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THE BUSINESS PERFORMANCE OF LISTED CHEMICAL INDUSTRY COMPANIES IN VIETNAM

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INTRODUCTION

1.Rationale of the Study

The chemical industry plays a crucial role, being the primary sector for transforming raw materials into desired products used in other industries, impacting all aspects of life such as agriculture, the environment, food, hygiene, decoration, transportation, etc. By 2024, more than 4 million different types of chemicals were known worldwide, with over 80,000 widely used. Chemical products play a vital role in the food industry, creating preservatives and flavorings for food processing and extending shelf life. This has led to a boom in the food industry because preservatives not only help maintain food quality but also facilitate food imports to various places.

In reality, the business performance of enterprises in the chemical industry sector has not lived up to its potential. The average net profit margin is only 12%. This result partly shows that the industry's potential has not been fully exploited. This stems from many subjective and objective reasons, including: difficulties in managing input materials, limited capital scale, irrational capital structure, and low labor skill levels… Furthermore, businesses in the chemical industry also face many adverse pressures related to the supply market, such as the Covid-19 pandemic, armed conflicts, the Russia-Ukraine war causing disruptions and breakdowns in supply chains, and soaring prices of raw materials. In the context of globalization, it is inevitable that foreign businesses with strong financial resources and modern technology will enter and compete with domestic businesses in the chemical industry.

Based on that reality, the doctoral candidate chose the topic: **"The business performance of listed chemical industry companies in Vietnam"** as the research topic for their dissertation.

2. Research Objectives of the Thesis

The overall research objective of this thesis is to clarify the business performance of listed companies in the chemical industry sector, thereby providing an assessment of the current state of business performance and proposing solutions to improve the business performance of listed companies in the chemical industry sector in Vietnam.

3. Research Subject and Scope

- Research Subject: This thesis studies the business performance of enterprises.
- Research Scope:

+ In terms of content: Focuses on analyzing the business performance of listed enterprises in the chemical industry in Vietnam based on the analysis of core financial indicators and influencing factors, aiming to propose solutions to comprehensively and sustainably improve business performance.

+ Scope: The research focuses on listed chemical industry enterprises in Vietnam. The sample includes 32 enterprises with large capital and market capitalization, and high transparency in the chemical industry, listed on the HNX and HOSE stock exchanges.

+ Timeframe: The documents and data for the research were collected over six years, from 2019 to 2024, ensuring a comprehensive reflection of the industry's fluctuations before, during, and after the Covid-19 pandemic, as well as changes in the global chemical market.

4. Research Status on Business Performance

4.1. Research Results on Business Performance

The development of theoretical and practical approaches to business performance management (BPM) worldwide shows significant improvement, shifting from a purely financial approach to multi-dimensional models integrating strategic and sustainable development factors. Contributions in this field extend beyond refining the system of measurement indicators; they also expand the scope of evaluation to include factors profoundly impacting the survival and growth of businesses in an increasingly complex competitive environment.

In the early period, business performance was primarily determined through accounting indicators such as revenue, net profit, return on assets (ROA), return on equity (ROE), or return on sales (ROS). This perspective reflects an approach focused on short-term and easily quantifiable results. This approach assumes that a business is efficient when it achieves the expected profit level, paying little attention to the cost of capital or non-financial factors. A typical example is provided by Venkatraman, N., & Ramanujam (1986). Since the late 20th century, researchers have begun to realize that evaluating business performance through absolute profit can lead to biases if the cost of capital is not considered. This has spurred the development of new indicators such as Return on Invested Capital (ROI), Economic Value Added (EVA), and especially the use of weighted average cost of capital (WACC) as a benchmark. For example, economist Erasmus (2008) stated that the Economic Value Added (EVA) index is a

financial measurement tool that reflects the true efficiency of capital utilization. Since the early 21st century, the trend of integrating financial and non-financial performance has become increasingly evident, exemplified by Andy Neely (2002), Bernini (2015), Hammer (2003), Dasa Dragnic (2014), Daniel Onwonga Auka and Jackline Chepngeno Langat (2016). It can be seen that the theoretical development of business performance has shifted from accounting thinking (absolute profit indicator) to value thinking (comparison between profit and cost of capital), and currently to strategic-social thinking (overall performance including financial, managerial, environmental, and social factors).

In Vietnam, research related to business performance is increasingly abundant, reflecting a shift in academic thinking and business management practices. Approaches to business performance remain relatively diverse, lacking clear theoretical consensus. A common point is the primary application of financial indicators such as profit, profitability, or productivity as a basis for evaluating effectiveness. Typical examples include studies by Tram Thi Xuan Huong and Nguyen Tu Nhu (2018); Mai Thi Dieu Hang (2020); Vu Thi Kim Oanh (2022); Le Cong Hoi (2017); Doan Vinh Thang (2016); and Doan Ngoc Phuc (2014)

4.2. Research findings on factors affecting the business performance of enterprises

Currently, numerous domestic and international scientific studies have been conducted using various methods, such as qualitative and quantitative approaches, to identify factors influencing the business performance of enterprises. Most studies focus on applying theories to quantify the impact of internal and external factors on ROA, ROE, ROS, or EVA. These studies have identified key factors affecting business performance, including asset size, growth rate, ownership structure, interest rates, etc. Globally and in Vietnam, research on factors impacting business performance has provided diverse empirical evidence. Some notable studies worldwide include: Kamasak's dissertation, Ghulam's dissertation, Tailab's experimental research, M.M.'s research, Mahmoud et al.'s research (2018), and Erasmus's research. In Vietnam, some notable studies include: Nguyen Thanh Doan, Tran Thanh Phuong Quynh and Nguyen Thi Oanh, Dr. Tran Thi Thu Phong, Le Thanh Huyen, Nguyen Dinh Hoan, Bach Thi Huyen, Hoang Quoc Mau, Ngo Thi Minh, Pham Thi Huong, Doan Thuc Quyen, and Ha Van Dung.

