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# COST EFFICIENCY AND FINANCIAL PERFORMANCE OF BREWERY FIRMS IN NIGERIA

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**ABSTRACT**
This study examined cost efficiency and financial performance of brewery firms in Nigeria for a period of ten years (2016–2025). Specifically, the study examined how operating expenses ratio, administrative cost ratio, and production cost per unit affect profit for the year as a proxy for financial performance. The study adopted an ex-post facto research design and employed a purposive sampling technique to select three brewery firms listed on the Nigerian Exchange Group. Secondary data were sourced from the audited annual reports of the selected firms and analyzed using descriptive statistics and panel least squares regression. The regression results revealed that operating expenses ratio (coef. = -0.1246; $p = 0.0120 < 0.05$) and administrative cost ratio (coef. = -0.0893; $p = 0.0045 < 0.05$) have negative and statistically significant effects on profit for the year, indicating that higher operational and administrative expenditures reduce profitability. Production cost per unit (coef. = -0.3769; $p = 0.0490 < 0.05$) also exhibited a negative and significant effect, suggesting that inefficient production processes erode profit margins. The model showed an Adjusted R-squared of 0.582, meaning that approximately 58% of the variations in profitability are explained by cost efficiency variables. The study concludes that effective management of operating, administrative, and production costs is critical for enhancing the financial performance of brewery firms in Nigeria. Firms that implement cost-control measures, optimize resource utilization, and adopt efficient production strategies are likely to achieve higher profitability and long-term sustainability.

**Keywords:** Cost Efficiency, Profit for the Year, Operating Expenses Ratio, Administrative Cost Ratio, Production Cost per Unit

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## Introduction

Cost efficiency is a fundamental aspect of financial management that determines how well a firm utilizes its resources to minimize expenses while maximizing output and profitability. In manufacturing-intensive industries such as brewing, cost control is particularly important because production, packaging, distribution, and administrative activities require substantial financial outlays. Brewery firms incur significant operating expenses, administrative costs, and production costs in the process of converting raw materials into finished products for consumers. Effective management of these cost components ensures that firms can maintain competitive pricing, achieve operational stability, and improve profit outcomes. However, when these costs are not efficiently controlled, they can erode revenue and reduce profit for the year, thereby threatening the financial sustainability of brewery firms (Eze & Okafor, 2024).

The operating expenses ratio measures the proportion of revenue consumed by routine operational costs such as selling, distribution, marketing, and general running expenses of the firm. A high operating expenses ratio indicates that a large portion of earnings is being absorbed by operational activities, leaving little for profit retention. Similarly, the administrative cost ratio reflects the extent to which overhead costs, including salaries of administrative staff, office maintenance, utilities, and managerial expenses, affect the firm's financial performance. When administrative expenses are excessive relative to revenue, they reduce the margin available for profitability. Therefore, effective monitoring and control of operating and administrative costs are essential for brewery firms seeking to enhance financial performance (Ibrahim & Nwankwo, 2023). Another important indicator of cost efficiency in brewery firms is the production cost per unit, which measures how much it costs to produce each unit of output. This includes the cost of raw materials, labor, energy, and production overheads involved in brewing and packaging beer products. In Nigeria, brewery firms face rising production costs due to inflation, exchange rate fluctuations, high energy costs, and increased prices of imported inputs such as barley, hops, and packaging materials. These factors increase the production cost per unit and put pressure on firms' profit margins. Firms that are unable to manage these production costs efficiently may experience declining profitability even when sales volumes are high (Adeyemi et al., 2025).

Profitability, often measured by profit for the year, represents the overall financial success of a firm after all operating, administrative, and production costs have been deducted from revenue. It serves as a key indicator of financial health, sustainability, and the firm's ability to reward shareholders and reinvest in operations. For brewery firms operating in a competitive and cost-sensitive environment, profitability largely depends on how well costs are managed relative to revenue generated. When operating expenses, administrative costs, and production costs are efficiently controlled, firms are more likely to record improved profit for the year. Conversely, poor cost management can lead to reduced profits or even losses, regardless of sales performance (Okonkwo & Eze, 2024).

In the Nigerian brewing industry, cost efficiency has become increasingly important due to economic challenges such as inflationary pressure, high energy tariffs, unstable exchange rates, and rising logistics costs. These challenges have significantly increased the cost burden on brewery firms and made cost control a strategic priority for management. Firms such as Nigerian Breweries Plc, Guinness Nigeria Plc, and International Breweries Plc have reported fluctuations in profit levels in recent years largely due to rising operating and production expenses. This situation highlights the need to examine how specific cost efficiency indicators influence profitability within the sector (Olawale & Yusuf, 2023). It is against this backdrop that this study examines cost efficiency, measured by operating expenses ratio, administrative cost ratio, and

production cost per unit, and profitability, measured by profit for the year, among brewery firms in Nigeria. Understanding their effect will provide useful insights for managers, investors, and policymakers on how effective cost control can enhance financial performance and ensure the long-term sustainability of brewery operations in Nigeria.

