



## ANALYZING THE EFFECT OF CAPITAL STRUCTURE ON SALES GROWTH: A CASE OF LISTED TRANSPORT ENTERPRISES IN VIETNAM

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**Abstract.** In the current context of Vietnam's economy gradually recovering and growing after the Covid-19 pandemic, the transportation industry plays a crucial role in the supply chain and circulation of goods. It is important for listed transport enterprises to carefully consider capital structure, as it not only affects financial capacity but also impacts sales growth. This study examines the correlation between capital structure and sales growth of listed transport enterprises in Vietnam from 2019 to 2022. The sample consists of 98 transport enterprises, and data was collected from their financial statements. The fuzzy-set Qualitative Comparative Analysis (fsQCA) method was utilized to determine the relationship between variables representing capital structure (such as total debt to equity ratio, short-term debt to total assets ratio, long-term debt to total assets ratio, and total debt to total assets ratio) and sales growth. The findings indicate that capital structure has a significant impact on sales growth. Additionally, the study reveals that the short-term and long-term debt ratios have both positive and negative effects on the sales growth of listed transport enterprises in Vietnam. These results provide valuable insights for managers in making informed decisions regarding the optimal capital structure for maximizing sales growth in the transportation industry in Vietnam.

**Keywords:** capital structure, sales growth, transport enterprises, Vietnam

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### 1. INTRODUCTION

Capital structure refers to the way in which a business manages its financial resources to fund its production and operations. It involves determining the proportion of debt and equity in

the enterprises' total assets, which in turn affects its profitability, financial risk, and overall financial strength. This is a crucial factor in a business's ability to sustainably grow and develop. In today's business landscape, choosing an appropriate capital structure can not only optimize financial costs but also improve profitability and the potential for expanding operations.

Numerous studies have demonstrated the significant impact of capital structure on the performance and growth of enterprises, although this effect may vary depending on the industry and economic conditions of each country. Firstly, the impact of capital structure on the performance and value of an enterprise is significant. According to Modigliani and Miller [1], in a perfect market, capital structure does not affect firm value. However, in reality, factors such as taxes, bankruptcy costs, and agency costs can make capital structure a critical factor in optimizing performance. The results showed a complex relationship between capital structure and firm performance, with significant variations across industries (construction, consumer products, industrial products, plantation, property, trading, and service) and firm size. Salim and Yadav [2] confirmed the impact of capital structure on the performance of listed enterprises in Malaysia from 1995 to 2011. In Vietnam, Luu [3] confirmed the negative impact of capital structure on the value of chemical enterprises listed on the Vietnamese stock market. Additionally, the moderating role of state ownership ratio on the relationship between capital structure and firm performance was also confirmed by Khang et al. [4] in non-financial listed enterprises in Vietnam from 2010 to 2019. Additionally, the capital structure has been shown to have a significant effect on business growth. Research by Rajan and Zingales [5] also suggests that high levels of debt can promote firm growth if used to invest in high-return projects. According to Gaytan et al. [6], capital structure plays an important role in financing the growth and business operations.

The transportation industry in Vietnam is a vital contributor to the economy, facilitating the movement of goods, connecting economic regions, and expanding import and export markets. Not only does transportation ensure the smooth supply chain of goods, but it also drives the development of other economic sectors such as industry, agriculture, and tourism. In the current era of deep integration, improving the efficiency and quality of transportation services is crucial in enhancing national competitiveness and promoting comprehensive economic development.

In Vietnam, the transportation industry is undergoing significant changes, particularly in the context of economic integration and the development of listed enterprises, along with increased transportation demand after the Covid-19 pandemic. Enterprises in this sector often face various factors that affect their capital structure. In the transportation industry, where large capital is needed to maintain and develop facilities and infrastructure, excessive debt can create high financial risks, jeopardizing the sustainability of the business. Vietnamese transport enterprises tend to rely on equity to minimize financial risks, while also demonstrating that low debt ratios can bring stability in sales growth. However, increasing competition and the need for continuous investment in infrastructure are putting immense pressure on the capital structure of these enterprises.

Despite numerous studies on capital structure and corporate performance, the relationship between capital structure and sales growth in the Vietnamese transportation industry has not been fully explored. Therefore, this study aims to investigate the relationship between capital structure and sales growth of listed transport enterprises in Vietnam from 2019 to 2022. The research results will contribute to the development of appropriate financial strategies for the

transportation industry, particularly in the context of economic integration and the fluctuations following the end of the Covid-19 pandemic.

