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MALİYYƏ GÖSTƏRİCİLƏRİ TƏHLİLİ SƏMƏRƏLİLİYİN QİYMƏTLƏNDİRİLMƏSİ ALƏTİ KİMİ, SOCAR NÜMUNƏSİ

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Xülasə

Bu tədqiqat nümunə kimi Azərbaycan Respublikası Dövlət Neft Şirkətinə (ARDNŞ) diqqət yetirməklə, emal sənayesində səmərəliliyin qiymətləndirilməsi vasitəsi kimi maliyyə əmsalı təhlilinin tətbiqini araşdırır. Şirkətin maliyyə sağlamlığını və əməliyyat səmərəliliyini qiymətləndirmək qabiliyyəti ilə tanınan maliyyə əmsalının təhlili likvidlik, gəlirlilik, ödəmə qabiliyyəti və ümumi maliyyə sabitliyi haqqında dəyərli fikirlər təqdim edir. SOCAR-ın müəyyən dövr üzrə maliyyə məlumatlarını qiymətləndirərək, bu tədqiqat korporativ fəaliyyətin ölçülməsində və müqayisəsində bu əmsalların effektivliyini araşdırır. Təhlil maliyyə əmsallarının təkcə davam edən əməliyyatları izləmək üçün deyil, həm də strateji qərar qəbuletmə prosesləri haqda məlumatlandırmaq üçün necə tətbiq oluna biləcəyini nümayiş etdirmək məqsədi daşıyır. Nəticələr istehsal sektorunda maliyyə fəaliyyətinin qiymətləndirilməsinin daha geniş başa düşülməsinə kömək edir və ciddi maliyyə təhlili vasitəsilə əməliyyat səmərəliliyini və rəqabət qabiliyyətini artırmaq istəyən şirkətlər üçün praktiki nəticələri vurğulayır. Məqalənin hazırlanmasında müxtəlif elmi metodlardan istifadə edilmişdir. Belə ki, məlumatlar geniş şəkildə toplanmış, tədqiqat məqsədlərinə uyğun sintez edilmiş və SOCAR-ın maliyyə göstəriciləri əsasında müqayisəli analiz aparılmışdır.

Açar sözlər: *maliyyə, səmərəlilik, qiymətləndirmə, təhlil, idarəetmə, mənfəətlilik.*

FINANCIAL RATIO ANALYSIS AS A PERFORMANCE TOOL: THE SOCAR CASE STUDY

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Abstract

This study explores the application of financial ratio analysis as a performance measurement tool within the manufacturing industry, focusing on the State Oil

Company of the Azerbaijan Republic (SOCAR) as a case study. Financial ratio analysis, widely recognized for its ability to assess a company's financial health and operational efficiency, provides valuable insights into liquidity, profitability, solvency, and overall financial stability. By evaluating SOCAR's financial data over a specific period, this research examines the effectiveness of these ratios in measuring and benchmarking corporate performance. The analysis aims to demonstrate how financial ratios can be implemented not only to monitor ongoing operations but also to inform strategic decision-making processes. The findings contribute to the broader understanding of financial performance evaluation in the manufacturing sector and highlight the practical implications for firms seeking to enhance their operational efficiency and competitiveness through rigorous financial analysis. The preparation of the article utilized a range of scientific methodologies. Specifically, data were comprehensively collected, systematically synthesized to align with the research objectives, and subjected to a comparative analysis using SOCAR's financial indicators as a case study.

Keywords: *finance, performance, measurment, analysis, management, profitability.*

ПРИМЕНЕНИЕ АНАЛИЗА ФИНАНСОВЫХ КОЭФФИЦИЕНТОВ КАК ИНСТРУМЕНТ ОЦЕНКИ ЭФФЕКТИВНОСТИ: СЛУЧАЙ SOCAR

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Резюме

В этом исследовании изучается применение анализа финансовых коэффициентов в качестве инструмента измерения производительности в производственной отрасли, с упором на Государственную нефтяную компанию Азербайджанской Республики (SOCAR) в качестве примера. Анализ финансовых коэффициентов, широко признанный за его способность оценивать финансовое состояние и операционную эффективность компании, дает ценную информацию о ликвидности, прибыльности, платежеспособности и общей финансовой стабильности. Оценивая финансовые данные SOCAR за определенный период, в этом исследовании изучается эффективность этих коэффициентов в измерении и сравнительном анализе корпоративной производительности. Цель анализа — продемонстрировать, как финансовые коэффициенты могут быть реализованы не только для мониторинга текущих опера-

ций, но и для информирования о процессах принятия стратегических решений. Результаты способствуют более широкому пониманию оценки финансовых показателей в производственном секторе и подчеркивают практические последствия для фирм, стремящихся повысить свою операционную эффективность и конкурентоспособность с помощью строгого финансового анализа. В подготовке статьи были использованы различные научные методы. В частности, данные были всесторонне собраны, систематически синтезированы в соответствии с целями исследования и подвергнуты сравнительному анализу на основе финансовых показателей SOCAR.

