

Business Diversification and Financial Supply Chain Efficiency of Companies Listed on Ho Chi Minh City Stock Exchange

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Abstract— This research evaluate the impact of business diversification of companies listed on HoSe from 2013 to 2017, the research has used balance panel data form of 145 listed enterprises. Business diversification is measured according to the Entropy index, measured by turnover in the Grade 2 subdivision and Level 4 subdivision according to Vietnam's industry standard. The results of the study showed that diversification would generally help improve financial efficiency, however, for those enterprises focusing on diversification outside the industry will reduce financial efficiency. In addition, the results of the study also showed that businesses increasing financial leverage for the purpose of expanding the left-sector business will be unstable, those businesses scaling up to strengthen the true diversification of businesses with experience will help increase their financial efficiency.

Keywords— *Diversification, Financial Supply Chain, Efficiency, Companies Listed on HoSe*

1. Introduction

In order for businesses to be able to thrive, the decisions and activities that the business has always consider about how to best use the resources while meeting the challenges of the business environment. Diversification is a diverse range of diverse sectors such as diversify products, industries, diversify geography, international, investment. in which business diversification (industries, products, markets) is one of the most important strategic decisions

and many modern research is also focusing on this form of diversification.

In the world, up to now, there has been a lot of research work on the impact of diversifying business to corporate finance efficiency. The studies approach the diversity index by two methods: the method of dividing the scale by survey such as the study of [1-3], classify companies into 3 diverse groups. [4]: Berger and Ofek have conducted business classification in two single-segment search and multidisciplinary; and methodology for measuring diversification as an Entropy index, research in this form include: [5-10] In Vietnam, the most recent study of [11], which studies the factors affecting the level of income diversity of households in the Mekong Delta region, ... In general, the approach and index of diversity assessment is diverse, from product diversification, trades, revenue, geography to diversification or investment.

Many studies on business diversification have been implemented within the past three decades, not only in the field of corporate finance but also from a strategic governance perspective. The results of the study so far have not reached consensus on the effects of diversification to the performance of the business. The research suggests that business diversification helps to increase financial efficiency such as: [12-20]; but there are also many studies that have given that diversification reduces the effectiveness of the business, typically as researched by: [21, 22]; or some studies indicate the relation between financial performance and diversity is the nonlinear relation (U-shaped), typically the studies of: [23].

Businesses that have been in business to a development stage are often attracted to diversified activities under the trend in business environment in Vietnam. In fact, some businesses still maintain stability and efficiency. Business outside of the industry still delivers profits and achieved business objectives. However, there are businesses through diversification in the last time that have failed to improve operational efficiency. Many businesses have had to implement restructuring and return to traditional business sector, in order to promote their core values. The question is that in today's business environment in Vietnam, should businesses diversify or concentrate on specialization? Is the relevant or non-cultural diversification going to bring better economic efficiency? Is high diversification good or less diversification going well? So, a new study on this topic is necessary to clarify theoretically a diversified business is more effective than a specialisation-focused business? In any conditions, diversification has a positive effect, in which conditions the diversification has a negative effect or may not have an impact on the business performance. Moreover, in practice, although the expected benefits from diversification such as the dispersion of risks and costs, the advantage of scale in taking advantage of resources, but the organization and management and investment that appear in diversified companies is a huge challenge for a country such as Vietnam

The remainder of the paper is organized into five sections. Section 2 is devoted to a brief review of the related literature. In Section 3, we set out a brief description of the data and econometric approach. Section 4 presents the descriptive statistics and experimental results while the conclusion is reported in Section 5.

Literature Review

As we all know, business diversification includes such as market diversification, products, and professions and it has a close relationship with the business performance and financial efficiency of businesses. Current research focuses on debates over the positive or negative impact of business diversification to enterprise efficiency. In this research brief, we focus on the analysis by nature and the relationship between business diversity and operational efficiency.

The study of the nature of business diversification in many countries, feces according to the level of business diversification of products, trades, or markets for the results have a positive relationship to the financial performance of businesses. The studies that support this result include many authors. [22] has researched data on US companies from 1981-1990. The research was based on [24] scale (SR) for the company's classification of three