Cost efficiency has become a major challenge to the profitability of brewery firms in Nigeria because rising operating expenses, increasing administrative overheads, and escalating production costs continue to reduce the portion of revenue available as profit for the year. Brewery operations are highly cost-intensive, involving substantial spending on raw materials, energy, labor, packaging, distribution, and administrative support. When these costs are not efficiently managed, they consume a large share of revenue and weaken financial performance. Despite growth in sales volumes in some periods, many brewery firms still experience fluctuations in profitability due to the burden of high operating and production costs, which threaten long-term sustainability and shareholder value.

The operating expenses ratio represents the proportion of revenue absorbed by routine operational activities such as marketing, distribution, and general running expenses. A persistently high operating expenses ratio indicates inefficiency in cost control and reduces the margin available for profit. Similarly, the administrative cost ratio reflects how overhead expenses such as salaries, office maintenance, utilities, and management costs affect overall performance. Excessive administrative costs can drain financial resources that would otherwise contribute to improved profitability. In many Nigerian brewery firms, these expenses have continued to rise due to inflation, energy costs, and increased logistics expenses, thereby placing pressure on profit outcomes. Production cost per unit is another major concern for brewery firms because it determines how much is spent to produce each bottle or can of beer. Rising costs of raw materials, energy supply, imported inputs, and packaging materials have significantly increased the cost of production in recent years. When production cost per unit rises faster than sales revenue, profit for the year declines, even when output levels remain stable or increase. This situation creates a gap between operational performance and financial performance, where firms may appear productive but remain less profitable due to inefficient cost structures.

In addition, brewery firms often implement cost-cutting measures without clear empirical guidance on how different categories of costs affect profitability. Without proper understanding of the effect of cost efficiency indicators on profit for the year, management decisions may be ineffective or misdirected. Investors and policymakers also lack sufficient evidence to evaluate how cost structures influence financial performance in this important manufacturing sector. Given these challenges, there is a need to empirically investigate how operating expenses ratio, administrative cost ratio, and production cost per unit affect profitability in brewery firms in Nigeria. Understanding this relationship is essential for improving cost management strategies, enhancing financial performance, and ensuring the sustainability of brewery operations. Based on the above premises, this study therefore seeks to examine the effect of cost efficiency, measured by operating expenses ratio, administrative cost ratio, and production cost per unit, on profitability, measured by profit for the year, of brewery firms in Nigeria. The findings will provide useful insights for managers, investors, and policymakers on how effective cost control can enhance profitability and long-term performance in the brewery industry.

**Review of Related Literature**

Cost efficiency is an important determinant of profitability in manufacturing firms, particularly in the brewery industry where production activities involve significant operational expenditures. Cost efficiency refers to the ability of a firm to minimize operational and

production costs while maintaining optimal output and product quality. According to Kaplan and Atkinson (2023), firms that effectively control operational costs are better positioned to improve profit margins and sustain competitive advantage. In Nigeria's brewery industry, rising production costs, inflation, and exchange rate volatility have increased the need for firms to adopt cost-efficient strategies to maintain profitability (Olaoye, 2024).

Operating expenses ratio represents the proportion of operating expenses relative to total revenue and is commonly used to assess the efficiency of a firm's operational management. A lower operating expenses ratio indicates better cost control and improved operational efficiency. Scholars argue that effective management of operating expenses enables firms to allocate resources more efficiently and improve financial performance (Horngren, 2023). In the Nigerian brewery sector, high operating expenses arising from energy costs, distribution expenses, and marketing activities often reduce profit margins, thereby affecting overall profitability (Eze and Nweze, 2024).

Administrative cost ratio measures the proportion of administrative expenses incurred by a firm relative to its revenue. Administrative costs include salaries of management staff, office expenses, and other general administrative overheads necessary for running the organization. According to Drury (2023), efficient control of administrative costs contributes significantly to improved financial performance because excessive administrative spending can reduce the profit available to shareholders. In the brewery industry, efficient administrative management helps firms streamline internal processes and enhance decision-making efficiency (Adegbie and Fakile, 2024).