Ключевые слова: *финансы, коэффициенты, производительность, измерение.*

Introduction

Performance measurment is a critical process integral to the operation of any organization. In a modern market economy, achieving and maintaining competitive advantages necessitates that organizations not only enhance the overall efficiency of their operations but also implement precise methods for measuring and evaluating this efficiency. Within this framework, financial indicators serve as one of the primary tools for assessing efficiency. These indicators encapsulate the outcomes achieved in areas such as profitability, financial stability, and financial risk management, thereby playing a pivotal role in the decision-making processes of management [1].

The significance of financial indicators in the assessment of efficiency extends beyond a narrow focus, encompassing both the internal dynamics of the organization and its interactions with the external environment. By evaluating the utilization of organizational resources, operational efficiency, and financial stability, these indicators enable financial managers and other stakeholders to analyze the organization’s overall performance and develop strategies for the future.

The financial reports of an enterprise are utilized across a broad spectrum of efficiency evaluation methodologies. These can be presented as representative examples of widely employed financial analysis methodologies: common-size balance sheet and income statement, financial ratios, cross - sectional analysis (or relative analysis), trend analysis and regression analysis [2].

The manufacturing industry represents a strategic sector that plays a critical role in the economic development of nations and constitutes a central component of the broader industrial landscape. On the other side, the manufacturing industry exhibits

significant diversification, with each branch addressing distinct market demands and producing a broad spectrum of goods. High-technology sectors, such as aerospace and electronics, alongside more traditional industries, including textiles and food processing, all contribute fundamentally to the global economy [3]. The continuous advancement of technology, coupled with the increasing emphasis on sustainability, is anticipated to further transform and redefine the various sectors within manufacturing. Therefore, it is imperative to account for sectoral variations in the evaluation of efficiency derived from financial analysis.

This article aims is not only to explore the role of financial indicators in efficiency evaluation, analyzing their impact on the strategic objectives of organizations and their application within management processes but also analyses the case study on last three years (2021-2022-2023) of The State Oil Company of the Azerbaijan Republic (SOCAR) financial reports. The company runs oil and gas exploration, production, processing, transport and marketing both Azerbaijan and international markets [4].

Furthermore, the article will examine the contexts in which financial indicators are most effective for evaluating efficiency, address their limitations, and highlight the necessity of integrating them with alternative indicators.

Overview of financial analysis techniques

As highlighted earlier general acceptance financial techniques and their objectives are indicated table below.

Table 1: Category and objectives of financial analysis techniques

Category of Analysis	Objective
Financial Ratio Analysis	An indicator of certain dimensions of the company's operations.
Common Size BS & IS	It establishes a correlation between each financial statement item and its corresponding underlying component.
Cross- sectional Analysis (or Relative analysis)	is facilitates the comparison of a specific performance indicator across different companies or groups of companies. It enables such analysis irrespective of variations in the size of the companies or differences in their operating currencies
Trend Analysis	is used to identify patterns from multiple time periods and plan them in a graphical format so that actionable

The use of graphs	Graphs serve as a valuable tool for comparing performance and financial structures over time, effectively highlighting shifts in key aspects of business operations.
Regression Analysis	serves as a methodological tool to identify and quantify the relationships or correlations between variables (such as company's sales to GDP over time and etc.)
Predicting financial failure	Quantitative models (Beaver model, Althman and me cough model, Kida model and Sherrod model) are effective in forecasting financial insolvency, providing crucial insights through analytical methodologies

Source: Researcher preparation based on listed literature [2],[5],[6].

