INVESTMENT EFFICIENCY AND FINANCIAL PERFORMANCE: A CASE OF BADISCHE ANILIN- UND SODA-FABRIK SOCIETAS EUROPAEA (BASF SE)

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Abstract

This study examines the financial condition and investment efficiency of BASF SE over the period 2022-2024 based on financial statement analysis. The research relies on secondary data obtained from the company's official financial reports and applies quantitative methods, including the calculation of key financial indicators such as Return on Assets (ROA), Return on Equity (ROE), operating margin, asset turnover, and free cash flow. The results show various changes in the company's performance. Profitability indicators, particularly ROA and ROE, demonstrate a gradual positive growth during the analyzed period, indicating improved profitability and increased returns for shareholders. However, the operational efficiency showed a negative trend, as sales volume, operating profit, operating margins, and asset turnover all declined. This suggests that the company's efficiency in converting assets into revenue and profit has decreased.

Keywords: Investment efficiency; Financial performance; ROA; ROE; Asset turnover; Free cash flow; BASF SE.

Annotatsiya

Mazkur tadqiqot 2022-2024-yillar davomida BASF SE kompaniyasining moliyaviy holati va investitsion samaradorligini moliyaviy hisobotlar tahlili asosida o‘rganishga bag‘ishlangan. Tadqiqot kompaniyaning rasmiy moliyaviy hisobotlaridan olingan ikkilamchi ma’lumotlarga tayanadi hamda ROA (aktivlar rentabelligi), ROE (xususiy kapital rentabelligi), operatsion marja, aktivlar aylanish koeffitsiyenti va erkin pul oqimi kabi asosiy moliyaviy ko‘rsatkichlarni hisoblashni o‘z ichiga olgan miqdoriy usullarni qo‘llaydi. Natijalar kompaniya faoliyatida turli o‘zgarishlar yuz berganini ko‘rsatadi. Rentabellik ko‘rsatkichlari, xususan ROA va ROE, tahlil qilingan davrda bosqichma-bosqich ijobiy o‘sishni namoyon etgan bo‘lib, bu foydalilikning oshganini va aksiyadorlar uchun daromadlilikning ortganini anglatadi. Biroq operatsion samaradorlik salbiy tendensiyani ko‘rsatgan, chunki savdo hajmi, operatsion foyda, operatsion marja va aktivlar aylanish koeffitsiyenti kamaygan. Bu kompaniyaning aktivlarni daromad va foydaga aylantirish samaradorligi pasayganini anglatadi.

Kalit so‘zlar: investitsion samaradorlik; moliyaviy natijalar; ROA; ROE; aktivlar aylanish koeffitsiyenti; erkin pul oqimi; BASF SE.

Аннотация

Данное исследование посвящено анализу финансового состояния и инвестиционной эффективности компании BASF SE за период 2022-2024 годов на основе анализа финансовой отчётности. В работе используются вторичные данные, полученные из официальных финансовых отчётов компании, а также применяются количественные методы, включая расчёт ключевых финансовых показателей, таких как рентабельность активов (ROA), рентабельность собственного капитала (ROE), операционная маржа, оборачиваемость активов и свободный денежный поток. Полученные результаты свидетельствуют о различных изменениях в деятельности компании. Показатели прибыльности, в частности ROA и ROE, демонстрируют постепенный положительный рост в анализируемый период, что указывает на повышение прибыльности и увеличение доходности для акционеров. Вместе с тем операционная эффективность показала отрицательную динамику, поскольку объём продаж, операционная прибыль, операционная маржа и оборачиваемость активов снизились. Это свидетельствует о снижении способности компании эффективно преобразовывать активы в выручку и прибыль.

Ключевые слова: инвестиционная эффективность; финансовые результаты; ROA; ROE; оборачиваемость активов; свободный денежный поток; BASF SE.

INTRODUCTION

Attracting investments and ensuring their efficient utilization are considered among the key factors of economic development for any country. This is because a nation’s independence and its position in the international arena largely depend on the level of its economic growth. In particular, the industrial sector, which is one of the most important branches of the economy, requires stable investment support. Indeed, the strengthening of industry is regarded as one of the main drivers of overall economic growth.