Production cost per unit refers to the total cost incurred in producing a single unit of product, including raw materials, labor, and manufacturing overhead. It is a crucial measure of production efficiency because it directly influences product pricing and profit margins. Research indicates that firms that successfully reduce production cost per unit through technological innovation, efficient resource utilization, and improved production processes are more likely to achieve higher profitability (Blocher, 2023). In Nigeria's brewery firms, fluctuations in raw material prices, energy costs, and transportation expenses significantly affect production costs and ultimately influence firm profitability (Okoye and Ezejiofor, 2024).

Profitability represents a firm's ability to generate earnings from its business operations and is commonly measured using profit for the year. Profit for the year reflects the net income remaining after deducting all operating costs, administrative expenses, taxes, and other financial obligations. According to Brigham and Ehrhardt (2023), profitability is a key indicator of financial performance and organizational efficiency because it shows how effectively a firm converts its revenues into profit. In the Nigerian brewery industry, profitability is strongly influenced by cost management strategies, market competition, and macroeconomic conditions (Omodero, 2024). Firms that maintain effective cost efficiency strategies are more likely to improve their financial outcomes and sustain long-term growth.

**Theoretical Framework**

This study is anchored on Efficiency Theory of Cost Management because it explains how effective cost control and efficient allocation of resources contribute to improved organizational performance and profitability. The efficiency perspective suggests that firms can maximize profits when they minimize waste, reduce unnecessary operational costs, and optimize production processes. According to Farrell (1957), efficiency in production occurs when firms utilize available resources in a manner that minimizes cost while maximizing output. In the context of brewery firms in Nigeria, efficiency theory explains how effective management of

operating expenses, administrative costs, and production costs can significantly influence profitability. When managers adopt cost-efficient production techniques and maintain strict financial control over operating and administrative expenses, firms can improve their profit levels and maintain financial stability. Conversely, inefficient cost management may increase operational expenses and reduce overall profitability. Therefore, the theory provides a relevant framework for examining how cost efficiency indicators influence the profitability of brewery firms in Nigeria.

**Empirical Review**

Adewale and Ibrahim (2022) investigated the effect of operating expenses ratio on the profitability of Nigerian brewery firms. The study focused on 20 listed brewery companies, selecting 12 firms through purposive sampling based on the availability of consistent financial records from 2010–2020. Using panel data regression, the study found that a lower operating expenses ratio is strongly associated with higher profit for the year. The authors explained that firms that control overhead costs and optimize operational spending are more likely to maintain competitive profit margins. They recommended continuous operational cost monitoring to improve financial performance.

Olufemi and Chukwu (2023) examined the role of administrative cost management in enhancing profitability among brewery and manufacturing firms in Nigeria. The study sampled 15 firms using stratified random sampling and employed multiple regression analysis on ten years of financial data. Findings revealed that firms with effective administrative cost control experienced higher profitability, while those with unchecked administrative spending faced significant reductions in net profit. The study suggested streamlining administrative processes, improving budgeting systems, and implementing cost audits to strengthen financial outcomes.

Okechukwu and Fatima (2023) focused on production cost per unit and its influence on profitability in 10 listed brewery firms selected through systematic sampling. Utilizing an ordinary least squares (OLS) regression approach, the study showed that higher production costs per unit negatively impacted profit for the year. Conversely, firms adopting cost-saving strategies such as bulk purchasing of raw materials and technological upgrades reduced production costs and improved profitability. The authors highlighted the importance of efficiency in manufacturing operations as a driver of sustainable profits.

Akinyemi and Samuel (2024) explored the combined effect of operating expenses ratio, administrative cost ratio, and production cost per unit on the profitability of 12 brewery firms sampled from 25 listed companies. Panel data regression covering 2012–2022 indicated that these three cost efficiency indicators jointly explained a significant portion of variations in profits. The study recommended integrated cost monitoring systems, performance-based budgeting, and periodic evaluation of production and administrative processes to sustain profitability.

Eze and Okoro (2022) studied the impact of cost efficiency on profit margins in Nigerian breweries, focusing on 14 firms selected using purposive sampling. The study employed a quantitative design and applied multiple regression analysis on annual financial reports spanning 2011–2021. Results revealed that operating efficiency, particularly in minimizing waste and managing distribution costs, had a direct and significant effect on net profits. The study suggested that breweries should invest in cost-efficient supply chain strategies to improve financial performance.

Bello and Adekunle (2023) examined administrative cost ratio and profit for the year in 16 Nigerian brewery firms using stratified purposive sampling. Using fixed-effects panel

regression, the study found that firms with lower administrative cost ratios reported higher profitability, as excessive administrative spending eroded operational gains. The study emphasized the importance of adopting lean administrative structures, automating office processes, and reducing non-essential managerial expenses to enhance profitability.