This study consists of five parts. The following section presents the theoretical basis and hypothesis development. The third part outlines the research method and data. The subsequent part presents the research findings. The final part is the conclusions and limitations of the study.

## **2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT**

### **2.1. The resource - based view theory**

The resource-based view theory, developed by Barney [7], argues that a firm's ability to maintain a sustainable competitive advantage depends on its possession and effective utilization of special resources, including financial, human, and technological resources. In the transportation industry, firms can utilize their capital structure to invest in special resources, such as new means of transport, efficient operational management technology, or infrastructure, in order to improve competitiveness and promote sales growth. Maintaining a reasonable capital structure will assist transport firms in optimizing resources and creating effective investment opportunities, ultimately leading to sustainable growth in a competitive business environment [7, 8].

### **2.2. Agency theory**

The agency theory proposed by Jensen and Meckling [9] suggests that there is a conflict of interests between stakeholders within a firm, specifically between shareholders (owners) and managers (operators). The capital structure can impact this conflict, as debt can create pressure on managers to maintain efficient operations in order to ensure solvency, while equity provides more flexibility in investment decisions and reduces financial pressure. Fama and Jensen [10] support this idea, stating that the use of debt can decrease agency costs by holding managers accountable to creditors and ultimately benefiting shareholders. However, in the transportation industry, where large investments in infrastructure are necessary, finding the right balance between debt and equity is crucial for optimizing business operations and sustaining growth.

### **2.3. Trade-off theory**

The trade-off theory, developed by Kraus and Litzenberger [11], hypothesizes that firms optimize their capital structure by balancing the tax benefits of debt with the bankruptcy costs associated with it. In other words, enterprises can use debt to reduce their taxes (since interest is tax deductible), but if they have too much debt, they may face higher bankruptcy costs and financial risks. In the transportation industry, maintaining a reasonable level of debt can allow enterprises to take advantage of tax benefits from interest, while also supporting investments in infrastructure and expansion. However, excessive use of debt can lead to significant financial risks, which can ultimately impact an enterprise's ability to pay and maintain stable business operations, thereby affecting sales growth.

### **2.4. Modern capital structure theory by Modigliani và Miller (1958)**

One of the most fundamental theories of capital structure is the Modigliani and Miller theory [1], also known as the M&M theory, which assumes perfect markets. This theory states that, in the absence of taxes, bankruptcy costs, or information imperfections, the capital structure does not impact the value of the enterprise. However, in reality, the presence of taxes and bankruptcy costs can affect the value of the enterprise, particularly in determining the

balance between debt and equity. Subsequent studies have further developed and expanded upon this theory. For instance, Myers [12] introduced the concept of agency costs and market imperfections, highlighting the strategic importance of capital structure in directly influencing the profitability and sales growth of the enterprise.

## **2.5. The relationship between capital structure and sales growth**

Capital structure refers to the combination of debt and equity used by enterprises to support their operations [13]. A well-balanced capital structure can help enterprises maintain financial stability and optimize their costs, ultimately leading to sales growth. According to research by Rajan and Zingales [5], a high level of debt can drive sales growth when it is used to invest in projects with high returns. However, excessive debt can also increase financial risk, which can negatively impact solvency and long-term scalability. On the other hand, equity can help minimize financial risk but may limit ability to use financial leverage for rapid growth. A study by Demirgüç-Kunt and Maksimovic [14] examined the impact of different financial systems - bank-based versus market-based - on firms' ability to raise capital for growth. The study found that firms in countries with more developed and efficient financial systems tend to experience faster growth. Additionally, the authors found that bank-based financial systems tend to benefit small firms, while market-based financial systems favor larger firms in terms of capital raising. These findings highlight the crucial role of financial structure in promoting economic growth and demonstrate that the type of financial system can significantly affect ability to raise capital for growth. These results have important implications for policies in developing economies that aim to improve financial infrastructure to support firm growth.

In the transportation industry, which requires significant investments in infrastructure and facilities, selecting the appropriate capital structure is crucial. Transport enterprises must maintain a flexible capital structure to manage fluctuations in operating costs while also ensuring the ability to expand and maintain their services. Proper utilization of debt can provide financial leverage and drive sales growth for transport enterprises, this is consistent with the resource - based view theory, agency theory and modern capital structure theory by Modigliani and Miller [1]. Moreover, high debt ratios can aid in the rapid sales growth of transport enterprises in developed economies, as it enables them to invest in large-scale and highly profitable projects. However, in emerging markets such as Vietnam, excessive debt can pose financial risks, particularly in an economy that is not yet fully stable. Thus, trade off - theory can explain the appropriateness of the relationship between capital structure and sales growth in the specific context of the transportation industry in Vietnam.