Improving investment activities in industrial enterprises is achieved through enhancing the overall competitiveness of the industry, ensuring sustainable economic development, and introducing modern innovative technologies. The distinctive aspects of improving investment activity in industrial enterprises can be interpreted as follows:

Introducing innovative technologies - the adoption of new technologies contributes to further increasing production efficiency. Technological modernization enables a reduction in labor requirements, saves time, and decreases production costs.

Improving product quality makes it possible to strengthen competitiveness and enter markets more effectively. Products that meet international quality standards create opportunities to access foreign markets and gain the right to export national goods more widely.

Adapting to market demand - directing investments toward increasing the competitiveness of the enterprise in both domestic and foreign markets.

Managing financial resources - ensuring proper and efficient financial management helps minimize risks when attracting both internal and external investments.

Diversifying production - expanding production beyond a single product and establishing additional types of manufacturing activities.

Utilizing government support and incentives - effectively benefiting from tax incentives and subsidies provided for enterprises, as well as participating in government-funded investment programs.

LITERATURE REVIEW

In general perspective there are numbers of research studies have been carried out to identify and analyze the investment, investment efficiency and financial results in industrial companies.

According to Keynes's General Theory of Employment, Interest and Money (1936), investment decisions play a central role in determining aggregate demand, which in turn influences national income, output, and employment. In Keynesian theory, an increase in investment generates a multiplied rise in income and consumption until savings adjust to the new investment level. The level of investment depends on the marginal efficiency of capital - that is, the expected rate of return on investment - compared with the market interest rate. When the marginal efficiency of capital exceeds the interest rate, investment rises, leading to higher output and employment [2].

Firm-level investment decisions are commonly explained by two broad theoretical perspectives.

From a Hayekian adjustment-based view, investment represents the process of moving the firm toward its desired capital stock. In this framework, firms determine the optimal capital stock and then adjust toward it at a chosen speed. Investment is therefore a decision about the rate of adjustment, influenced by costs of installation, expectations of future demand, and financial constraints.

In contrast, the Keynesian behavioral view places less emphasis on an "optimal capital stock." Instead, firms are seen as investing based on current expectations, business sentiment, and internal routines. Investment thus reflects periodic behavior driven by confidence, liquidity availability, and macroeconomic signals rather than a long-run optimization target. The capital stock becomes the result of ongoing investment behavior rather than a separate strategic objective [3].

In the research conducted by Cicaea C, Marenecu C, Papa I, and Dubrin C, (2014) the effectiveness of investment impact on renewable energy is studied and implemented at the macroeconomic level within the economic indicators of the European Union member countries. These indicators include: CO_2 emissions from electricity and heat production (in million metric tons); gross domestic product per capita (in constant 2000 dollars); electricity production (kWh); electricity production from renewable sources (kWh); and total inland energy consumption (for all products)

(in 1000 tons of oil equivalent). The research method applied by these scholars has not been conducted before, and unlike previous classical methods, this approach is based on an economic-econometric methodology and is carried out using a linear regression model. [4]

In research paper from Lim, J. H., Dehning B., Richardson, V. J., and Smith, R. E. (2011) meta-analysis methods were used to study the profitability outcomes of information technology (IT) investments. This direction of investment has shown a positive impact on the financial performance of firms, meaning that investments in this field have demonstrated significant efficiency. According to the authors, the relationship between IT investment and performance varies depending on how financial outcomes and IT investments are measured. Despite the criticisms encountered in this field, the scholars found that this relationship is stronger in studies using accounting measures compared to those using market measures. In addition, when IT investment is measured through IT strategy or spending, the relationship is stronger than when it is measured through IT capability. [5]

From the perspective of Chen, F., Hope, O. K., Li, Q., and Wang, X. (2011), there is a positive correlation between financial reporting and investment efficiency. The scholars conducted this study in the context of private firms in emerging markets, and according to them, consistent with the suggestions of previous research, in such environments the quality of financial reporting has a weaker effect in reducing investment inefficiencies. Previous studies also show that the level of FRQ in private firms is lower, presumably due to the lower demand for public financial information. It has also been found that FRQ is lower in countries with weak investor protection, bank-oriented financial systems, and strong alignment between tax and financial reporting rules. Empirical analyses based on firm-level data from the World Bank indicate that the quality of financial outcomes is positively associated with investment efficiency [7].