diversified groups: Undiversified, Moderately diversified and high-diversification (highly diversified) business. The research results show that the performance of companies has a better diversification than companies are not diversified. Especially, companies with moderate levels of diversification have the best operational efficiency. In [3], a research review of the impact of product diversification strategy on the financial efficiency of enterprises and growth. The research model consists of 48 companies in Nigeria. Research results show that related diversification has a significant impact on financial performance, while an unassociated diversification has a negative but negligible effect on efficiency [25], a research review of the relationship between diversification and enterprise efficiency. The research sample consisted of 30 food companies, in the period 1973-1979. The study found that the associated diversification would make a higher profit than the unrelated diversification [26], a study that considers the impact of diversification on the efficiency of businesses in India. The research form is listed in India for the period 2006-2012. The principle finds that diversified companies have a greater degree of efficiency than companies that are not diversified. [27]: Research into the relationship between product diversification with financial performance and third-party roles (in this study include religious organizations, nonprofits. The research model consists of the 500 Fortune United States company, which is from 1996-2003. Research shows that the 3rd stakeholders have a positive role in the relationship between product diversification and financial efficiency. This robust effect is more in the case of unrelated diversification than in the relevant diversification. Or a series of previous studies of [28-30] also support these results.

Other studies advocated not to focus diversification, especially diversification is not related to the profession, products that doing karma has a strong oath. Therefore, such diversification will result in a negative impact on the financial performance of the companies.: Berger and Ofek have conducted business classification in two monophyletic (Single-segment search) and multi-segment search. Research data is American companies in the period 1986-1991, businesses with a wide range of profitable segments operating less than monophyletic enterprises. The losses were due to 'subsidiement' for weak sectors in multidisciplinary businesses, though diversification increased the tax shield but the savings were too small to compensate for the loss caused by diversification. [21-30], research in consideration of the relationship between diversification, diversification of products impacts the performance of Japanese enterprises. The research model is 399 enterprises in the period 1991-1995. Numerous studies also support these

results as Delios.

In addition, many studies have shown that nonlinear relations (U-shaped) between business diversification and financial efficiency of enterprises, support for the results of this study include: Stephen Tallman and Jiatao Li (1996), this study shows the quadratic relationship between product diversification and the efficiency of multinational companies on all models. Efficiency MNE (American multinational company from 1982-1987) increased as the diversity index increased but by the time it began to decline as further diversification. [31], this study pointed out the impact of diversification on the financial performance of businesses in China. Research shows that diversification of products has a reverse-shaped relationship with the company's effectiveness, and U-shaped geochemical diversities. [32] research results show us: diversify products with a reverse-shaped relationship with company efficiency. [33] have experimented on a sample of private companies in Binh Duong province. The results also show that diversification has non-linear relationships with corporate-level profits: Diversification of products improves the profitability of companies up to a point, then diversification continues to increase lead to decreased efficiency

2. Research Methods and Materials

3. 1. Data Setting

In this study, we used the data of the listed enterprises on the HCMC Stock Exchange (HOSE) from 2013-2017 of 145 listed companies, with balanced Panel data, the total number of observations in the study was 725 samples. The calculations are based on financial reports, annual reports of listed enterprises. In terms of subdivision, the author combines the company's product portfolio information, revenue of each industry in the reports with a list of businesses that are allocated by the stock Exchange and regulations on the contents of the Vietnam Economic sectors system in 2007 to form the list of branches of each enterprise.

In order to choose the research template, first of all authors consider businesses with adequate information necessary for research and the presentation of revenue, authors exclude businesses with incomplete information, and financial institutions (banks, finance companies), brokerage firms and securities trading, investment funds, insurance. The reason is due to the complexity of the balance sheet of these companies as well as the difference in the standards of reporting on the results of business operations, at the same time with the goal of considering the impact of business diversification, financial institutions will not be fit in this research because the majority of financial institutions are less diversified, revenue is mainly from the main activity.

3. 2. Model Specifications

Some studies have shown that: the financial performance of the business will be influenced by the diversification and the degree of diversification and relevance and is not related. The relation between the financial performance of the business and the diversification of many studies mentioned. For Vietnam in the present period, investing in the areas of the sector is common. It can be said that Vietnamese enterprises are aiming to expand multidisciplinary investments in order to find profits in the industries they consider potential. This is a favorable condition in the analysis of diversification that this study is referring to. In order to study the impact of diversification on the effectiveness of the enterprises listed businesses we use the following two models:

$$\text{Model 1: } ROA_{it} = \alpha_0 + \alpha_1 DT_{it} + \alpha_2 DT_{it}^2 + \alpha_3 DU_{it} + \alpha_4 FL_{it} + \alpha_5 \ln(\text{Size}_{it}) + \alpha_6 \ln(\text{Age}_{it}) + e_{it}$$

$$\text{Model 2: } ROE_{it} = \beta_0 + \beta_1 DT_{it} + \beta_2 DT_{it}^2 + \beta_3 DU_{it} + \beta_4 FL_{it} + \beta_5 \ln(\text{Size}_{it}) + \beta_6 \ln(\text{Age}_{it}) + u_{it}$$

