off theory is supported when companies diversify. Government support has no impact on firm performance. The research will help enterprises orient themselves appropriately when deciding to diversify or register and receive support from the government.

Subjects: Economics; Finance; Business, Management and Accounting;

Keywords: Diversification; government support; firm performance; business model; smes; Vietnam

1. Introduction

SMEs play a vital role in Vietnam's economy, contributing 30–53% of the country's total GDP and producing 19–31% of total exports to foreign markets (OECD, 2021). SMEs, which have between 1–

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249 employees, account for 96% of the total number of companies in Vietnam, employ 47% of the workforce, and contribute 36% of national revenue, all of which are significantly lower than the corresponding Organisation for Economic Co-operation and Development (OECD) average (OECD, 2021). The largest 1% of companies employ more than half of the total employees in Vietnam (51%), while the top 10% create 83% of the total jobs. Of the 100 largest firms, 91 are industrial (OECD, 2021). This shows that large manufacturing companies play a core role in Vietnam's economy. In the context of increasing competition not only among domestic enterprises but also with foreign enterprises (Thi Viet Nguyen et al., 2021). Changing/diversifying the business model increases the chances of improving the efficiency and sustainability of the business (Nguyen et al., 2021). Besides, Government support is another important factor contributing to firm performance, but it has yet to be considered in studies in Vietnam. Since it is a developing country, its businesses will need government support. However, as of 2015, only 8.5% of small and medium enterprises (SMEs) in Vietnam received government support (OECD, 2021).

In recent years, diversification has been a popular and necessary method employed by companies to improve profits (Adesina, 2021; Chen & Yu, 2012; Sohl et al., 2022). Corporations expand in the domestic market and globally (Capar & Kotabe, 2003; Chang & Wang, 2007). Diversification has focused on products and services and developed around geographical factors (Chang & Wang, 2007; Kim et al., 1989). New business opportunities arise when working with partners, and the strategic vision of the managers involved leads the business to diversify. They see this as an opportunity to enhance their competitiveness in the market by improving value through sizing (Bettis, 1981; Chen & Yu, 2012; Prahalad & Hamel, 1997). Many researchers have evaluated the relationship between diversification and firm performance (Alouane et al., 2022; Capar & Kotabe, 2003; Chang & Wang, 2007; Geringer et al., 1989; Hitt et al., 1997; Lu & Beamish, 2004; Sohl et al., 2022). Several studies have shown that diversification leads to firms having lower performance than undiversified firms in emerging markets (Delios et al., 2008). In contrast, other studies have shown that diversification increases business opportunities and profits (Chen & Yu, 2012; Chang & Wang, 2007; Delios et al., 2008; Chen & Ho, 2000). Further, some studies show no relationship between diversification and firm performance (Geringer et al., 2000). Therefore, studying diversification and firm performance has important implications for developing countries.

Government support for enterprise activities is part of the business development strategy in Vietnam and other countries worldwide. Government support for different companies varies. Some companies receive capital support, some corporations receive tax support, and others receive support for related licensing procedures for business operations (Jugend et al., 2018). In particular, capital support is essential when companies face financial hurdles such as difficulties accessing loans from financial intermediaries (Guo et al., 2016). Government support is aimed at helping companies achieve better performance. Several studies have been conducted on the impact of government support on firm performance (Guo et al., 2016; Jugend et al., 2018), many of which show a positive effect of government support on firm performance (Guo et al., 2020). But there is also research suggesting that receiving subsidies from the government makes the company inefficient by adding other costs and causing them to favor redundant local staff (Claessens et al., 2000; Du et al., 2017). Many other studies also cast uncertainty on the effectiveness of government support for companies (Le & Harvie, 2010).

Given the conflicting results on the effects of diversification, government support on firm performance was the driving force behind this study. Some studies suggest that diversification has a positive effect on performance (Chen & Yu, 2012; Chang & Wang, 2007; Delios et al., 2008; Chen & Ho, 2000). Some argue that diversification has a negative impact on performance (Delios et al., 2008). At the same time, there are many studies that show a positive impact of government support on performance (Guo et al., 2016; Jugend et al., 2018) but there are studies that show a negative impact from government support (Claessens et al., 2000; Du et al., 2017). (These two factors can have different results on firm performance in emerging markets than in different economic contexts, such as in developed markets. However, research about the impact of

diversification and government support on firm performance for SMEs in Vietnam is still limited. Therefore, this study examined the effects of diversification and government support on firm performance of SMEs in Vietnam from 2011 to 2015.