Peloza's (2009) research examined the relationship between financial performance and corporate social performance. According to him, this research has not provided managers with detailed information on this matter. Market indicators - such as share price - or accounting indicators - such as return on equity - are influenced by many other factors. These metrics cannot provide the level of precise information needed for managers who want to determine the optimal level of CSP investment for their company [8].

Research by Lee and Min (2015) shows that their article examines the impact of "green research and development" (R&D) investments-aimed at environmental innovation-on environmental and financial performance. Their study is based on the resource-based view (RBV) and the natural resource-based view (NRBV) [9].

In the study conducted by Zeng S., Jiang C., Ma C., and Su B. (2018), the investment efficiency of the new energy industry in China was examined. Using a four-stage semi-parametric DEA analysis based on a sample of listed new energy companies from 2012 to 2015, the authors found that the investment efficiency in this industry is low. In addition, the study revealed that macroeconomic conditions and firm-specific

factors play an important role in shaping the investment efficiency of the new energy sector [6].

Tian J., Sun S., Cao W., Bu D., and Xue R. (2024) systematically examined the impact of green credit regulation on corporate green investment efficiency, finding that firms tend to pursue symbolic efforts to secure credit rather than substantive green investments that drive real green transformation [10].

Based on the investigation of Prof. Roberto Moro Visconti (2018), two financial ratios Return on equity (ROE) and Return on assets (ROA) are considered as an important key factors [11]. And Return on equity is emphasized as a measure of business profitability with the impact of company investments to its profits while on the other hand, the return on assets (ROA) is described as an indicator of profitability of the company, from which the manager and the investor can make an idea of how effective the company's management assets are for profit generation [12].

Research of Shmatkovska T., Kulinich T., Dziamulych M., Rogach S., Bilochenko A., and Serdiukova O. (2022) studied various aspects of assessing investment activity in Ukraine's agricultural sector and analyzed the influence of government policy on investment processes in agriculture. The results of their study revealed that the volume of state financing and the level of financial incentives for investment management bodies have the greatest impact on regulating investment activity. These findings scientifically substantiate the important role of state policy in enhancing investment efficiency and promoting sustainable development [13].

In summary, the literature reviewed highlights that investment decisions play a crucial role in determining firm-level financial performance and macroeconomic outcomes. Both theoretical perspectives (Keynesian and Hayekian) and empirical studies across various sectors indicate a positive relationship between investment efficiency and financial results, influenced by factors such as policy support, financial incentives, and firm-specific management practices. These findings are highly relevant to Uzbekistan's industrial enterprises, suggesting that optimizing investment strategies and enhancing financial management can significantly improve their performance and sustainable growth.

METHODOLOGY

In this study, all the data were determined through BASF SE company's website in 3 year, from 2022 to 2024. Additionally, data is gathered from reliable sources and official website: Google scholar. As a method of the study, multiple calculation analysis is used. In addition to this ROA, ROE, Asset turnover indicators were found.

ANALYSIS AND RESULTS

Table 1. Informations from the income statement[1]

Indicators	2022	2023	2024
Sales revenue	87,327	68,902	65,260
Net income	-627	225	1,298
EBIT(operating profit)	6,548	2,240	2,033

[1] Source: Author's calculations based on BASF SE Annual Reports (2022-2024), Consolidated Financial Statements.