Financial analysis techniques involve systematic examination of historical and current financial data to assess future risks and potential opportunities. The basic and the main data source of financial analysis is financial statements which are cash flow statement (CFS), statement of comprehensive income (SOCI), statement of financial position (SOFP), statement of owners` equity (SOE), notes on the accounts, statement of accounting policies (SOP). The role of statutory auditors has become increasingly critical since the auditing of financial statements commenced. Similarly, the importance of the directors' report should not be underestimated, as it presents essential and legally mandated information pertaining to the financial year under review [5]. Moreover, the Value-Added Statement (VAS) constitutes a significant element of the financial statement, with its relevance contingent upon the utility it offers to potential stakeholders. The Value-Added Statement (VAS) illustrates the income generated by the company as a whole and outlines how this income is distributed among the various stakeholders who contributed to its production. Stakeholder theory, which was propounded by Edward R Freeman in 1983, posits that organizations should be managed not solely in the interest of shareholders, but in consideration of all stakeholders who are affected by the organization’s activities. These stakeholders include not only investors but also employees, customers, suppliers, communities, and even the environment [6]. The theory challenges the traditional shareholder-centric model by advocating for a broader perspective in corporate governance and decision-making. It suggests that long-term organizational success is dependent on balancing the interests of diverse stakeholder groups. By fostering transparent relationships and addressing the needs and concerns of these groups, organizations can achieve sustainable growth, enhance their reputation, and reduce potential conflicts. Stakeholder theory, therefore, extends the notion of corporate responsibility beyond financial performance to encompass ethical

considerations and social impact, contributing to a more holistic approach to business management.

Financial ratio analysis as a financial analysis technique

There are numerous interconnections among financial accounts, with various anticipated relationships observable over different points in time. A substantial body of academic research has extensively explored the significance of financial ratios in evaluating corporate performance and financial health. It should be taken into account that there are no authoritative bodies that prescribe specific formulas for calculating financial ratios or provide a standardized, comprehensive set of ratios. The potential number of financial ratios that can be formulated is virtually limitless [2]. However, there are several widely accepted ratios that have been consistently recognized for their utility in financial analysis. Given the vast number of financial ratios, it is beneficial to classify them into broad categories based on the specific aspects of performance they are designed to assess. This categorization helps streamline analysis and enhances the focus on key performance indicators. Common ratio categories, subcategories and their objectives are summerised below table.

Table 2: Categories and description of financial ratios

Category of Ratio	Description
Activity Ratios (or asset utilization ratio or operating efficiency ratios)	assess how efficiently a company executes its day-to-day operations, including the management of assets, liabilities, and resources, to support its overall performance and productivity
Liquidity Ratios	evaluate a company's capacity to meet its short-term obligations by assessing the availability of liquid assets to cover liabilities as they come due. These ratios are crucial for determining the firm's financial flexibility and stability in the short term
Solvency Ratios (or Gearing ratios)	assess a company's ability to meet its long-term obligations and maintain financial stability over time
Profitability Ratios	evaluate a company's ability to generate profits from its available resources, providing insight into the efficiency with which the firm utilizes its assets to produce earnings
Valuation Ratios	assess the relative value of an asset or income stream associated with ownership of a particular claim, such as equity. These ratios are typically used to evaluate a company’s market value in relation to its earnings, cash flows, or other financial metrics, aiding in the assessment of investment potential

Source: Resarcher preparation based on listed literature [2], [5], [6].

Activity ratios

Table- 3: Activity ratios and their calculation formulas

Name of Ratio	Calculation formula
Inventory turnover	$\frac{Cost\ of\ sales\ (or\ cost\ of\ goods\ sold)}{Average\ inventory}$
Days of inventory on hand (DOH)	$\frac{Average\ inventory\ x\ number\ of\ days\ in\ period)}{Cost\ of\ sales\ (or\ cost\ of\ goods\ sold)}$
Receivables turnover	$\frac{Revenue\ (or\ \ sales, or\ net\ forward\ sales\ )}{Average\ receivables}$
Days of sales outstanding (DSO)	$\frac{Average\ receivables\ x\ number\ of\ days\ in\ period)}{Revenue\ (or\ sales)}$
Payables turnover	$\frac{Purchases}{Average\ trade\ payables}$
Number of days of payables	$\frac{Average\ trade\ payables\ x\ number\ of\ days\ in\ period}{Purchases}$
Working capital turnover	$\frac{Revenue}{Average\ working\ capital}$
Fixed asset turnover	$\frac{Revenue}{Average\ net\ fixed\ assets}$
Total asset turnover	$\frac{Revenue}{Average\ total\ assets}$
ROCE	$Net\ margin\ x$ asset turnover
Revenue per employee	$\frac{Revenue}{Number\ of\ employees}$

Source: Resarcher preparation based on listed literature [2], [5], [6].

Activity ratios, also referred to as efficiency or turnover ratios, serve as critical indicators of a firm's capacity to effectively deploy its assets in the generation of revenue and the management of operational processes. These metrics evaluate the degree to which a business transforms its resources, such as inventory, receivables, and fixed assets, into sales. Prominent activity ratios, including inventory turnover, receivables turnover, and total asset turnover, offer valuable insights into various dimensions of operational efficiency. Elevated activity ratios typically signify a higher level of managerial effectiveness in resource utilization, whereas lower ratios may indicate inefficiencies or potential liquidity challenges. As such, these ratios are

indispensable for assessing an organization's proficiency in sustaining operational continuity and maximizing asset productivity.