The study used resource theory to evaluate the effects of diversification and government support on firm performance. Therefore, the study will contribute theoretically and show how to use internal resources in a meaningful way to diversify businesses and bring profits as expected. The resource-based perspective theory provides valuable information for researchers to build the relationship between diversification and firm performance. In addition, the study compares the different impacts of diversification and government support on firm performance. For example, whether firms are more efficient when using equity or total assets to diversify.

2. Literature review

2.1. Diversification and firm performance: definitions and concepts

Diversification is defined through an approach to the business model or scope of the firm's operations (Pils, 2009; Porter, 1989). Firms diversify when focusing on one business area and many companies (Dinh Nguyen et al., 2021; Park & Jang, 2012). Companies may initially focus only on the one area in which they start a business. Later, they may open subsidiaries in the hope to enter new markets (Ansoff, 1957). This diversification may or may not be related to the existing business the companies are conducting (Chen & Yu, 2012). Related diversification is when a firm associates itself with products or services related to what the company already provides (, Winter, 2009). Diversification can introduce new products or services into a new market without needing to improve on old products or services (Berry, 2015; Park & Jang, 2013b). Unrelated diversification is when a firm moves into business areas where no physical resources or knowledge can be applied from their existing industry (Chatterjee & Wernerfelt, 1991).

2.2. Resources-based view on diversification and firm performance

Resources-based View theory indicates the use of available resources in the company to bring about the development of the business (Amabile et al. 1996). With these available resources (both intangible and intangible) it will be easy for businesses to develop new business activities (diversification) (Panzar & Willig, 1981; Tanriverdi & Venkatraman, 2005). Based on the resource-based view (RBV), businesses diversify to use available resources to optimize their development (Tanriverdi & Venkatraman, 2005). The RBV is the use of already-available resources by companies to exploit economic advantages through diversification (Panzar & Willig, 1981; Tanriverdi & Venkatraman, 2005). Firms diversify with the expectation of making more profits in a new business field (Adesina, 2021; Chang & Wang, 2007; George & Kabir, 2012; Rumelt, 1982; Sohl et al., 2022).

3. Trade-off theory, diversification and firm performance

In this study, firm performance is measured through return on assets (ROA) and return on equity (ROE), so the use of equity or debt for diversification may also differ. The trade-off theory can explain this. Firms use financial leverage to effectively use tax shields (Myers, 1984; Nguyen et al., 2021), but at the same time, companies face pressure on loan interest. Therefore, the operating efficiency due to diversification can be compared with the use of good equity or external debt or both (Adesina, 2021; Nguyen et al., 2021). Diversification is the expansion of the company's regulations and new business models, so the issue of capital or cost is inevitable (Adesina, 2021). Strategies to use financial leverage or equity for this activity can yield different business results (cited). When the use of equity reduces the financial resources in the business but avoids the risk of interest (Amit & Livnat, 1988). Meanwhile, the use of debt will make the most of the capital in the business and optimize the tax shield, but there is a risk of loan interest if the business situation is not good (Amit & Livnat, 1988).

4. Diversification, government support and firm performance

Diversification gives enterprises an advantage over startups when creating new fields (George & Kabir, 2012; Park & Jang, 2012, 2013a, 2013b; Williamson, 1967). When diversifying, firms will allocate available resources more optimally (George & Kabir, 2012). Therefore, diversified enterprises will have better competitive advantages regarding resources and market access tools than concentrated (non-diversified) enterprises (George & Kabir, 2012). With the advantage of resources, the benefits from exploiting unused company assets or the available management skills and technology bring about a better business position and result for the company (George & Kabir, 2012). In addition, diversification helps enterprises reduce risks related to their operations (Amit & Livnat, 1988; Park & Jang, 2013b).

On another note, some studies show that diversification inhibits firm performance (Park & Jang, 2012; Penrose, 1959; Rumelt, 1982). Firms reduce profits by diversifying without detailed plans or moving into an environment that is unfamiliar to managers (Park & Jang, 2012). At the same time, enterprises that are not performing well in their old field but choose to diversify carry existing problems in resources and management into the new field. This decreases firm performance in both the new and old fields (Meyer et al., 1992; Rajan et al., 2000; Williamson, 1967).