4.3. Research findings related to the chemical industry and chemical industry enterprises

The chemical industry is a fundamental and long-standing industry worldwide, influencing socio-economic life, thus attracting the attention of many authors. Although the chemical industry plays a crucial role in the economic development of each country and impacts many other sectors, the number of research results on this industry is still limited. Notable studies include: Joana Costa, Tânia Freitas (2022), Roberts (2002), Ken Geiser & Stephanie Baima (2021), Steve Evans (2013), Nguyen Chi Thanh (2024), Nguyen Hoang Manh (2016), and Le Tuan Hiep (2020).

4.4. Research gap

Firstly, in studies of business performance, traditional accounting metrics such as ROS, ROA, ROI, or ROE are commonly used to reflect the business performance of enterprises. However, these indicators do not take into account the cost of capital, and therefore do not fully reflect whether the enterprise is actually creating economic value. This limitation becomes more apparent in the industrial and handicraft sectors – sectors characterized by high capital intensity, high financial costs, and significant financial risk. Although the EVA metric allows for the assessment of business performance from a net economic value perspective, by considering profit in relation to the cost of both debt and equity, this approach has not been fully explored in studies on business performance in Vietnam, especially in the chemical industry. This is a theoretical gap that this thesis aims to clarify.

Secondly, regarding research methodology, most previous studies approached business performance by using traditional accounting indicators individually or value-based indicators, primarily descriptive and comparative in nature. The lack of a unified analytical framework combining accounting performance indicators (ROA, ROE) with economic performance indicators (EVA, WACC) has limited the ability to identify the difference between accounting profit and the actual economic value created by the business.

Thirdly, empirically, studies on listed companies in the Vietnamese IT sector mainly focus on analyzing accounting profits or traditional efficiency indicators, while quantitative evidence on factors affecting EVA remains limited. In particular, the post-Covid period, with its significant fluctuations in capital costs, supply chain disruptions,

and changes in the competitive environment, has significantly altered the operating conditions of companies in the IT sector. However, there are not many empirical studies exploiting EVA as the central dependent variable to analyze the factors affecting the business performance of listed companies in the industrial and handicraft sector in this context. This empirical gap necessitates quantitative tests based on post-Covid data to provide more meaningful empirical evidence for the industrial and handicraft sector in Vietnam.

Based on the aforementioned gaps, the researcher chose to measure efficiency in terms of actual economic value added (EVA).

5. Research Methodology

This thesis employs a combination of research methods to clarify the specific research objectives. The research methods used in this thesis are as follows:

Research objectives	Research methods
Systematizing the basic theories on the business performance of enterprises.	The comparative, analytical, and synthetic approach is based on previous domestic and international studies on business performance and factors affecting business performance.
Lessons learned from improving business performance in the chemical industry worldwide.	Case study method: The researcher selects typical enterprises in the chemical industry in various countries, clarifies their business characteristics and the current state of their business operations. From this, they generalize and draw lessons learned for listed enterprises in the chemical industry in Vietnam.
This study clarifies the current state of business performance of listed companies in the chemical industry in Vietnam, identifies factors	Descriptive statistical methods for evaluating the current state of business performance of enterprises Using Stata software and multivariate

affecting business performance, and proposes solutions to improve business performance in these companies.	regression methods to clarify the factors affecting the business performance of listed enterprises in the industrial and handicraft sector. Using qualitative methods to collect the views, opinions, and practical experiences of 164 managers and key personnel, helping to deeply explore the factors affecting the business performance of listed enterprises in the industrial and handicraft sector that quantitative data cannot fully reflect.

6. Research Questions

Stemming from the need to clearly identify the nature of business performance in the context of market fluctuations, along with existing gaps in previous research systems, this thesis aims to address the following key research questions:

- What is business performance of an enterprise?

- What significance can the application of the Economic Value Added (EVA) measure bring in reflecting the true business performance of an enterprise?

- How is the business performance of listed enterprises in the chemical industry sector reflected when assessed according to the EVA indicator in the period 2019 - 2024?

- What are the main factors affecting the EVA of listed companies in the chemical and pharmaceutical industry, and what is the extent of each factor's influence?

- Do differences in operational characteristics among subgroups within the chemical and pharmaceutical industry create differences in value creation efficiency?

- Based on the quantitative analysis results and the industry context, what solutions should be developed to help companies in the chemical and pharmaceutical industry improve profitability and control the cost of capital simultaneously, thereby enhancing business performance in the context of sustainable development and integration?

7. Scientific and Practical Significance of the Thesis

- Theoretically: The thesis provides further empirical evidence on the business performance of enterprises from the perspective of creating economic value (EVA),

through the analysis of the difference between the return on capital and the cost of capital of enterprises. The research results help clarify the role of factors in shaping the business performance of enterprises.