Case Study

Table- 4: Data extracted and processed

Data (*with AZN*)	**2020**	**2021**	**2022**	**2023**
Revenue		77,531	119,228	85,201
COS		68,689	104,526	76,639
Inventory	2,783	2,839	2,504	2,469
Tr. Receivables	7,477	9,418	9,730	8,851
Tr. Payables	9,461	11,049	11,508	10,505
Purchases		68,689	104,526	76,639
Working capital	(2,378)	3,632	4,461	3,362
Net fixed assets	45,900	45,417	47,404	49,033
Total Assets	64,155	69,357	80,835	71,966
Average Inventory		*2,811.00*	*2,672*	*2486.5*
Average Tr. Receivables		*8,447.50*	*9,574.00*	*9290.5*
Average Tr. Payables		*10,255.00*	*11,278.50*	*11006.5*
Average Working Capital		*627.00*	*4,046.50*	*3,911.50*
Average net fixed assets		*45,658.50*	*46,410.50*	*48,218.50*
Average total assets		*66,756.00*	*75,096.00*	*76,400.50*

Source: SOCAR annual financial reports from 2020 to 2023 and researcher`s data computation output.

Table-5: Activity ratios of SOCAR period from 2021 to 2023

Ratio	**2021**	**2022**	**2023**
Inventory Turnover	24.44	39.13	30.82
Days of inventory on hand (DOH)	14.94	9.33	11.84
Receivables turnover	9.18	12.45	9.17
Days of sales outstanding (DSO)	39.77	29.31	39.80
Payables turnover	6.70	9.27	6.96
Number of days of payables	54.49	39.38	52.42
Working capital turnover	123.65	29.46	21.78
Fixed asset turnover	1.70	2.57	1.77
Total asset turnover	1.16	1.59	1.12

Source: Resarcher`s data computation output.

Overall interpretation

The company's financial efficiency appears to have declined from 2022 to 2023 across several key metrics. Notable declines in inventory turnover, receivables

turnover, and asset turnover ratios point to potential challenges in operational efficiency, sales generation, and cash collection. Additionally, the lengthening of days of inventory on hand, days of sales outstanding, and days of payables may signal slower sales, difficulties in collecting payments, and extended payment terms to suppliers possibly indicative of liquidity concerns.

For future analysis, it may be useful to investigate external factors (e.g., economic conditions, industry trends) that could have influenced these changes, as well as internal strategies for working capital and asset management.

Liquidity ratios

Table- 6: Liquidity ratios and their calculation formulas

Subcategory of ratio	Name of Ratio	Calculation formula
	Current ratio	$\frac{Current\ assets}{Current\ liabilities}$
	Quick ratio (acid test)	$\frac{Cash + Short-term\ marketable\ \ investments + Recevables}{Current\ liabilities}$
	Cash ratio	$\frac{Cash + Short-term\ marketable\ \ investments}{Current\ liabilities}$
	Defensive interval ratios	$\frac{Cash + Short-term\ marketable\ \ investments + Recevables}{Daily\ cash\ expenditures}$
Additional Liquidity Measure	Cash conversion cycle (net operating cycle)	*DOH + DSO - Number of days of payables*

Source: Researcher preparation based on [2], [5], [6].

Liquidity ratios are key financial indicators used to evaluate a company's capacity to fulfill its short-term obligations using readily available assets. Prominent liquidity ratios, such as the current ratio and the quick ratio, assess the firm’s ability to meet liabilities due within a one-year period. A higher liquidity ratio typically reflects a stronger financial position and a greater ability to manage immediate debt commitments, while lower ratios may indicate potential solvency risks. These metrics are critical in assessing a company’s short-term financial resilience and its efficiency in managing cash flows and working capital.