In this study, diversification is understood as a business moving into a new field and creating new products or services related or unrelated to its old field. The diversification of enterprises is meant to increase the company's profits. Thus, the first hypothesis is as follows:

H1: *Diversification has a positive effect on firm performance*

In addition to the efforts enterprises put toward their own company, government support also promotes business development, especially in times of general crisis (Jugend et al., 2018; Luo et al., 2021). Government support for enterprises manifests in many forms, such as tax support, subsidies, infrastructure for production and business, or related legal procedures (Chauvet & Ferry, 2021; Jugend et al., 2018). Corporate innovation, or the creation of new products or services (R&D activities) to improve firm performance, is also influenced by government support (Cano-Kollmann et al., 2017; Chauvet & Ferry, 2021; Jugend et al., 2018, 2020). In some cases, enterprises have difficulties raising external capital, so support from the government in the form of capital will help enterprises implement their strategies well (Dimos & Pugh, 2016). This relationship is considered suitable for SMEs when they are taking extra care with their use of financial resources in challenging times (Teirlinck, 2017). Government tax support is also a motivating factor for businesses to make better investments and expand business activities in preferred areas (Jugend et al., 2018). In general, government support helps attract human and financial resources that boost firm performance (Luo et al., 2021). Thus, the second hypothesis is as follows:

H2: *Government support has a positive impact on firm performance*

5. Method

5.1. Research model

$$\textit{Firm performance}_{it} = \alpha_i + \beta_1 \text{Diversification}_{it} + \beta_2 \textit{Government assistance}_i + \beta_3 \textit{Control variables}_{it} + \varepsilon_{it}$$

The variables as defined in Table 1

Dependent variables:

In this study, the indicators of firm performance include ROA and ROE (Abdullah & Tursoy, 2021), where ROA is measured through the rate of return on total assets, and ROE is measured through the return on equity ratio. These are two metrics commonly used by previous studies when measuring firm performance.

Independent variables:

Diversification: Diversification is measured by answering whether or not the company is diversified. In this study, because of the limitation of the database, there is only some or no diversification of products/services. However, as the literature review and first hypothesis stated, firms with diversification tend to deliver better performance than firms without diversification (Park & Jang, 2012).

Government support: Government support is measured by assessing whether or not government support was received during the year. This study expects the government's support to help companies operate more smoothly (Jugend et al., 2018). As a result, companies that receive government support will have better firm performance than those without government support.

Control variables: Based on some previous studies as well as the meaning of control variables. The study takes some control variables such as firm size (Chang & Wang, 2007; Dinh Nguyen et al., 2021), employee, year of establishment (Vu et al., 2019), tax (Wu et al., 2012), legal status (Tapanainen et al., 2022) to further evaluate the difference between enterprises with the characteristics of the control variables.

Size: The natural logarithm of total assets measures firm size. The increased assets of enterprises will affect firm performance, as the expansion of production and scale of the business is expected to bring more profits (Dinh Nguyen et al., 2021). In cases where enterprises scale up but the business results are not as expected (not good), the new system's capital costs and maintenance costs create pressure on the companies (Chang & Wang, 2007). Therefore, firm size can positively and negatively affect firm performance.

Table 1. The variables

Variable name	Content	Expected sign
Dependent variables:		
Firm performance	$ROA = \frac{Return}{Totalassets}$ $ROE = \frac{Return}{Equity}$	
Independent variables:		
Diversification	=1 if diversification =0 if there is no diversification	+
Government support	=1 if got the Government support =0 if do not get the Government support	+
Control variables		
SIZE	Ln(total assets)	+
Employee	Total number of full-time workers	+
Tax	Total fees and taxes	+
EY	Year of establishment	+
Type	Legal status	

Employee: The number of employees with full-time contracts in a company represents the size and potential of an enterprise's human resources. The larger the number of employees, the greater the ability to operate at scale and the potential to deliver better business results than enterprises with fewer employees (Vu et al., 2019).

Tax: The more annual fees and taxes, the greater the operating revenue. Therefore, increased tax revenue will signal that businesses are operating more efficiently (Wu et al., 2012).

EY: The number of years of operation represents long-term maintenance. The longer the corporation has operated, the more management experience it possesses and the more its brand name has been established in the market. Therefore, the longer a company runs, the better its business performance tends to be (Vu et al., 2019).

Type: The author included the type of enterprise in the model to see if there is any relevant difference in firm performance. Companies with different organizational characteristics or types of companies may have different firm performances (Tapanainen et al., 2022)

5.2. Data collection

The variables in the model are all collected based on the survey of SMEs from 2011 to 2015 by the General Statistics Office of Vietnam. The study uses data up to 2015 without updating the latest available data. Due to some issues related to funding is not applied, so the authors can only use the data set provided in 2015. Results were compiled from a total of 1341 enterprises. Before being included in the analysis, the variables were processed by outliners and winsorzied in STATA 15 software.