In the field of capital structure research, various indicators are commonly used to assess the financial leverage and capital sources. These include the debt-to-equity ratio, short-term debt to total assets ratio, long-term debt to total assets ratio, and total debt to total assets ratio. These indicators not only provide a quantitative measure of firm's reliance on borrowed capital, but also have a significant impact on financial risk, solvency, and capital efficiency (Titman and Wessels [15]; Rajan and Zingales [5]). For instance, a high short-term debt ratio may indicate a higher liquidity risk, while a long-term debt ratio may reflect a more stable financial strategy. By analyzing these indicators, a comprehensive evaluation of firm's capital structure can be made, leading to optimal decisions regarding corporate financing (Frank and Goyal [16]). Based on the theoretical basis and the results of previous studies, this study proposes the following hypotheses:

**Hypothesis H1:** The total debt to equity ratio has an effect on sales growth of listed transport enterprises in Vietnam.

**Hypothesis H2:** The short-term debt to total assets ratio has an effects on sales growth of listed transport enterprises in Vietnam.

**Hypothesis H3:** The long-term debt to total assets ratio has an effect on sales growth of listed transport enterprises in Vietnam.

**Hypothesis H4:** The total debt to total assets ratio has an effect on sales growth of listed transport enterprises in Vietnam.

### 3. DATA AND RESEARCH METHOD

#### 3.1. Research method

To investigate the correlation between capital structure and sales growth among listed transport enterprises in Vietnam, this study utilizes the fuzzy set method fsQCA. According to Ragin [17], fsQCA is an analytical approach that combines qualitative comparative theory with quantitative analysis techniques, aiding in the clarification of complex cause-effect relationships in sociological and economic studies.

#### 3.2. Data

The research sample for this paper consists of 98 listed transport enterprises in Vietnam from 2019 to 2022. Data was collected from the public financial reports of these enterprises, including parameters such as debt-to-equity ratio, short-term debt to total assets ratio, long-term debt to total assets ratio, and debt to total assets ratio, as well as sales growth during the study period. Table 1 illustrates the measurement of variables in this study.

Table 1. Measurement variables in the study.

Variables	Symbols	Measurements	Related Studies
<b>Dependent variable</b>			
<b>Sales growth ratio</b>	GRWTH	The rate of sales growth is measured by comparing this year's revenue to last year's.	Putri & Rahyuda [18]
<b>Independence variables</b>			
<b>Total debt to equity ratio</b>	DER	The ratio between total debt and equity	Nissim & Penman [19]
<b>Short-term debt to total assets ratio</b>	SDA	The ratio between short-term debt and equity	Salim & Yadav [2]
<b>Long-term debt to total assets ratio</b>	LDA	The ratio between long-term debt and total assets	Salim & Yadav [2]
<b>Total debt to total assets ratio</b>	DAR	The ratio between total debt and total assets	Luu [3]
<b>Control variables</b>			

<b>Listing age</b>	AGE	Logarithm of the difference between the observation year and the listing year	Gomes & Schmid [20]
<b>Firm size</b>	SIZE	The logarithm of total assets	Kirch & Terra [21]
<b>Asset turnover ratio</b>	ATR	Net revenue divided by average total assets	Onaolapo & Kajola [22]

(Source: Author's synthesis)

The study examines the relationship between sales growth and various measures of capital structure, including the debt to equity ratio, short-term debt to total assets ratio, long-term debt to total assets ratio, and debt to total assets ratio. The control variables in the study include listing age, firm size, and asset turnover. This study follows the use of these control variables from previous research, as they have been shown to have a significant influence on firm performance and sales growth [20, 21, 22]. These relationships are shown in equation (1).

$$f(\text{GRWTH}) = f(\text{DER, SDA, LDA, DAR, AGE, SIZE, ATR}) \quad (1)$$

The proposed research model is illustrated in Figure 1.