- In practice, the conclusions of this thesis serve as a reference for financial managers in listed companies in the industrial and handicraft sector in evaluating and improving business performance towards efficient capital utilization and sustainable economic value creation. At the same time, the research results also provide information to support policymakers and investors in making decisions regarding listed companies in the industrial and handicraft sector in Vietnam, in line with the industrial and handicraft sector development strategy until 2030.

8. Thesis Structure

Besides the introduction, conclusion, bibliography, and appendices, the thesis is divided into 3 chapters:

Chapter 1: Theoretical framework on business performance of enterprises.

Chapter 2: Current state of business performance of listed chemical industry enterprises in Vietnam.

Chapter 3: Solutions to improve business performance of listed chemical industry enterprises in Vietnam.

CHAPTER 1: THEORY OF BUSINESS PERFORMANCE

1.1. BUSINESS PERFORMANCE

1.1.1. Concept of business performance

The research student presented their viewpoint: *The return on capital is the difference between the return on capital and the cost of capital used by a business to increase its value*. When the return on capital is higher than the cost of capital, it indicates that the business is not only operating efficiently financially but also contributing to long-term benefits for investors. In other words, the business has positive economic value added (EVA). Conversely, if the return on capital is lower than the cost of capital, it shows that the business is losing value and needs to reconsider its business strategy and financial structure.

1.1.2. The Role of Business Performance in Enterprises

1.1.3. Classification of Business Performance

1.2. INDICATORS FOR EVALUATING BUSINESS PERFORMANCE

From the perspective that business performance must be considered in balance with risk, the researcher uses the Economic Value Added (EVA) indicator to evaluate business performance, taking into account the risk factor of the enterprise.

***Economic Value Added (EVA)**

Economic Value Added (EVA) is considered one of the most effective measures for evaluating the actual performance of business management, going beyond traditional profit indicators. Although the EVA calculation formula is relatively simple, its application marks a significant step forward in the thinking behind measuring financial performance.

The EVA calculation is based on the efficiency of using total investment capital. Accordingly, EVA is calculated as the difference between net profit before interest and the cost of using all investment capital, expressed as follows:

EVA= EBIT (1-t) -WACC x V

= ROI x V - WACC x V

= (ROI - WACC) x V

In this model, V is the average total investment capital

ROI is the return on investment

WACC is the weighted average cost of capital.

This model shows that economic value is only generated when the return on investment (ROI) exceeds the weighted average cost of capital (WACC). This reflects the enterprise's

ability to create real value when considering all mobilized financial resources. If ROI is lower than WACC, then even with accounting profit, the enterprise is still wasting economic value.

1.3. FACTORS AFFECTING BUSINESS PERFORMANCE

Business performance is determined by the difference between the return on capital and the cost of capital of the enterprise. Therefore, any factor that changes either of these two quantities directly affects business performance. Factors affecting business performance are divided into two groups: subjective factors (originating from the characteristics and management capabilities of the enterprise) and objective factors (related to market conditions and the external business environment). This division helps clarify the mechanism of influence of each group of factors on the value creation efficiency of the enterprise.

1.4. EXPERIENCES IN IMPROVING BUSINESS EFFICIENCY OF CHEMICAL INDUSTRY COMPANIES GLOBALLY AND LESSONS LEARNED FOR LISTED CHEMICAL INDUSTRY COMPANIES IN VIETNAM

1.4.1. Experiences in improving business efficiency of chemical industry companies worldwide

1.4.2. Lessons learned for listed chemical industry companies in Vietnam

From the successful operational practices of two leading global chemical corporations, Sinochem (China) and ExxonMobil (USA), several valuable lessons can be drawn for listed companies in the chemical industry in Vietnam, an industry playing an increasingly important role in the production supply chain, but still facing limitations in scale, technology, and competitiveness:

Firstly, the concept of business performance has been expanded beyond financial indicators such as ROA, ROE, and ROS to reflect the ability to successfully achieve long-term strategic goals and realize the company's vision.

Secondly, the strategy focuses on core, low-cost, high-profit business segments. Experience from ExxonMobil shows that concentrating on core operations, especially those with low operating costs but high profits, helps businesses maximize resource efficiency and enhance their competitive position. For Vietnamese chemical and agricultural enterprises, which are mostly small and medium-sized, the lesson here is to focus resources on products or segments with clear comparative advantages instead of spreading investments too thinly

(as in the chemical and agricultural industries, such as fertilizers). At the same time, maintaining transparency in information disclosure and governance will facilitate attracting investment capital, cooperation, and market expansion.

Thirdly, listed companies in the chemical industry need to introduce new technologies into production to increase productivity, reduce production costs, and especially limit local environmental pollution. ExxonMobil is a prime example, not only pursuing profits but also investing heavily in emission reduction technologies, thereby increasing production efficiency while meeting environmental protection requirements.

Fourth, businesses can improve their organizational structure and management towards greater flexibility. Experience from Sinochem and ExxonMobil shows that a lean organizational model with clear functions and responsibilities, along with an effective delegation mechanism, will help shorten the decision-making chain and increase market responsiveness. For Vietnamese chemical industry businesses, this is especially important in the context of a highly volatile market and limited resources, requiring restructuring the organization according to a cost center or profit center model to enhance accountability and operational efficiency

Fifth, effectively utilize logistics channels and value chain linkages. While unable to build their own logistics systems like large corporations, chemical industry enterprises can collaborate with specialized logistics service providers to reduce transportation, warehousing, and storage costs for chemicals. Optimizing the links in the input-output supply chain will improve overall efficiency, increase order fulfillment capacity, and minimize the risk of inventory buildup or material shortages.