5.3. Data analysis

Data were collected for SMEs in Vietnam from 2011 to 2015. Therefore, the panel data analysis technique will be used in this study. The typical models for panel data analysis will be used: The fixed effect model (FEM), Random effect model (REM). The study uses the Hausman test to find the model that fits the research data between FEM and REM (p-value of Hausman test less than 0.05 will show that the FEM model is suitable and if the p-value greater than 0.05, the REM model is considered to be suitable for the research data). After finding a suitable model, the model will perform autocorrelation and heteroskedasticity tests to assess the model's sustainability. If the model encounters the above phenomena, the model will be calibrated through cluster, robust to make the model more suitable.

6. Results

6.1. The descriptive analysis

The collected results show that the mean ROA is 0.159, of which the largest is 0.527 and the smallest is 0.007. The mean ROE is 0.169, of which the largest is 0.566 and the smallest is 0.008. The mean number of employees with full-time contracts in enterprises is nine, the largest is 43, and the smallest is one person. The mean of total assets is about 3.82 trillion VND, the largest is 20.4 trillion VND, and the smallest is 0.14 trillion VND. The mean annual tax fee is 82 trillion; the largest is 835 trillion. The mean number of years of establishment is 16 years, of which the largest is 61 years, and the smallest is two years old (see Table 2).

The qualitative variables related to business model diversification show that the number of enterprises implementing diversification tends to increase gradually from 2011 to 2015. From 10 enterprises diversifying in 2011 to 2013, it is 56. enterprises and, by 2015, increased to 388 enterprises. It can be seen that by 2015, the number of enterprises having diversified business models accounted for 28.93%. The trend of companies adding new products or services has increased sharply in recent years (see Table 3).

Table 2. Descriptive statistics the variables

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	4,023	0.159	0.150	0.007	0.527
ROE	4,023	0.169	0.161	0.008	0.566
Employee *(person)*	4,023	9.000	10.647	1.000	43.000
Total_assets *(Thousand Bil VND)*	4,023	3.828	5.179	0.140	20.400
Tax (Bill VND)	4,023	82,764	324,522	0	835,665
Year of establishment	4,023	16.33234	10.02784	2	61

Table 3. Information about the diversification in SMEs

Year	Diversification	Number of companies	Percent	Cum.
2011	No	1,331	99.25	99.25
	Yes	10	0.75	100
2013	No	1,285	95.82	95.82
	Yes	56	4.18	100
2015	No	953	71.07	71.07
	Yes	388	28.93	100
Total		**1,341**	**100**	

Government support decreased from 2011 to 2015. Specifically: in 2011, the number of enterprises receiving government support was 185, accounting for 13.8%. By 2013, the number of enterprises receiving support from the government decreased to 114 enterprises (accounting for 11.71%), and by 2015, this rate dropped to 8.5% with 114 enterprises. Thus, it can be seen that companies are receiving support from the government decrease. This may reflect the level of independence of enterprises when there are not too many fluctuations in terms of economic crises, pandemics, or severe natural disasters (see Table 4).

6.2. Regression

With Hausman test results, almost all of them choose FEM model as more suitable than REM model (p-value of Hausman test is less than 5% and 10% significance level). However, with the FEM model, heteroskedasticity is encountered (p-values are all less than 0.05) (Detail in Tables 5 and 6). Therefore, the study conducts robust correction for firms (Tables 7 and 8)

The panel data regression analysis results based on the adjusted model show that diversification has a positive effect on ROA ($\beta = 0.0168$ and p-value less than 0.05; see Table 5). This indicates a significant positive effect on the diversification decisions of firms. Diversification effectively increases ROA in enterprises, as the growth in assets increases earnings in a meaningful way. Expanding a company with new products or industries helps increase the enterprise's revenue, which brings more stable sources of income for the enterprise and helps limit the risks encountered when focusing on only one source of income (Ansoff, 1957). The increasing number of enterprises that choose to diversify shows that enterprises have seen the effectiveness of diversification. Therefore, they tend to gradually shift to more diversification over time. The results are similar to previous studies (Chen & Yu, 2012; Chang & Wang, 2007; Chen & Ho, 2000) when pointing out the positive impact of diversification on ROA. However, diversification does not affect ROE (p-value greater than 0.05; see Table 6), showing that the diversification of enterprises only makes sense when they increase capital sources based on