The calculation method and names of variables are presented in Table 3.1 below

Table 2.1. Summary of variables in research models

No.	Variable name	Symbol	Data sources	Expectation mark	Calculation method
1	Profit / total assets	ROA	Financial report		ROA= earnings before interest and taxes/ total assets
2	Profit / equity	ROE	Financial report		ROE=earnings before interest and taxes / equity

3	Total diversification	DT	Financial report	+	$DT_{it} = \sum_{i=1}^n [P_i \times \ln(\frac{1}{P_i})]$ <p>Pi is the revenue ratio of segment i (segment 4).</p>
4	Diversification level	DT ²	Financial report	-	
5	Diversification is not related	DU	Financial report	-	$DU_{it} = \sum_{i=1}^k [S_i \times \ln(\frac{1}{S_i})]$ <p>Si is the revenue ratio of the i_{th} industry groups (tier 2 codes)</p>
6	Business size	FirmSize	Financial report	+	Total assets of the business
7	Corporate financial leverage	FL	Financial report	-	FL= (book value of long-term debt / book value of long-term debt + book value of equity)
8	Enterprise age	FirmAge		+	Age= logarithm (current year - year of establishment)

3. Results and Discussion

4. 1. Descriptive Statistics

Table 3.1. Statistical description of the variables

Variable name	Average value	Standard deviation	Minimum value	Maximum value
ROA	.0735501	.0995986	-1.568111	.469226
ROE	.0862199	.457076	-9.807404	.6730373
DT	.6271985	.4024247	0	1.733971
DU	.3144993	.3389018	0	1.603044

Age	9.365517	3.66937	1	23
Ln(Age)	2.147973	.4554506	0	3.135494
Ln(Size)	14.01722	1.265144	10.72155	19.01097
FL	.2060574	.2185651	0	.8302852

Source: calculated from the Stata program.

Table 4.1 shows ROA of businesses at an average of 7.35%, this indicator has the highest value of 47%, the lowest value is -156%, and a standard deviation of 10%. This shows the financial performance of the business if compared to the total assets that have a large range of fluctuations. Similarly, the ROE index of businesses is at an average of 8.6%, the highest is 67%, the lowest value is -980% and the standard deviation is 45%. The data above indicates that the behavior of the change variance occurs. To overcome this problem, we use the method of estimating the GLS (Generalized Least Squares) in order to minimize the residual zero-weighted residue caused by the variance of change when estimating the model by OLS (Ordinary Least Square) or the FEM method. In addition, the GLS method also resolves the

phenomenon of auto-correlation when using the FEM and REM methods. [34]

The average life expectancy of businesses in the research form is 9.4 years. If the comparative study of [35]. When researching Chinese enterprises is 10.6 years, the average Vietnamese enterprises have a lower age. The average value of diversification (DT) measurement is 0.63 indicating that Vietnamese enterprises have a high level of diversification and are not related (DU) is 0.31, in other words, the number of Vietnamese enterprises involved in manufacturing business of relatively many related aviation sectors. Minimum value of 0 indicates that a business with the lowest diversification or business doesn't diversify.

Table 3.2. Correlation matrix of independent variables in the model

	ROA	ROE	DU	DT	Ln(Age)	Ln(Size)	FL
ROA	1.0000						
ROE	0.5199	1.0000					
DU	-0.0615	-0.0153	1.0000				
DT	0.0409	0.0512	0.6804	1.0000			
Ln(Age)	0.0827	0.0354	0.0030	0.0835	1.0000		
Ln(Size)	0.0102	0.0075	0.2181	0.2206	0.0785	1.0000	
FL	-0.1908	-0.0965	0.2833	0.1537	-0.1543	0.3833	1.0000

Source: calculated from the Stata program.

Table 2.2 Describes the correlation between variables explained in the research model. Variable financial leverage (FL) has an inverse relationship with effective variables. The old variables (Age) and the same scale

(Size) are correlated with efficacy. While the overall level of diversification (DT) that is related to efficiency, the unassociated diversification (DU) is in reverse correlation to the financial efficiency of the enterprises.