Sixth, optimize the operating model to suit the specific characteristics of the business. ExxonMobil has built an integrated value chain model from upstream (oil and gas exploration) to downstream (refining, petrochemicals, and chemicals), thereby minimizing intermediate costs and increasing operational efficiency. Conversely, Sinochem has chosen the path of diversification, expanding into multiple segments such as agriculture, healthcare, and green materials, in order to minimize risks and expand growth opportunities.

Seventh, environmental protection and sustainable development of the industry must be a priority that both the Government and businesses are committed to. The business performance of enterprises is not just about short-term profits, but also about long-term goals. The value of products, the value of the enterprise, and the industry must be considered

in long-term strategies. Ensuring good employee rights is also a minimum requirement to encourage employees to dedicate themselves to the company. In addition, fulfilling environmental standards is crucial for stable production and maintaining market share.

CHAPTER 2: CURRENT STATUS OF BUSINESS PERFORMANCE OF LISTED CHEMICAL INDUSTRY COMPANIES IN VIETNAM

2.1. OVERVIEW OF LISTED CHEMICAL INDUSTRY COMPANIES IN VIETNAM

2.1.1. The Formation and Development Process of Chemical Industry Companies in Vietnam

In Vietnam, the chemical industry originated in the 1950s, initially forming fertilizer and consumer chemical factories in the North with assistance from the Soviet Union and China. During wartime, these facilities produced essential goods for both national defense and civilian needs.

Since 2011, the Vietnamese chemical industry has entered a phase of in-depth development, focusing on increasing productivity, optimizing the value chain, and adapting to sustainability standards in the context of international integration and the pressures of climate change.

2.1.2. Characteristics of the Chemical Industry in Vietnam

The characteristics of the chemical industry are one of the important factors affecting business performance:

- The Vietnamese chemical industry still focuses on basic chemicals and serves agricultural needs.

- The chemical industry is a highly concentrated production industry in close connection with other supporting industries.

- The chemical industry is a production industry with high technological content and technical requirements.

- The chemical industry is an industry that uses large amounts of investment capital.

- The chemical industry is a labor-intensive industry requiring high skill levels.

- The chemical industry has high demands on production, storage, and transportation conditions, especially regarding safety, fire prevention, and the risk of

significant environmental pollution.

- It is characterized by high input costs and high production costs.

- It experiences significant fluctuations according to industry cycles and the global market.

- The scale of enterprises in the chemical industry is relatively small.

2.1.3. Overview of the research sample of listed chemical industry enterprises in Vietnam

The research sample consists of 32 enterprises that meet several standards: (1) correct research subject in the thesis; (2) representativeness of the chemical industry, including 32 listed enterprises in the chemical industry with large scale according to each sub-sector: chemical products (3 enterprises), detergents (2 enterprises), plant protection chemicals (4 enterprises), fertilizers (11 enterprises), plastic and rubber production (9 enterprises), paints and printing inks (3 enterprises). In addition, these enterprises all have data sources that are audited annually, ensuring the accuracy of the data.

2.1.4. Main financial situation of listed chemical industry enterprises in Vietnam

2.2. CURRENT STATUS OF BUSINESS PERFORMANCE OF LISTED CHEMICAL INDUSTRY ENTERPRISES IN VIETNAM

2.2.1. Current status of profitability of listed chemical industry enterprises

During the period 2019-2024, listed companies in the chemical industry in Vietnam have shown significant improvements in profitability, as reflected in indicators such as BEP, ROS, ROI, ROA, and ROE, with relatively clear trends of fluctuation.

In 2019, profitability indicators remained relatively stable with ROE at 8.89%, ROA at 5.41%, and ROS at 9.49%. ROI and BEP also reached 7.56% and 7.54%, respectively. This is considered a year with average profit levels, reflecting stability in the production and consumption environment of enterprises in the chemical industry after a period of sluggish growth. Compared to the industry average, the studied enterprises had higher ROS, ROA, and ROE, indicating superior efficiency in capital and asset utilization.

In 2020, the profitability of businesses showed a significant improvement. ROE increased to 11.49% and ROA to 7.09%. Simultaneously, ROS reached 12.72%, reflecting a substantial increase in core business performance. BEP and ROI also reached 9.30% and 9.42%, respectively. This result largely stemmed from businesses restructuring their production operations, better utilizing cost factors, and anticipating the slight increase in

domestic demand for fertilizers and basic chemicals following the COVID-19 pandemic.

In 2021, the profitability of businesses continued its positive growth momentum. ROE surged to 16.37%, ROA reached 10.39%, while ROI and BEP reached 13.02% and 12.77% respectively. ROS reached 14.13%, indicating that businesses had better optimized production costs and improved net profit margins.

In 2022, profitability indicators peaked in the entire 6-year period. ROE reached 22.01%, ROA 14.52%, and ROS 17.43%, the highest levels recorded in the analysis period. ROI and BEP also reached 17.73% and 17.30%, respectively. This reflects the fact that businesses have taken full advantage of the global commodity price increase cycle, while expanding their domestic and international markets. This period demonstrates the optimal efficiency of the entire production and consumption value chain in the industrial and commercial sector.