Table 4. Information about government assistance in SMEs

Year	Government Support	Number of companies	Percent	Cum.
2011	No	1,156	86.2	86
	Yes	185	13.8	100
2013	No	1,184	88.29	88.29
	Yes	157	11.71	100
2015	No	1,227	91.5	91.5
	Yes	114	8.5	100
Total		**1,341**	**100**	

debt. Using incremental equity for diversification does not yield a return. This result also points to the importance of financial leverage in implementing diversification, and the trade-off theory is applied in this context. The results are consistent with Geringer et al. (2000), showing that there is no effect of diversification on ROE.

The study also shows that government support does not affect the ROA or ROE of SMEs (p-values are greater than 0.05). The percentage of companies supported by the government decreased over the years (from 13.8% in 2011 to 11.71% in 2013 and 8.5% in 2015). It can be seen that companies are becoming more and more independent from government support. The number of companies receiving government support by 2015 was less than 9%, making the impact of government support on firm performance in Vietnam unclear. In recent years, SMEs have become increasingly active in company activities with the trend of changing interest from start-ups to enterprises and large corporations. Therefore, government support does not affect them (Le & Harvie, 2010). This is a positive sign for SMEs as they can obtain desired business results without government support.

The results also show that firm size has a negative effect on ROA and ROE ($\beta>0$ and p-value are both less than 0.05). This result is similar to the previous study by Chang and Wang (2007), where expansion reduces profit margins. However, expansion into a new trend causes a reduction in the ROA and ROE of enterprises. At the same time, enterprises increasing assets according to the size of equity or borrowed capital does not bring business efficiency in this research context. This result further emphasizes the importance of the diversification of enterprises. Therefore, it makes more sense for enterprises to increase assets and enter new business fields than to focus on old products and services (Chang & Wang, 2007).

The number of employees in SMEs has a positive impact on ROA and ROE. Regarding the SMEs in this study, the number of employees with full-time contracts is not excessive, as the largest number of employees with full-time contracts in the sample is 43 people. This implies that job control is also not excessive, and as a result, employees' jobs are made easier. Work efficiency increases when tasks are easily controlled (Vu et al., 2019). Therefore, the number of employees in an enterprise has a positive effect on the ability of businesses to diversify their operations and continue to hire full-time employees.

Regarding tax payment, there is a positive effect on firm performance through ROE but no impact on ROA. It can be seen that the larger the tax costs of enterprises, the better the business results. However, tax payable is significant to ROE that does not yield a return on investment through debt. It can be seen that companies tend to use tax shields effectively. Therefore, fees and taxes affect ROE but not ROA. The enterprise has revenue as well as large profits from business activities, but it must also pay the tax costs associated with obtaining contracts and jobs. The results are similar to previous studies, which all show a positive relationship between tax and firm performance (Wu et al., 2012).

Table 5. The result of regression for ROA (unadjusted)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ROA	**FEM**	**REM**	**FEM**	**REM**	**FEM**	**REM**	**FEM**	**REM**	**FEM**	**REM**
Diversification	0.0196***	0.0177***	0.0145**	0.0162**	0.0219***	0.0170***	0.0139**	0.0125**	0.0212***	0.0188***
	(0.00738)	(0.00668)	(0.00713)	(0.00656)	(0.00698)	(0.00655)	(0.00699)	(0.00545)	(0.00809)	(0.00653)
Gov_Assistance	0.00194	0.00244	−0.00291	−0.00528	−0.00657	−0.00228	−0.00157	−0.00295	−0.00409	−0.00275
	(0.00787)	(0.00707)	(0.00734)	(0.00672)	(0.00737)	(0.00677)	(0.00713)	(0.00559)	(0.00834)	(0.00672)
LTax	−0.0014	−0.011***								
	(0.00243)	(0.0012)								
EY			0.00245***	0.00087***						
			(0.000599)	(0.00028)						
Lnemployee					0.0182***	−0.013***	0.0538***	0.072***		
					(0.00568)	(0.00286)	(0.00550)	(0.00283)		
SIZE							−0.101***	−0.09***		
							(0.00379)	(0.001)		
Type_Household is the reference variable										
Private/sole proprietorship									−0.0409**	−0.053***
									(0.0201)	(0.0108)
Partnership									−0.0668	−0.0749
									(0.0547)	(0.0637)
Collective/Cooperative									0.0799	−0.0321
									(0.0648)	(0.0199)
Limited liability company									−0.0159	−0.041***
									(0.0212)	(0.00770)
Joint stock company with state									−0.0509	−0.0746
									(0.0351)	(0.0578)
Joint stock company without state									−0.0340	−0.0326**