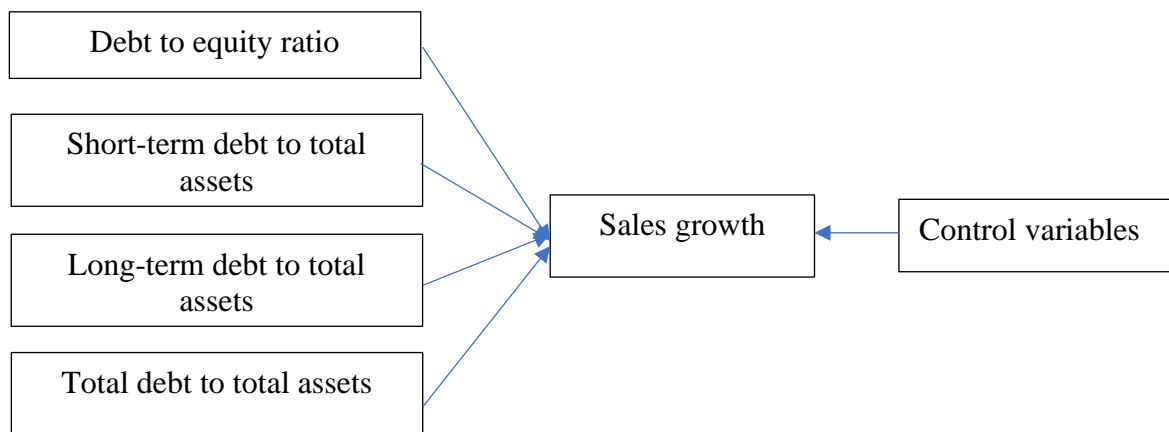


Figure 1. Proposed research framework.

#### 4. RESEARCH FINDINGS AND DISCUSSIONS

The descriptive statistical results (Source: Author's synthesis) of the variables in the study are presented in Table 2. The GRWTH index has a negative minimum value (Min GRWTH = -91.24), indicating that some transport enterprises in the research sample have experienced a decrease in revenue. This could be due to competition or difficulties caused by the Covid-19 pandemic. However, the maximum value of GRWTH reached 471.46, suggesting that there are transport enterprises in Vietnam that have recently experienced significant sales growth of over 400% compared to the previous year. This is a positive indication of the growth potential of enterprises in the transport sector, provided they are able to expand their market and implement digital technology in their management. The GRWTH variable shows significant fluctuations, which can be attributed to both differences between enterprises and the impact of COVID-19 on the market. Some enterprises may have experienced high revenue growth due to a low base

effect from the previous recession. Additionally, the ratio of long-term debt to total assets has a minimum value of 0, indicating that there are enterprises that do not rely on long-term debt and instead solely depend on short-term debt for their business operations. This can create pressure for these enterprises to pay short-term interest. As a result of COVID-19, the capital structure of enterprises may have been affected, particularly in terms of short-term capital sources. This may have led to an increase in short-term borrowing for transport enterprises in order to meet liquidity needs during challenging times. The instability caused by COVID-19 may have also resulted in enterprises postponing or cancelling long-term investment projects.

Table 2. The descriptive statistical results.

Variable	Mean	Std. Dev.	Minimum	Maximum	N Cases	Missing
GRWTH	11.1643	51.1997	-91.24	471.46	392	0
DER	1.1765	4.9329	-3.538	82.75	392	0
SDA	3.2336	25.558	0.003	246.06	392	0
LDA	2.9276	28.8221	0	429.15	392	0
DAR	54.7197	80.0098	1.3	794.44	392	0
AGE	0.7595	0.2839	0	1.342	392	0
SIZE	2.6232	0.7150	0.007	4.833	392	0
ATR	5.7688	57.1630	0.026	781.96	392	0

**Note:** GRWTH - Sales growth ratio, DER - Total debt to equity ratio, SDA - Short-term debt to total assets ratio, LDA - Long-term debt to total assets ratio, DAR - Total debt to total assets ratio, AGE - Listing age, SIZE - Firm size, ATR - Asset turnover ratio.

(Source: Extracted from the fsQCA software)

The results of the fsQCA analysis indicate which capital structure factors play the most important role in promoting sales growth. This method allows for the identification of optimal combinations of capital structure factors and sales growth potential, making it easier to provide recommendations for listed transport enterprises in Vietnam to adjust their capital structure.

Table 3 and 4 present the parsimonious and intermediate solutions from the fsQCA analysis on the relationship between variables describing capital structure and sales growth potential of listed transport enterprises in Vietnam. According to Table 3, five variables have a significant impact on sales growth potential: short-term debt to total assets ratio, long-term debt to total assets ratio, debt to total assets ratio, firm size, and listing age. This suggests that debt structure has a positive impact on sales growth potential. The research results also confirm that both short-term and long-term debt have a positive impact on sales growth in listed transport enterprises in Vietnam. This is understandable because transport enterprises require a significant amount of capital to invest in means of transport and facilities, and short-term and long-term debt can help them expand their scale. Additionally, paying interest on loans serves as a driving force for transport enterprises to optimally utilize resources, leading to good business results and steady sales growth over time.