However, in 2023, profitability indicators declined significantly. ROE fell to 9.55%, ROA to 6.48%, and ROS sharply decreased to 9.60%. ROI and BEP also fell to 8.53% and 8.37%, respectively. The main reasons were the pressure of rising raw material costs, a stagnant export market, and increasingly stringent environmental standards, forcing businesses to increase processing costs and reduce profits.

In 2024, profitability showed signs of recovery. ROE reached 11.37%, ROA 7.74%, and ROS 11.13%. ROI and BEP also recovered slightly to 9.57% and 9.44%, respectively. Although not yet back to the peak levels of 2022, this is a positive sign indicating that businesses are restructuring and gradually adapting to the volatile market environment. In particular, maintaining above-average industry performance in key indicators reflects efforts in management and optimizing production costs.

2.2.2. Current situation of the cost of capital for listed chemical industry enterprises

***Cost of borrowed capital for enterprises**

The cost of borrowing affects the net profit of businesses, especially when market interest rates rise. During the period 2019-2021, the average cost of borrowing across the entire industrial sector showed a steady downward trend, from 5.59% in 2019 to 4.64% in 2024. This fluctuation reflects the combined impact of market interest rate volatility and the financial management strategies of each business group. Particularly, in the context of an economy facing inflation and cyclical changes in interest rate policies, controlling financial costs becomes a key factor in improving business performance.

***Cost of using equity capital for businesses**

Against the backdrop of the period 2019-2024 being strongly impacted by macroeconomic factors such as the COVID-19 pandemic, geopolitical conflicts, and fluctuating raw material prices, the cost of equity for enterprises in the chemical industry in Vietnam has shown significant changes. On average, the cost of equity fluctuated from 8.08% in 2021 to a peak of 21.26% in 2023, clearly reflecting the influence of financial market fluctuations and investors' expected growth trends in the post-pandemic and global economic instability context. In 2023, many businesses recorded outstanding profit and stock price growth, leading to a sharp increase in beta coefficients and cost of equity. However, this level is trending slightly downward to 16.04% in 2024, reflecting expectations of gradually stabilizing profits.

***Average cost of capital for businesses**

During the period 2019-2024, the average WACC of the entire listed industrial and commercial sector showed a significant upward trend, especially in 2022 and 2023. Specifically, the WACC started at 10.26% in 2019, gradually decreased to 6.67% in 2021, before surging to 16.22% in 2023, and then slightly adjusted to 11.79% in 2024. The deepest decline in the initial period (2019-2021) was mainly due to the impact of loose monetary policies in the context of the COVID-19 pandemic, which led to a sharp decrease in interest rates, helping businesses access capital at low costs. However, from 2022 onwards, as the economy gradually recovered, inflation increased and interest rates were adjusted towards tighter controls, causing the cost of capital for the entire industry to rise again at a very rapid pace, peaking in 2023 at its highest level during the entire period.

2.2.3. Analysis of the relationship between profitability and cost of capital of listed chemical industry companies

***Relationship between ROI and WACC - Overall effectiveness of investment activities**

Return on investment (ROI) reflects the efficiency of using invested capital, while WACC represents the cost a company has to incur to raise those capital sources. When ROI is higher than WACC, the company not only generates profit but also creates added value for all investors.

In the first three years (2019-2021), chemical industry enterprises effectively utilized the low interest rate environment to reduce the cost of capital, especially in 2021, recording an ROI exceeding the WACC by 6.35%, demonstrating very positive overall capital

utilization efficiency. This result accurately reflects a period where many chemical industry enterprises utilized their existing production capacity, avoiding expansion investments, thereby optimizing capital turnover. Many enterprises, such as Duc Giang Chemical Group JSC (DGC) and Southern Chemical Industry JSC (CVS), did not expand with new investments but focused on maximizing existing capacity, thereby optimizing capital turnover and improving asset utilization efficiency

However, the heavy manufacturing industry is characterized by its high investment requirements in factories, technology, environmental treatment systems, and a high degree of dependence on imported raw materials (such as phosphorus, sulfur, and hydrocarbons from petroleum). Therefore, as we entered 2022-2023, rising interest rates and escalating raw material prices caused the Weighted Average Cost of Goods Sold (WACC) to increase sharply (from 6.67% to 16.22%), while the Return on Investment (ROI) declined due to high input costs and stagnant market demand. Consequently, the ROI was lower than the WACC in the last two years, reflecting a decline in the overall investment efficiency of the enterprise – a typical situation for heavy manufacturing industries when interest rates rise. In 2023, the average ROI for the entire chemical industry was only 8.53%, while the WACC reached 16.22%, a significant negative difference reflecting a marked decline in investment efficiency. Businesses that expanded aggressively in 2021 or had high financial leverage, such as Duc Giang Chemical Group JSC (DGC), faced the challenge of costs of capital increasing faster than profits, leading to risks in maintaining investment value.

Although ROI recovered slightly in 2024 (reaching 9.57%), it was still not enough to surpass WACC (12.08%), indicating that industrial enterprises are still paying higher costs of capital than the returns on investment, especially for enterprises with high financial leverage and those expanding after the pandemic.

***Relationship between ROE and r_e - Profit versus shareholder expectations**

ROE is a key indicator showing the efficiency of shareholder capital utilization, while the cost of equity ($\mathbf{r_e}$) reflects the rate of return that shareholders expect based on market risk. Comparing these two indicators helps determine whether a company is meeting investors' profit expectations.