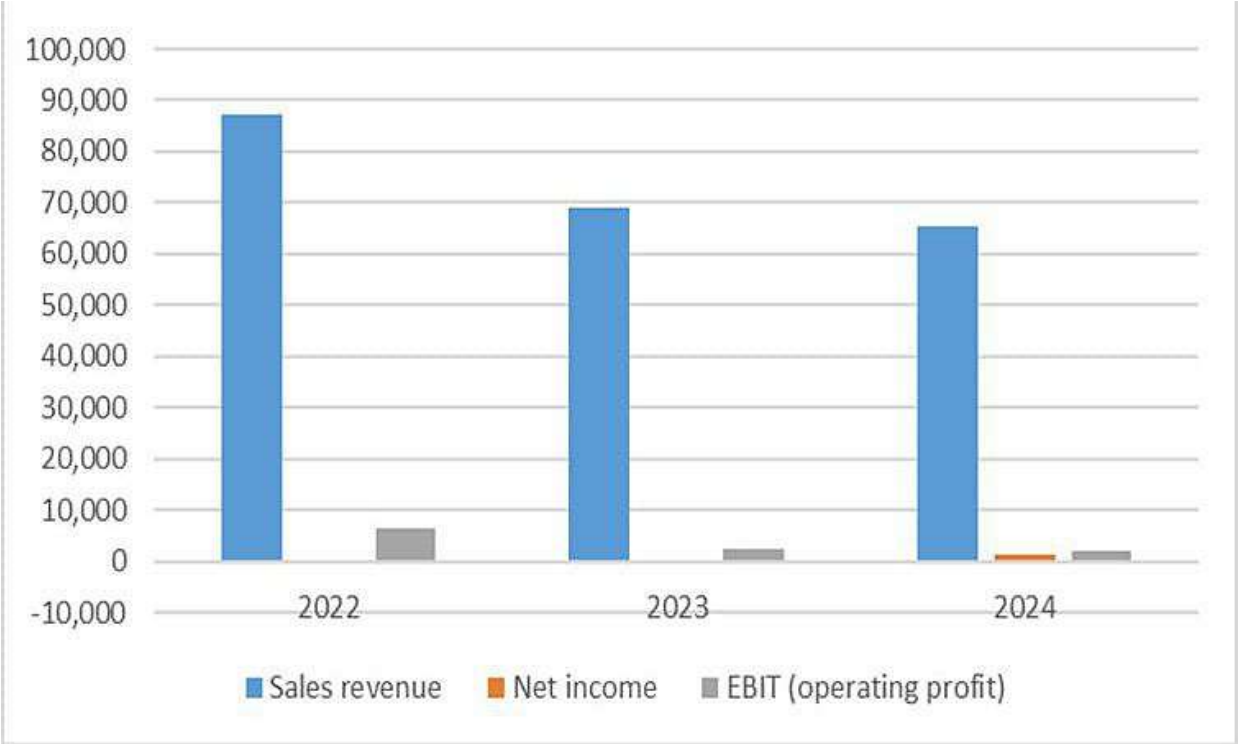

Figure 1. Dynamics of Sales Revenue, Net Income and EBIT of BASF SE (2022-2024)[1]

From this table, it can be seen that during 2022-2024, the company experienced a decline in profit from sales and operating income. That is, sales decreased from 87,327 in 2022 to 65,260 in 2024, meaning a reduction of 22,067 million euros. EBIT also showed a downward trend in its dynamics, falling by 4,515.

However, net income increased significantly: the loss in 2022 turned positive during 2023 and 2024. From this, it can be understood that the increase in profitability occurred not due to operations, but as a result of cost reductions, financial adjustments, and non-operating factors (Table 2).

Table 2. Informations from the balance sheet[2]

Indicators	2022	2023	2024
Total assets	84,472	77,395	80,415
Total equity	40,923	36,646	36,884
Total liabilities	43,549	40,749	43,531

[1] **Source:** Author's calculations based on BASF SE Annual Reports (2022-2024), Consolidated Statement of Income. Available at: https://report.basf.com

[2] **Source:** Author's calculations based on BASF SE Annual Reports (2022-2024), Consolidated Balance Sheets. Available at: https://report.basf.com