Table- 7: Data extracted and processed related to liquidity ratios

Data (AZN) & Ratios	2021	2022	2023
Current assets	23,940	33,431	22,933
Current liabilities	20,308	28,970	19,571

Inventories	2,839	2,504	2,469
Cash&Cash equivalents	9,012	12,490	8,041
Current ratio	*1.18*	*1.15*	*1.17*
Quick ratio (acid test)	*1.04*	*1.07*	*1.05*
Cash ratio	*0.44*	*0.43*	*0.41*

Source: *SOCAR annual financial reports from 2020 to 2023 and researcher`s data computation output.*

Table 8: Solvency ratios and their calculation formulas

Subcategory of ratio	Name of Ratio	Calculation formula
Debt ratios	Debt- to- asset ratio (or Total debt ratio)	$\frac{Total\ debt}{Total\ assets}$
	Debt- to- capital ratio (or financial gearing)	$\frac{Total\ debt}{Total\ debt + Total\ shareholders`\ equity}$
	Debt- to- equity ratio (or financial gearing)	$\frac{Total\ debt}{Total\ shareholders`\ equity}$
	Financial leverage ratio	$\frac{Average\ total\ assets}{Average\ total\ equity}$
	Debt- to- EBITDA	$\frac{Total\ debt}{EBITDA}$
Coverage ratios	Interest coverage	$\frac{EBIT}{Interest\ payments}$
	Fixed charge coverage	$\frac{EBIT + Lease\ payments}{Interest\ payments + Lease\ payments}$

Source: Researcher`s preparation based on listed literature [2].

The company's liquidity position has exhibited relative stability over the three-year period, with only minor variations in its financial ratios. Despite a notable reduction in current assets, particularly cash reserves, in 2023, this was offset by a corresponding decrease in current liabilities, thereby maintaining consistent current and quick ratios. However, the slight decline in the cash ratio indicates a diminished capacity to meet short-term obligations solely through cash reserves. Overall, while the company appears to be effectively managing its liquidity, the downward trend in cash reserves may necessitate more rigorous monitoring to ensure the maintenance of robust short-term financial stability.

Solvency ratios

Solvency ratios are key financial indicators utilized to assess a company's long-term capacity to fulfill its debt obligations and maintain operational sustainability. Ratios such as the debt-to-equity ratio and interest coverage ratio measure the firm’s

financial leverage and its ability to manage debt relative to its equity base and earnings. Elevated solvency ratios may signal an over-reliance on debt, potentially increasing financial risk, whereas lower ratios typically indicate a more stable capital structure. These metrics are essential for evaluating a company's long-term financial viability and its ability to remain solvent under its debt commitments.

Case Study

Table 9: Data extracted and processed related to solvency ratios

Data (*with AZN*) & Ratios	**2020**	**2021**	**2022**	**2023**
Total debt	42,232	46,607	47,500	37,118
Total asset	64,155	69,357	80,835	71,966
Total shareholders` equity	21,923	22,750	32,145	33,079
Debt- to- asset ratio		*2.05*	*1.48*	*1.1221*
Debt- to- capital ratio		*0.67*	*0.60*	*0.52877*

Source: *SOCAR annual financial reports from 2020 to 2023 and researcher`s data computation output.*

The company has made considerable progress in enhancing its solvency from 2021 to 2023. The significant reductions in total debt, alongside improvements in the debt-to-asset and debt-to-capital ratios, indicate a strategic effort to mitigate financial risk and decrease reliance on debt financing. Concurrently, the steady growth in shareholders' equity and total assets reflects an overall fortification of the company's financial position, likely attributable to retained earnings and prudent investment strategies. The declining debt ratios signify a more sustainable capital structure, thereby augmenting the company’s long-term financial stability and resilience.

Limitations, recommendations & conclusion

The performance measurment using financial indicators presents several limitations from different perspectives. Primarily, assessing the efficiency of an enterprise solely based on financial indicators may lead to a narrow focus and short-terminism [7]. However, financial indicators provide valuable insights into an organization's performance over specific periods and allow for comparisons with industry averages and competing firms. A notable limitation in this context is the limited availability of officially published financial statements from enterprises operating in Azerbaijan's manufactoring industry, compounded by the absence of sector-average data for financial ratios.

Although SOCAR operates across various sectors, from mining to delivery services, both domestically and internationally, it was selected for this study due to the

availability of its officially audited reports, which are compliant with international accounting standards. In future research on this topic, it is crucial to emphasize the importance of obtaining sector-wide financial ratio averages and conducting comparative analysis with global benchmarks. This approach could facilitate economic modeling that explores the relationship between financial indicators and an enterprise's creditworthiness.

When evaluating the efficiency of large enterprises such as SOCAR, it is advisable to analyze both the overall company performance and the financial indicators of individual subsidiaries within the corporate group. Furthermore, the establishment of statistical correlations between financial and non-financial indicators should be prioritized in future studies.

In conclusion, to comprehensively assess an enterprise's efficiency in achieving its long-term strategic objectives, a multidimensional analysis encompassing both financial and non-financial indicators is essential. Frameworks such as the Balanced Scorecard and the Baldrige Excellence Model offer valuable tools for this purpose.

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