The period from 2020 to 2022 was a time when industrial enterprises created positive value for shareholders, with ROE significantly exceeding $\boldsymbol{r_e}$ (especially in 2021, the difference reached 8.29%). This was a time when industrial enterprises took advantage of

the rising commodity prices, strong post-pandemic demand recovery, and were not yet under much pressure from financial costs. Companies like Southern Industrial Enterprises CSV and NET Detergent Joint Stock Company effectively utilized the post-pandemic recovery, optimized financial costs, and achieved high profit margins, thereby significantly increasing profit per unit of equity.

However, starting in 2023, the cost of equity increased sharply (reaching 21.26%), reflecting higher market risk and higher investor returns. Meanwhile, ROE fell to 9.55%, resulting in a negative spread of -11.71%, the deepest in a six-year period. This signals a decline in investor confidence and that profitability is no longer attractive enough to offset capital risk. This signals a decrease in market valuation, and is particularly dangerous for small and medium-sized enterprises, such as Viet Tri Chemical Joint Stock Company (HVT), as their ability to raise equity will be more limited compared to the 2020-2021 period.

The relationship between ROI - WACC and ROE - r_e reveals a clear cyclical pattern in the financial performance of industrial enterprises during the 2019-2024 period. This accurately reflects the characteristics of the manufacturing industry, which is capital-intensive, experiences significant input fluctuations, and is vulnerable to macroeconomic changes. The years 2021-2022 were a golden period for financial efficiency, while 2023 marked a negative turning point, indicating the risk of costs exceeding profits.

In this context, businesses in the chemical industry need to restructure their investment portfolios, optimize asset turnover, minimize the cost of capital through smarter fundraising strategies, and improve core operational efficiency. Furthermore, they need to shift towards high-value-added chemical segments with less dependence on foreign inputs, while strengthening their resilience to market fluctuations through flexible financial management. Only by ensuring stable profitability that exceeds the cost of capital can businesses maintain long-term value and attractiveness to shareholders in an increasingly competitive environment.

2.2.4. Evaluating Business Performance Based on EVA

In the context of the chemical industry, a unique sector with high capital intensity, long investment cycles, and sensitivity to raw material price fluctuations, the EVA index reflects not only internal operational capacity but also the degree of adaptability to the macroeconomic environment. Data from 2019 - 2024 shows significant fluctuations in EVA,

demonstrating the distinct cyclical nature of the industry. The EVA index of listed companies in the chemical industry in Vietnam has fluctuated significantly during the period 2019-2024.

Specifically, in 2019, the EVA (Economic Value Added) of the entire chemical industry recorded a negative value of VND 96.52 billion, indicating that the return on investment (ROI) was insufficient to cover the cost of capital (WACC). This was a period when many businesses in the chemical industry were still not effectively utilizing their production capacity, while the cost of capital remained relatively high. Although businesses could achieve net profit, that level of profitability was not enough to surpass the minimum cost of capital threshold, leading to the erosion of the economic value of the investment. This is a common situation in industries with high capital intensity but long asset cycles and high input risks. However, in 2020, EVA turned positive at VND 52.40 billion, a positive turning point reflecting the company's initial adaptation to new market conditions, taking advantage of opportunities from lower interest rates and slightly increased demand for chemicals during the lockdown period. This improvement mainly stemmed from a sharp decrease in market interest rates, which reduced the weighted average cost of capital (WACC), while ROI improved slightly thanks to the utilization of existing capacity.

The growth momentum continued in 2021 and 2022, with EVA reaching VND 236.55 billion and VND 245.23 billion respectively. This was primarily due to a surge in the prices of household appliances and detergents, essential items in pandemic prevention, industrial production, and agriculture. During this period, ROI, ROA, and ROE all significantly exceeded the average cost of capital, creating a positive profit margin that fueled EVA's strong growth. This demonstrates the company's ability to generate genuine economic surplus, not only from increased revenue but also from optimized operating costs and effective financial restructuring.

However, a turning point occurred in 2023 when the EVA index unexpectedly plummeted to a negative VND 320.14 billion, a figure indicating a serious decline in investment performance, the most significant drop in the entire timeframe. This reflected a reversal in the chemical market after a period of rapid growth. Input material prices increased sharply, while output prices faced intense competition from the Chinese and regional markets, causing profit margins to shrink. At the same time, borrowing costs increased due to tight monetary policies, causing the WACC to skyrocket.

In 2024, EVA remained negative (-95.26 billion VND), but narrowed significantly compared to the previous year. This resulted from a slight increase in ROI while WACC cooled down after the period of monetary tightening. However, compared to the peak of 2021-2022, the current EVA is still quite modest. This reflects that the company is still in the recovery process, and its ability to create economic value is not yet truly stable. However, the inability to restore positive EVA indicates that the business environment remains highly uncertain, especially as businesses still face high real interest rates and the consumer market has not fully recovered to its pre-pandemic state. Without significant improvements in capital efficiency or a sharp reduction in financing costs, EVA is unlikely to return to its previous growth levels.

The fluctuations in EVA over the past six years have clearly illustrated the financial cycle of the industrial and handicraft sector in Vietnam. The period of 2021-2022 was a golden age with outstanding financial performance, but 2023 marked a reversal shock due to the combined impact of rising capital costs and input prices. This underscores the importance of maintaining a stable positive gap between ROI and WACC to ensure long-term economic value.