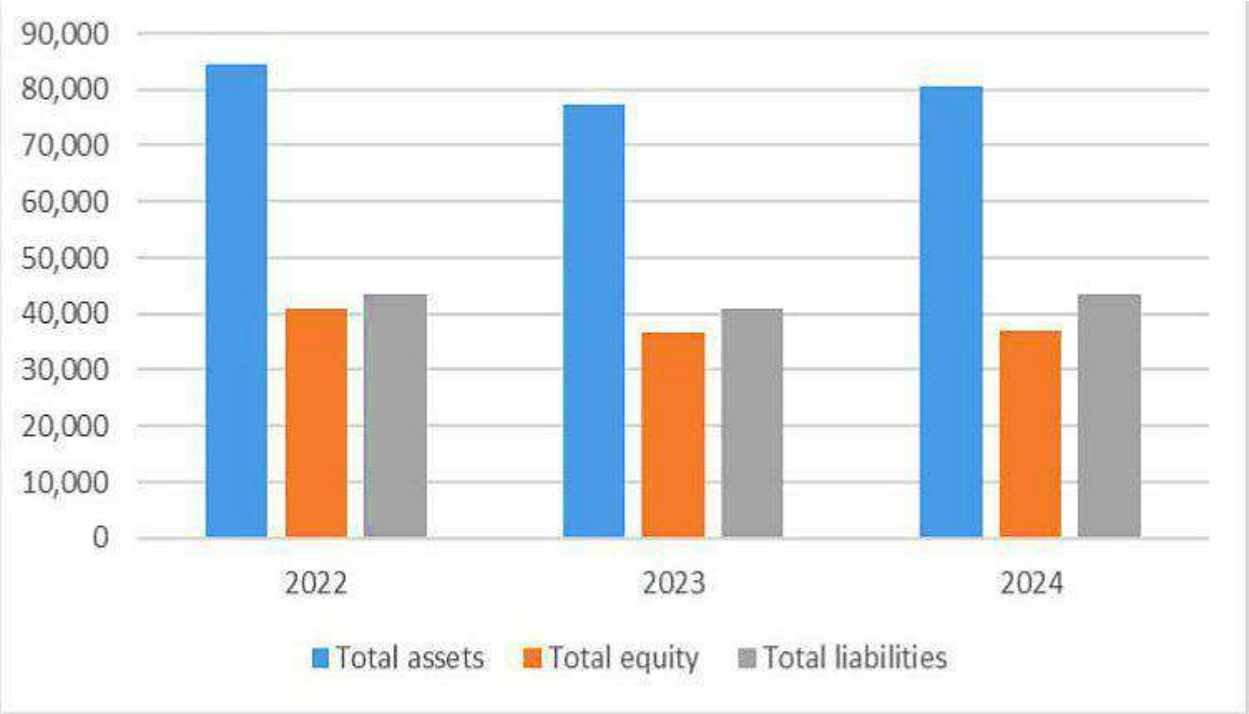

Figure 2. Dynamics of Total Assets, Total Equity and Total Liabilities of BASF SE (2022-2024)[1]

The balance sheet proves that the company's financial structure is stable, that is, between 2022 and 2024 this indicator remains at around 8,000. The liability index shows that the company relies moderately on debt. We can observe that the share of equity had some fluctuations, but it recovered again by the end of the year. In 2024, the increase in profitability has a positive impact on the financial condition; however, the rise in liabilities creates some risk (Table 3).

Table 3. From the Cash Flow statement[2]

Indicators	2022	2023	2024
Operating cash flow	7,709	8,111	6,946
Capex (capital expenditure)	-4,375	-5,395	-6,198

[1] Source: Author's calculations based on BASF SE Annual Reports (2022-2024), Consolidated Balance Sheets. Available at: https://report.basf.com

[2] **Source:** Author's calculations based on BASF SE Annual Reports (2022-2024), Consolidated Statement of Cash Flows. Available at: https://report.basf.com

Figure 3. Dynamics of Operating Cash Flow and Capital Expenditures of BASF SE (2022-2024)[1]

The cash flow data demonstrate strong and consistent operating cash generation throughout the period, despite declining revenues and EBIT. Operating cash flow remained above 6,900 each year, while capital expenditures increased gradually, indicating continued investment in assets. The resulting high and stable free cash flow suggests efficient cash management and disciplined investment behavior, supporting financial sustainability even in the absence of operational growth (Table 4).