4. 2. Estimation Results

Table 3 The impact of diversification on financial performance

	Model 1- ROA		Model 2- ROE	
	Coef	P-value	Coef	P-value
Const	.029904	0.074 (***)	-.1863016	0.000 (*)
DU	-.0137234	0.045 (**)	-.0353831	0.001 (*)
DT	.0184745	0.149	.1407166	0.000 (*)
FL	-.0754386	0.000 (*)	-.1787476	0.000 (*)
Ln(size)	.0038413	0.052(***)	.0160413	0.000 (*)
DT ²	-.0054063	0.551	-.0558135	0.000 (*)
Ln(age)	.0212530	0.002(*)	.0198185	0.001 (*)

Source: calculated from the author's Stata software by using GLS method

(*), (**), (***) at the 1%, 5% and 10% significance levels, respectively.

The estimated results from the table 4.3 showed an unrelated diversification (DU) statistically significant to both models and together had a reverse effect on the effectiveness of asset use (ROA) and capital Utilization Efficiency (ROE). The results of this study were consistent with the research by [2]. This results in showing that expanding into other industry sectors has led the business to face Disadvantages: (1) Having difficulties in operating at the same time different resources, especially new resources unlike old resources (machinery, manpower, new markets...); (2) Having difficulties in sharing shared resources, it is difficult to reduce costs at scale.

Variable (DT) measures the level of product diversification, statistically significant for all two models and has a relationship with ROA, ROE. This result shows that the business of diversified products is good, reduces risk and increases efficiency. This result is quite consistent with studies such as [34-36]. Also in Model 2 showed that the financial performance had non-quadratic relationship and vice versa with ROE and statistically significant at 5% significance. This nonlinear relation is also suitable for a number of studies by Stephen Tallman and [1].

Theoretically, when enterprises focused on the effort to diversify the product involved will increase the

likelihood of market responsiveness, increase competitiveness. This will positively impact the business efficiency of the business. However, if the growth is not in depth which extends encroachment to the related aviation sectors with the core sectors will lead to the increase in management costs, increase the cost of market research and impact reduce the performance of the business. Discovery in the study by [10], said that the performance of the business increased as the diversity index increased, but after some time it began to decline if further diversified. The study of [2] said that, in essence the relationship between diversification and business efficiency is quite complex. The company's efficiency increased as the diversity index increased but by some point it began to decline as further diversification was reached. When researching the product diversification of Chinese enterprises, [3] based on three factors: lack of resources, the fragmentation of the domestic market, and market uncertainty due to the impact of the institutional transition, the authors have found that under the impact of the three factors, the level of product diversification of enterprises Affecting the efficiency of the production of business in reverse-shaped, i.e. diversishing the positive impact on the performance of the business to some extent and descending if further increase in diversification. The results of research are also consistent with the research of [5], research companies in Binh Duong, Vietnam said that diversification improves the profitability of companies up to a point, then diversification continues to increase lead to decreased efficiency.

The estimate suggests that FL variables have statistical significance for both models and the counter-impact effect on asset utilization (ROA) and capital (ROE). FL index is mentioned quite a lot in previous studies of diversification. According to [6] research suggests that businesses that use high leverage have an impact on reducing business performance. This results in accordance with [10]. This may indicate that businesses that are growing high in debt will often have poor business efficiency. This has also been asserted in the financial theories, when the company owes much debt, the high interest expense impacts make the value and performance low due to increased costs. The estimated outcome of the research model suggests that Vietnamese enterprises using financial leverage have a fairly large and paradoxical effect on the capital use efficiency

The company's Size impacts the same way on the ROE, in line with the theory of economic advantage by scale. Large-scale enterprises will have many advantages in mobilizing capital, creating prestige in the market, overwhelming competitors, make the most of available resources and mutual support between sectors of technology, ground, human resources, equipment... thereby leading to increased financial efficiency. Age variables are also statistically significant and have the same dimensional impact on efficiency. The results of this study are in accordance with the research of (15) As research impacts diversification to the operational efficiencies of Chinese enterprises.

4. Conclusions

Through the study of diversification of Vietnamese enterprises in the period 2013-2017 on the Ho Chi Minh Stock Exchange, it shows that businesses diversify more business efficiency than specialized enterprises (demonstrated by the efficient use of assets and effective use of equity). However, the diversification of the trades is not related, the lack of professional management capacity will reduce the efficiency. Therefore, businesses need to focus on the specialization of areas where they have strengths, should only diversify products from the main industry and even diversify products from the main industry also note which threshold levels allow, exceeding that threshold will reduce efficiency and the diversification is futile.

Another note for businesses is that if scaling based on product diversification from the main industry will help increase efficiency, conversely if scaling in the direction of industry diversity and the left sector create a reverse effect. In addition, if the business increases the financial

leverage, in order to diversify the non-related sectors, it will be a disaster to create a poor effect in the financial efficiency decline.

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