2.3. ANALYSIS OF THE IMPACT OF FACTORS AFFECTING THE BUSINESS PERFORMANCE OF LISTED CHEMICAL INDUSTRY COMPANIES IN VIETNAM

2.3.1. Subjective factors affecting the business performance of listed chemical industry companies in Vietnam

2.3.1.1. Factors related to the financial characteristics of the companies

To clarify the financial characteristics influencing the business performance of listed companies in the industrial sector, the researcher developed research hypotheses and a quantitative model based on previous research theories and quantitative models on business performance presented in the research overview in the Introduction and Chapter 1.

Within the scope of this dissertation, given the specific research sample of listed companies in the industrial sector during the period 2019-2024, the researcher constructed a quantitative model, aggregated data, and analyzed it using Stata 17 software to study the impact of financial management characteristics on the business performance of these companies as follows:

Dependent variable: The researcher uses EVATS (Economic Value Added (EVA)

per unit of assets) to evaluate the financial performance of the enterprise.

Independent variables: Building upon previously published studies, the researcher identifies six financial factors influencing the business performance of enterprises: Operating results (EBITTA), Enterprise size (SIZE), Debt ratio (LEV), Cash-to-asset ratio (CASH), Beta risk coefficient (BETA), and Cost of interest (COST).

In addition, the GDP growth rate is included in the model as a control variable to reflect the overall macroeconomic context over time and to control for the impact of economic cycles when assessing the impact of internal financial factors on the business performance of enterprises using the EVA approach.

Model:

$EAVTS_{it} = \beta_{03} + B \,.\, X_{it} + \varepsilon 3_{it}$

Where: B is the regression coefficient vector;

X is the vector of independent variables; εit is the model error.

The regression results using robust standard error estimation for the EVATS model clarify the role of characteristic financial variables in explaining the variability of economic value added at listed companies in the industrial and chemical sectors.

The EVATS regression equation is established as follows:

EVATS = -66,707 + 72,361 EBITTA + 9,79 SIZE -0,123 LEV – 1,156 COST + 0,217 CASH – 7,42 BETA + 0,177 GDPG

The regression results using a fixed effects model with cluster-adjusted standard errors show that the business performance of enterprises measured by EVATS is significantly influenced by financial factors such as operating results, enterprise size, costs, and market risk, consistent with many previous studies both domestically and internationally on measuring performance using a value-based approach. However, in the context of enterprises in the industrial sector in Vietnam, the capital-intensive nature, the level of dependence on debt financing, and cost volatility in the post-Covid period make the impact of these factors more sensitive compared to some developed markets. From a management and finance perspective, the results suggest that improving asset utilization efficiency, rationally exploiting economies of scale, and controlling capital costs and market risks are important directions to improve the economic value creation capacity of enterprises in the future.

2.3.1.2. Factors related to enterprise organization and management

- Management and operational capabilities of the leadership team
- Quality of human resources and internal training
- Organizational structure
- Corporate governance policies
- Dividend policy
- Corporate investment policies
- Transparency of financial information

2.3.1.3. Factors related to production technology

2.3.2. Objective factors affecting the business performance of listed chemical industry enterprises in Vietnam

- Legal environment
- Impact of macroeconomic policies
- Industry environment
- Impact of the natural environment (pandemics, natural disasters...)
- Market interest rates
- Corporate income tax policy

2.4. OVERALL ASSESSMENT OF THE CURRENT STATE OF BUSINESS PERFORMANCE OF LISTED CHEMICAL INDUSTRY COMPANIES IN VIETNAM

2.4.1. Achievements

- Positive Economic Value Added (EVA) during the 2021-2022 period
- Significantly improved profitability indicators
- Cost of capital maintained at a reasonable level

2.4.2. Existing Limitations and Causes

2.4.2.1. Existing Limitations

Although enterprises in the chemical industry have achieved many positive results in both financial and non-financial aspects, their operational efficiency is not yet truly stable. Some indicators still show strong fluctuations, even declines in recent times, indicating that alongside the achievements, the chemical industry still has limitations that need to be analyzed and overcome.

- EVA results are unstable and highly volatile.

During the same period, some businesses achieve relatively high accounting

profitability, while their EVA or EVATS remain low, or even negative. This indicates that the operational efficiency of many businesses only reaches the point of generating accounting profit, and has not fully transformed into economic value exceeding the cost of capital.

- Value creation efficiency is highly volatile cyclically, especially during periods of unfavorable market conditions.

While some industry groups achieved high positive EVA during 2021-2022, many groups recorded a sharp decline or even negative EVA in 2023-2024, particularly in the fertilizer, plastics and rubber manufacturing, and paint and ink sectors. This indicates that the ability of many businesses to generate profits exceeding the cost of capital has not been consistently maintained over time.

- Although efficiency increased sharply during 2019-2022, it uniformly declined in the following years.

The industry-wide indicators of BEP, ROS, ROI, ROA, and ROE all showed a strong upward trend during the 2019-2022 period, but simultaneously declined in 2023 before recovering slightly in 2024. For example, the average ROE of businesses decreased from 22.01% in 2022 to 9.55% in 2023, indicating that the efficiency of equity utilization was significantly impacted by the changing market context.