(*Continued*)

Table 5. (*Continued*)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ROA	**FEM**	**REM**	**FEM**	**REM**	**FEM**	**REM**	**FEM**	**REM**	**FEM**	**REM**
									(0.0358)	(0.0165)
Constant	0.166***	0.258***	0.118***	0.143***	0.127***	0.181***	1.509***	1.393***	0.162***	0.171***
	(0.0221)	(0.0114)	(0.00990)	(0.00572)	(0.00973)	(0.00575)	(0.0533)	(0.0258)	(0.00555)	(0.00379)
Observations	3,716	3,716	4,023	4,023	4,023	4,023	4,023	4,023	4,023	4,023
Number of Firm	1,329	1,329	1,341	1,341	1,341	1,341	1,341	1,341	1,341	1,341
Hausman test	0.000		0.0157		0.000		0.000		0.5397	
Autocorrelation test	0.000		0.000		0.000		0.000		0.000	
Heteroskedasticity test	0.000		0.000		0.000		0.000		-	

Note: Standard errors in parentheses

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

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Table 6. The result of regression for ROE (unadjusted)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ROE	**FEM**	**REM**	**FEM**	**REM**	**FEM**	**REM**	**FEM**	**REM**	**FEM**	**REM**
Diversification	0.0196**	0.0177***	0.0112	0.0139*	0.0191**	0.0149**	0.0105	0.0100*	0.0177**	0.0159**
	(0.00806)	(0.00668)	(0.00780)	(0.00715)	(0.00763)	(0.00714)	(0.00730)	(0.00598)	(0.00850)	(0.00712)
Gov_Assistance	8.62e-05	0.00244	−0.00645	−0.00832	−0.0101	−0.00556	−0.00440	−0.00644	−0.00799	−0.00629
	(0.00859)	(0.00707)	(0.00802)	(0.00731)	(0.00806)	(0.00736)	(0.00764)	(0.00612)	(0.00881)	(0.00732)
LTax	−0.00152	−0.0115***								
	(0.00267)	(0.00122)								
EY			0.00272***	0.00085***						
			(0.000649)	(0.000311)						
Lnemployee					0.0164***	−0.0128***	0.0547***	0.0802***		
					(0.00620)	(0.00310)	(0.00603)	(0.00309)		
SIZE							−0.107***	−0.101***		
							(0.00417)	(0.00218)		
Type_Household is the reference variable										
Private/sole proprietorship									−0.0497**	−0.058***
									(0.0209)	(0.0118)
Partnership									−0.0621	−0.0768
									(0.0580)	(0.0687)
Collective/Cooperative									0.0737	−0.0278
									(0.0763)	(0.0215)
Limited liability company									−0.000330	−0.0327***
									(0.0234)	(0.00833)
Joint stock company with state									0.0155	0.000464
									(0.0709)	(0.0636)
Joint stock company without state									−0.0169	−0.0241

(*Continued*)

Table 6. (*Continued*)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ROE	**FEM**	**REM**	**FEM**	**REM**	**FEM**	**REM**	**FEM**	**REM**	**FEM**	**REM**
									(0.0456)	(0.0180)
Constant	0.177***	0.258***	0.124***	0.155***	0.141***	0.190***	1.607***	1.487***	0.171***	0.181***
	(0.0242)	(0.0114)	(0.0107)	(0.00617)	(0.0106)	(0.00622)	(0.0588)	(0.0281)	(0.00625)	(0.00410)
Observations	3,665	3,716	3,968	3,968	3,968	3,968	3,968	3,968	3,968	3,968
Number of Firm	1,327	1,329	1,341	1,341	1,341	1,341	1,341	1,341	1,341	1,341
Hausman test	0.0087		0.000		0.000		0.000		0.6473	
Autocorrelation test	0.000		0.000		0.000		0.000		0.000	
Heteroskedasticity test	0.000		0.000		0.000		0.000		-	

Note: Standard errors in parentheses

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

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Table 7. The result of regression for ROA