The results from Table 4 demonstrate that capital structure not only directly affects sales growth, but also has complex interactions with other factors. The combination of these factors can create necessary and sufficient conditions for enterprises to achieve growth. The fsQCA results from the intermediate solution reveal that there are 16 different combinations of variables in the model that impact sales growth. The research findings in Table 3 and 4 demonstrate that variables can have both positive and negative effects on sales growth (DER & ~DER, SDA & ~SDA, LDA & ~LDA, DAR & ~DAR, AGE & ~AGE, SIZE & ~SIZE). The

proposed solution from the fsQCA results suggests that the impact of these variables is dependent on their combination with other factors in specific contexts. For instance, while solutions 1, 3, 4, 12, 15, and 16 show a positive impact of DER on GRWTH, solutions 5, 6, 7, 8, 9, and 13 indicate a negative impact. Among the 16 solutions found, the solution with the highest consistency at 0.8953 is  $DER\_c \sim SDA\_c \cdot DAR\_c \cdot AGE\_c \cdot SIZE\_c \sim ATR\_c$ . This indicates that an increase in total debt, combined with a decrease in the ratio of short-term debt to total assets, along with an expansion of scale, high listing age, and decreased asset turnover, can lead to sales growth. This solution suggests that long-term debt with a longer repayment period is more beneficial for transport enterprises, which typically require large investment capital. The solution coverage for the parsimonious and intermediate solutions is 0.6070 and 0.7179, respectively, indicating that these causal combinations explain 60.7% and 71.79% of the total causal conditions affecting business growth [23]. Therefore, hypotheses H1, H2, H3, and H4 are accepted. This result provides advice for transport enterprises on how to effectively combine debt and equity in order to achieve sustainable sales growth. The key to a reasonable combination is adjusting the proportion of debt and equity in total capital to fit the specific context of each enterprise and the current conditions. In the proposed solutions, higher values of DER, SDA, LDA, and DAR are also associated with GRWTH. Utilizing high financial leverage can contribute to revenue growth by expanding investment opportunities, taking advantage of market opportunities, and optimizing capital costs. When enterprises are able to secure loans at reasonable costs and effectively invest in profitable activities such as production, marketing, or research and development, significant improvements in revenue can be achieved. However, the effectiveness of financial leverage depends on proper risk management, macroeconomic conditions, and cash flow stability. Therefore, it is important to carefully consider these factors to avoid the negative consequences of interest expenses and the risk of insolvency.

In addition to capital structure, factors such as firm size, listing age, and asset turnover also have an impact on sales growth. Enterprises that implement expansion strategies and invest in new technology, facilities, means of transport, and machinery and equipment are often able to maintain and grow revenue more effectively. This research result is consistent with previous studies on the relationship between capital structure and sales growth. For instance, studies by Rajan and Zingales [5] also demonstrate that enterprises using reasonable financial leverage can experience strong growth, but when the debt ratio exceeds the safety threshold, growth may be limited due to high financial costs.

Table 3. Parsimonious solution.

**Frequency cutoff: 1**

**Consistency cutoff: 0.8289**

Assumptions	Raw coverage	Unique coverage	Consistency
SDA_c	0.5860	0.0011	0.7402
LDA_c	0.4038	0.0028	0.7232
DAR_c	0.6445	0.0078	0.6906
AGE_c	0.4874	0.0093	0.7959
SIZE_c	0.6378	0.0530	0.6843

*Solution coverage: 0.9157*

*Solution consistency: 0.6070*

*(Source: Extracted from the fsQCA software))*



Table 4. Intermediate solution.