Overall, the biggest limitation in the business performance of listed companies in the chemical and pharmaceutical industries is not the lack of profitability, but rather the insufficient stability of economic value creation to offset the cost of capital during unfavorable periods. The significant fluctuations in EVA and EVATS between years and between industry groups reflect the high sensitivity of value creation efficiency to market and financial environment fluctuations, necessitating a deeper analysis of the underlying causes in the following section.

2.4.2.2. Causes of Existing Limitations

* Subjective financial causes include fluctuating revenue and profits, poor asset management, suboptimal capital structure and risks from financial leverage, suboptimal financial policies, interest expenses adversely affecting financial performance, and uneven levels of technology and production organization.

* Other subjective causes include inadequate internal management and governance capabilities, limitations in the quality of human resources and training, and an inefficient and

inflexible organizational structure.

* Objective causes include fluctuations in market interest rates, changes in tax policies and legal regulations, impacts of the natural environment and epidemics, industry environmental characteristics, and the level of competition.

CHAPTER 3: SOLUTIONS TO IMPROVE THE BUSINESS EFFICIENCY OF LISTED CHEMICAL INDUSTRY COMPANIES IN VIETNAM

3.1. SOCIO-ECONOMIC CONTEXT OF LISTED CHEMICAL INDUSTRY COMPANIES IN VIETNAM IN THE COMING PERIOD

3.1.1. Socio-economic context

3.1.2. Opportunities and challenges for the chemical industry

3.1.3. Strategic orientation, perspectives and development goals of listed chemical industry companies in Vietnam

3.2. SOME SOLUTIONS TO IMPROVE THE BUSINESS EFFICIENCY OF LISTED CHEMICAL INDUSTRY COMPANIES IN VIETNAM

To improve the business performance of listed companies in the chemical industry sector amidst increasingly fierce competition and rising cost pressures, proposing a system of solutions that both ensure the internal efficiency of the enterprise and enhance profitability exceeding the cost of capital is a core condition for creating real value for shareholders.

3.2.1. Economic and Financial Solutions to Improve Business Performance

Including solutions to improve operational efficiency and control production and business costs, solutions to improve investment efficiency and asset utilization, solutions to improve the financial structure and reduce the pressure of the cost of capital.

3.2.2. Some supporting solutions to improve the business performance of listed chemical industry enterprises

These include improving the quality of human resources and corporate governance capacity, promoting technology application, protecting the environment, strengthening international cooperation, and perfecting the financial risk management system in the context of market fluctuations.

3.2.3. Implementation roadmap for solutions to improve the business performance of listed chemical industry enterprises

3.3. CONDITIONS FOR IMPLEMENTING THE SOLUTION

3.3.1. Conditions from the State

3.3.2. Conditions from chemical industry enterprises

3.3.3. Conditions from relevant organizations, associations and agencies

CONCLUSION

The three chapters of this thesis are logically structured and closely interconnected, aiming to address the research problem of business performance of listed industrial enterprises in Vietnam, which play a fundamental role in the industrial supply chain but have not received much attention in previous research. The chapters successively provide the theoretical basis, assess the current situation, and propose a system of solutions to improve business performance in a comprehensive, feasible manner, tailored to the specific characteristics of the industry.

Chapter 1 systematized theoretical viewpoints related to business performance and influencing factors, and selectively synthesized previous studies to clarify theoretical gaps, especially for enterprises operating in heavy industry, which have specific characteristics regarding capital, technology, and environmental risks such as chemical industries.

Chapter 2 analyzes the current state of business performance of enterprises in the chemical industry sector during the period 2019-2024 from two perspectives: describing the evolution over time and quantifying the impact of influencing factors through regression models. The division into sub-sector groups (chemicals, fertilizers, pesticides, detergents, plastics - rubber, paints - inks) allows for reflecting the inherent differences between sectors within the same industry, thereby helping to propose more appropriate solutions for each segment.

Chapter 3 proposes solutions to improve business performance: (1) optimizing revenue and costs; (2) improving investment efficiency and capital utilization; (3) diversifying funding sources and controlling financial risks. In addition, this chapter also adds groups of solutions from the external environment, including: improving economic institutions, stabilizing macroeconomic management, developing science and technology in the chemical sector, and improving supporting industrial infrastructure.

The research findings in the three chapters not only contribute to clarifying the current situation and solutions for improving the business performance of listed industrial enterprises, but can also be used as important reference material for policymakers, investors, and training and research institutions specializing in industrial economics in the context of integration and the transformation of the growth model towards sustainability.

LIST OF THE AUTHOR'S PUBLISHED WORKS RELATED TO THE DISSERTATION

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2. Nguyen Thi Bich Ngoc (2025), *"Enhancing the business efficiency of chemical enterprises in the context of integration and green transformation",* Economic and Forecasting e-magazine, No. 803/2025.

3. Nguyen Thi Bich Ngoc (2024), *"Enhancing the competitiveness of listed companies in the Vietnamese chemical industry",* Finance Magazine, Issue 2 October 2024 (835).

4. Nguyen Thi Bich Ngoc (2024), "*International experience on improvement of business efficiency and lessons for private sector chemical enterprises in vietnam*", International Conference of the Academy of Finance, November 2024.

5. Nguyen Thi Bich Ngoc (2024), *"Current Situation and Solutions to Improve Business Efficiency of Some Listed Steel Companies in Vietnam in the Context of Integration",* Industry and Trade Magazine, Issue 1, January 2024.