ROA	VIF_max	(1)	(2)	(3)	(4)	(5)
Diversification	1.12	0.0196**	0.0145*	0.0219***	0.0139**	0.0212***
		(0.00853)	(0.00817)	(0.00795)	(0.00699)	(0.00809)
Government support	1.14	0.00194	−0.00291	−0.00657	−0.00157	−0.00409
		(0.00882)	(0.00829)	(0.00831)	(0.00713)	(0.00834)
LnTax	1.25	−0.00141				
		(0.00287)				
EY	1.18		0.00245***			
			(0.000681)			
LnEmployee	1.22			0.0182***		
				(0.00633)		
SIZE	1.26				−0.101***	
					(0.00379)	
Type_Household is the reference variable	1.07					
Private/sole proprietorship						−0.0409**
						(0.0201)
Partnership						−0.0668
						(0.0547)
Collective/Cooperative						0.0799
						(0.0648)
Limited liability company						−0.0159
						(0.0212)
Joint stock company with state						−0.0509
						(0.0351)

(*Continued*)

Table 7. (*Continued*)

ROA	VIF_max	(1)	(2)	(3)	(4)	(5)
Joint stock company without state						−0.0340
						(0.0358)
Constant		0.166***	0.118***	0.127***	1.509***	0.162***
		(0.0259)	(0.0110)	(0.0107)	(0.0533)	(0.00555)
Observations		3,716	4,023	4,023	4,023	4,023
Number of Firm		1,329	1,341	1,341	1,341	1,341

Note: Robust standard errors in parentheses

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

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Table 8. The result of regression for ROE (robust)

ROE	VIF_max	(1)	(2)	(3)	(4)	(5)
Diversification	1.12	0.00719	0.00372	0.0103	0.00881	0.00741
		(0.00787)	(0.00759)	(0.00733)	(0.00747)	(0.00756)
Government support	1.14	0.00773	0.00245	−0.00320	0.00126	0.000817
		(0.00854)	(0.00778)	(0.00764)	(0.00782)	(0.00785)
LnTax	1.25	0.0108***				
		(0.00281)				
EY	1.18		0.00197***			
			(0.000565)			
LnEmployee	1.22			0.00524***		
				(0.000693)		
SIZE	1.26				−0.0988***	
					(0.00423)	
Sector_Household is the reference variable	1.07					
Private/sole proprietorship						−0.0138
						(0.0149)
Partnership						−0.0376
						(0.0481)
Collective/Cooperative						0.122
						(0.0845)
Limited liability company						0.0401**
						(0.0202)
Joint stock company with state						0.0354
						(0.0649)

(*Continued*)

Table 8. (*Continued*)

ROE	VIF_max	(1)	(2)	(3)	(4)	(5)
Joint stock company without state						0.0256
						(0.0503)
Constant		1.507***	1.541***	1.631***	1.581***	1.577***
		(0.0697)	(0.0610)	(0.0583)	(0.0606)	(0.0602)
Observations		3,665	3,968	3,968	3,968	3,968
R-squared		0.227	0.238	0.259	0.234	0.238
Number of Firm		1,327	1,341	1,341	1,341	1,341
Hansen test		0.000	0.000	0.000	0.000	0.000
Autocorrelation test		0.000	0.000	0.000	0.000	0.000
Heteroskedasticity test		0.000	0.000	0.000	0.000	0.000

Note: Robust standard errors in parentheses

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

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Table 9. Regression according to types of firm size

Variables	ROA	ROA	ROE	ROE
	Lower	Higher	Lower	Higher
Diversification	0.0306**	0.00883	0.0224	0.00839
	(0.0128)	(0.0106)	(0.0134)	(0.0107)
Government support	−0.0113	0.00984	−0.0231	0.0118
	(0.0147)	(0.0103)	(0.0153)	(0.0112)
Constant	0.221***	0.0917***	0.237***	0.0995***
	(0.00208)	(0.00190)	(0.00213)	(0.00192)
Observations	2,011	2,012	1,976	1,992
R-squared	0.007	0.002	0.005	0.002
Number of Firm	838	839	835	839

Note:** significant at 5%; Robust standard errors in parentheses

Finally, in terms of the type of enterprises, there is a difference between private/sole proprietorship and household in terms of ROA. Private/sole proprietorship enterprises have lower firm performance than household enterprises. Thus, it can be seen that with private companies in general, the family-owned type still has an advantage over private/sole proprietorship. At the same time, limited liability companies have a higher ROE than household companies.