*Frequency cutoff: 1**Consistency cutoff: 0.8277*

Assumptions	Raw coverage	Unique coverage	Consistency
DER_c*DAR_c*~AGE_c*~SIZE_c	0.4500	0.0034	0.8010
SDA_c*DAR_c*~AGE_c*~SIZE_c	0.4520	0.0068	0.8043
DER_c*SDA_c*DAR_c*~AGE_c	0.4761	0.0034	0.7976
DER_c*DAR_c*~AGE_c* ATR_c	0.4585	0.0028	0.8327
~DER_c*SDA_c*~LDA_c*~AGE_c*~SIZE_c	0.3827	0.0008	0.8399
~DER_c*~SDA_c*~LDA_c*~DAR_c*AGE_c	0.3895	0.0078	0.8408
~DER_c*~SDA_c*~DAR_c*SIZE_c*~ ATR_c	0.4374	0.0012	0.8154
~DER_c*~SDA_c*~LDA_c*~DAR_c* ATR_c	0.4743	0.0305	0.8606
~DER_c*~LDA_c*~DAR_c*AGE_c*SIZE_c	0.3414	0.0003	0.8768
LDA_c*DAR_c*~AGE_c*SIZE_c*~ ATR_c	0.2775	0.0060	0.8232
SDA_c*~LDA_c*DAR_c*~AGE_c* ATR_c	0.4452	0.0011	0.8686
DER_c*SDA_c*~LDA_c*DAR_c* ATR_c	0.4419	0.0078	0.8595
~DER_c*~SDA_c*~LDA_c*DAR_c*~AGE_c*~ ATR_c	0.3464	0.0062	0.8629
~SDA_c*~LDA_c*~DAR_c*~AGE_c*SIZE_c*~ATR_c	0.4310	0.0011	0.8149
DER_c*~SDA_c*DAR_c*AGE_c*SIZE_c*~ ATR_c	0.2606	0.0005	0.8953
DER_c*~SDA_c*LDA_c*DAR_c*SIZE_c	0.2863	0.0002	0.8292

*Solution coverage: 0.8459**Solution consistency: 0.7179**(Source: Extracted from the fsQCA software)*

## 5. CONCLUSIONS AND LIMITATIONS

This study not only clarifies the relationship between capital structure and sales growth in the Vietnamese transport industry, but also provides practical suggestions for developing appropriate financial policies for the industry. This will help enterprises optimize their capital structure and achieve sustainable growth.

The results show that high debt ratios can lead to a rapid increase in sales growth under certain conditions, but may not always result in positive outcomes. While high debt ratios can help enterprises quickly increase sales through financial leverage, they can also lead to increased financial risks, payment pressure, and potentially harm long-term performance if not managed properly. This is consistent with the trade-off theory, which suggests that enterprises must find a balance between the tax benefits of debt and financial risks [11]. Some enterprises with high debt ratios and low equity capital are still able to maintain sustainable sales growth. In stable cash flow conditions, with strong management capabilities and a favorable business environment, financial leverage can be used as a strategic tool to promote growth without compromising financial sustainability. However, these enterprises face greater financial risks if they do not manage debt repayment well or during difficult times in the transport market. This reflects the grand theory, which suggests that enterprises can create financial pressure for managers, forcing them to make decisions that benefit shareholders and support sales growth [9]. On the other hand, enterprises with a balanced capital structure, with a reasonable debt and equity ratio, tend to maintain stable and sustainable growth throughout the research period.

Enterprises with a balanced capital structure are able to maintain financial stability, minimize risks from interest rate fluctuations and debt repayment pressure, and create favorable conditions for sustainable growth. By finding the right balance between debt and equity, enterprises can optimize their cost of capital while maintaining investment flexibility and adaptability to changes in the market. This is supported by the resource theory, which suggests that a reasonable capital structure helps enterprises maintain stable financial resources while minimizing financial risks [7].

The research results have both theoretical and practical significance. Theoretically, this study contributes to the understanding of the relationship between capital structure and business growth, particularly in transport enterprises in developing countries. In practice, it provides guidance for managers of listed transport enterprises in Vietnam to pay attention to the appropriate capital structure of the enterprise, as well as factors such as scale, listing time, and asset turnover. The combination of these factors in specific cases can have varying impacts on the development and revenue of the enterprise. Additionally, this study recommends that listed transport enterprises in Vietnam prioritize the use of long-term debt for business expansion rather than short-term debt, as the pressure to repay debt in the short term can have a negative impact on the enterprise.

This study was conducted using a sample of 98 listed transport enterprises, with data collected from 2019 to 2022. However, the Covid-19 pandemic occurred during this time, causing disruptions in the operations of transport enterprises and impacting their sales growth. Additionally, it should be noted that the research data was limited to listed transport enterprises, which may not accurately reflect the overall Vietnamese economy. As a result, future research should consider expanding the scope to include different time periods and industries in order to provide a more comprehensive understanding of the relationship between capital structure and sales growth for listed enterprises in Vietnam.

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