Table 4. Return on Assets (ROA) [ROA= Net Income / Total Assets][2]

Net Income	Total Assets	ROA
-627	84,472	-0,74%
223	77,395	0.29%
1,298	80,415	1,61%

From the table of Return on Assets, we can see that although it showed a negative index in 2022, during the period between 2023 and 2024 it became positive and showed an increasing trend, demonstrating that the company is generating profit from its total assets. From this, we can observe that investment efficiency has improved over time. Nevertheless, the low level of ROA in 2024, at 1.61%, indicates that assets are not being used sufficiently efficiently (Table 5).

Table 5. Return on Equity (ROE) [ROE= Net Income / Total Equity][3]

Net Income	Equity	ROE
-627	40,923	-1,53%
233	36,646	0,61%
1,298	36,884	3,52%

[1] **Source:** Author's calculations based on BASF SE Annual Reports (2022-2024), Consolidated Statement of Cash Flows.
[2] **Source:** Author's calculations based on BASF SE Annual Reports (2022-2024), Consolidated Financial Statements. Available at: https://report.basf.com
[3] **Source:** Author's calculations based on BASF SE Annual Reports (2022-2024), Consolidated Financial Statements. Available at: https://report.basf.com

From these calculations, it becomes clear that Return on Equity increased from 1.53% in 2022 to 3.52% in 2024, resulting in improved profitability for shareholders. This indicates that the financial performance for equity holders has improved; however, the overall level of profitability is still considered moderate (Table 6).

Table 6. Operating Margin [Operating Margin= EBIT / Sales][1]

EBIT	Sales	Margin
6,548	87,327	7,5%
2,240	68,902	3,25%
2,033	65,260	3,12%

The operating margin declined from 7.5% in 2022 to about 3.1% in 2024, reflecting a deterioration in operating efficiency. This suggests that the company's core business activities have become less profitable over time (Table 7).

Table 7. Asset Turnover [Asset turnover= Sales / Total Assets][2]

Year	Sales	Assets	Turnover
2022	87,327	84,472	1,03
2023	68,902	77,395	0,89
2024	65,260	80,415	0,81

It can be seen that asset turnover decreased by 0.22 between 2022 and 2024. This demonstrates a loss in the company's efficiency in generating profit from its assets. It also indicates a weakening of operational and investment efficiency in terms of asset utilization (Table 8).

Table 8. Free Cash Flows (FCF) [FCF= Operating Cash Flow - CAPEX; CAPEX is negative so subtracting negative = adding absolute value][3]

Year	OCF	CAPEX	FCF
2022	7,709	-4,375	12,084
2023	8,111	-5,395	13,084
2024	6,946	-6,198	13,144

Free cash flow showed high levels over the three years, exceeding 12,000 each year. Despite the decline in sales and the negative trend in operating activity, this indicates strong cash-based investment efficiency and effective financial management.

CONCLUSION AND SUGGESTIONS

The analysis of BASF SE's financial statements for the period 2022-2024 shows a mixed trend in efficiency and investment efficiency. This can also be observed in the

[1] **Source:** Author's calculations based on BASF SE Annual Reports (2022-2024), Consolidated Statement of Income. Available at: https://report.basf.com
[2] **Source:** Author's calculations based on BASF SE Annual Reports (2022-2024), Consolidated Statement of Income. Available at: https://report.basf.com
[3] **Source:** Author's calculations based on BASF SE Annual Reports (2022-2024), Consolidated Statement of Income. Available at: https://report.basf.com

ROE and ROA indicators, which show that profitability has been improving over time. It can be seen that the company has been using its assets more effectively and generating profits in a more appropriate manner.

However, operational activity has declined, and a decrease in sales volume can be observed. This indicates that the efficiency of converting assets into revenue and operating profit in the company's core business has weakened. Investment efficiency has been ensured not through the use of production assets or business expansion, but through financial discipline and liquidity control.

In order to increase sales volume, the company should focus more on marketing activities and promote its products more actively through advertising. In addition, increasing exports could further boost sales volume. Operational performance, on the other hand, can be improved by reducing costs and using resources more efficiently.

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