To assess the model's sustainability, the study analyzes firms of larger and smaller sizes according to the median of total assets. The analysis results with different groups of enterprises are similar to the common results for all enterprises. Therefore, it can be seen that the analytical model can represent all SMEs in Vietnam. In addition, the analysis results for smaller and larger businesses indicate a difference in the impact of diversification on ROA. Diversification only positively affects ROA in companies with lower assets (below 50% quantile). As for larger companies, diversification does not affect ROA. This result shows that firms with larger group sizes tend to have the same impact on ROE. The results of the analysis can be found in Table 9.

Next, the study compares the effects of diversification and government support by type of company. The results show that diversification is significant for Households and Joint stock companies without the state. In these two types of enterprises, companies that diversify will have increased profits compared to companies that do not. Government support does not affect ROA in firms of different types (see Table 10).

Table 10. Analysis results by company type with ROA

The dependent variable: ROA	Beta of Diversification	Beta of Government support
Household	0.0278***	−0.00162
Private/sole proprietorship	−0.0232	0.00152
Partnership	−0.0597	-
Collective/Cooperative	0.0172	0.0238
Limited liability company	0.00635	−0.00344
Joint stock company with state	-	−0.334
Joint stock company without state	0.125**	−0.00188

Note:** significant at 5%

Diversification positively affects households and joint stock companies without the state for the dependent variable ROE. But diversification has a negative connotation for the Partnership type. Meanwhile, Government support has a positive for Joint stock companies with the state

7. Conclusion and implications

7.1. Conclusion

This study was conducted to provide a theoretical basis justifying the diversification of SMEs in Vietnam. The results show that the RBV theory supports the relationship between diversification and better firm performance when activities related to diversification are focused on increasing new products, services, or new business fields. The study also considered the contribution of government support to the company. Finally, the study collected data to assess the impact of SMEs' diversification, government support, and firm performance. The analysis results show that diversification helps increase the company's ROA but does not increase the company's ROE. This result implies that diversification is more efficient with leveraged assets than with equity. The study also shows that government support is not significant in promoting an increase in the ROA or ROE of SMEs. This may indicate the independence of SMEs from government assistance. From this main research result, the authors provide some policy implications for companies and related agencies.

7.2. Theoretical implications

Contributing research examines the relationship between diversification and firm performance based on an RBV. Research has shown a meaningful way of using an enterprise's internal resources in diversification to bring expected business profits. RBV theory provides helpful information for researchers to build the relationship between diversification and firm performance.

In particular, the results show the vital role of financial leverage in helping businesses operate more efficiently when diversifying. Therefore, the trade-off theory is advocated in this case. Again, it can be seen that the result can apply the trade-off theory when evaluating the relationship between diversification and firm performance in addition to the RBV theory. Accordingly, an enterprise conducting diversification through loans will bring more meaningful efficiency than equity (diversification has a positive impact on ROA but no impact on ROE). In addition, the study concludes that there is no relationship between government support and the firm performance of SMEs in Vietnam. This result will contribute to the theory relating to the independence of companies from government support. This result will also open up further research directions to learn more about the government's supportive policies for SMEs.

7.3. Practical implications

The positive effect of diversification on firm performance through ROA shows that companies are diversifying successfully. However, diversification has a positive impact on ROA but has no impact on ROE, showing that diversification only increases returns on assets, which, based on equity, has no meaning. Therefore, companies should not use their equity to diversify and should use debt to diversify more effectively instead. Government support that does not affect firm performance will help companies have a more proactive operating strategy without depending on government policies.

8. Limitation and future research

The study answered the research question and accomplished the research objective. However, the study still has some subjective and objective limitations. First, the study uses data up to 2015 and not the latest available data. Due to issues related to funding, the authors could only use the data set leading up to 2015. Therefore, authors of future studies can utilize the most recent data to describe these relationships in more detail up to the present time. Second, due to the limited number of years from 2011 to 2015, it was not easy to use the model to handle endogeneity. Therefore, in this study, the authors did not consider endogenous issues. Accordingly, it will be more reliable to check and fix the endogenous phenomenon with more comprehensive collected data.

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Highlights

- This study is one of the first studies focusing on impact of diversification, government support in Vietnam
- The analysis results show that Diversification has a positive impact on firm performance through return on assets.
- There is no influence of Diversification on on firm performance through return on firm performance through return on equity.
- There is no influence of Government support on on firm performance.
- The results show that the resourcebased view theory is supported when enterprises implement meaningful diversification. The study also shows that the tradeoff theory is supported when companies diversify

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