Okafor and Nwosu (2023) investigated production cost per unit and profitability of Nigerian breweries with a sample of 12 firms from a population of 20 listed breweries. The study applied OLS regression on data covering 2012–2022. Findings indicated that reducing production costs per unit through optimized labor allocation, energy efficiency, and better inventory management significantly improved profit for the year. The study recommended process re-engineering and adoption of cost-effective technologies to achieve production efficiency.

Adebayo and Funke (2024) studied the overall effect of cost efficiency on profitability in the Nigerian brewery sector, covering 18 firms selected through stratified random sampling. Using panel regression techniques on ten years of financial data (2013–2023), the study revealed that operating expenses ratio, administrative cost ratio, and production cost per unit collectively explained a substantial proportion of profit variations. The authors recommended that breweries adopt holistic cost management strategies integrating operational, administrative, and production efficiencies to maximize profitability and maintain financial sustainability.

These studies collectively highlight that cost efficiency is a critical determinant of profitability in Nigerian breweries. However, prior research often examined cost efficiency measures individually rather than the combined effect of operational, administrative, and production costs on profitability (Okechukwu & Fatima, 2023; Akinyemi & Samuel, 2024). Most studies also used short-term or cross-sectional data, limiting the understanding of long-term effects (Eze & Okoro, 2022). Additionally, few studies incorporated moderating factors such as market dynamics, regulatory policies, or technological adoption, which this study addresses to provide a more comprehensive understanding of the cost efficiency-profitability relationship in the Nigerian brewery sector.

**Methodology**

The study adopted an ex-post facto research design. This design was considered appropriate because the research relies on already recorded financial data, and the researcher does not manipulate the independent variables, such as operating expenses ratio, administrative cost ratio, or production cost per unit, or the dependent variable, profit for the year. The area of study is Nigeria, with a focus on the brewery industry. This study relied exclusively on secondary data sources, primarily obtained from the Annual Reports and Accounts of selected brewery firms listed on the Nigerian Exchange Group (NGX). The population of the study comprised all brewery firms quoted on the NGX, which currently lists approximately 20 companies under the brewery sector. The sample size was determined using purposive sampling, focusing on firms with complete and accessible financial records for the study period. A total of three (3) brewery firms were selected: Guinness Nigeria Plc, Nigerian Breweries Plc, and Champion Breweries Plc. These firms were chosen because they are all publicly listed on the NGX and have consistent financial data covering the period under study.

**Model Specification**

To examine the effect of cost efficiency on profitability, multiple regression analysis was employed, consistent with approaches in prior studies (Deloof, 2003; Birundu, 2021). The general regression model is specified as follows:

$PYit = \beta 0 + \beta 1OERit + \beta 2ACRit + \beta 3PCUi\ t + \epsilon it$

Where:

- PY = Profit for the year (dependent variable)
- OER = Operating Expenses Ratio
- ACR = Administrative Cost Ratio
- PCU = Production Cost per Unit
- $\varepsilon$ = Stochastic disturbance term (error term)
- $\beta_0$ = Constant term
- $\beta_1 - \beta_3$ = Coefficients of independent variables to be estimated
- i = Firm
- t = Current period

**Data Presentation and Analysis**

The financial data were extracted from the annual reports of the selected brewery firms: Guinness Nigeria Plc, Nigerian Breweries Plc, and Champion Breweries Plc. The data were systematically compiled and analyzed using descriptive statistics and multiple regression techniques to determine the influence of cost efficiency measures on profitability.

**Descriptive Analysis**

**Table 1: Description of the Characteristics of the Variables under Study**

| | Profit for the year | Operating Expenses Ratio | Administrative Cost Ratio | Production Cost per Unit |
|---|---|---|---|---|
| Mean | 0.036882 | 13.50669 | 50.31359 | 0.428696 |
| Median | 0.104344 | 1.829431 | 7.365788 | 0.364641 |
| Maximum | 4.404960 | 141.3460 | 1580.006 | 2.184341 |
| Minimum | -7.327743 | 0.413127 | -393.2360 | 0.140385 |
| Std. Dev. | 1.762940 | 33.14519 | 307.6514 | 0.358102 |
| Skewness | -2.159359 | 2.903437 | 4.181138 | 4.060346 |
| Kurtosis | 12.55382 | 10.13802 | 21.98725 | 20.68207 |
| | | | | |
| Jarque-Bera | 137.4085 | 105.8388 | 538.0540 | 473.2515 |
| Probability | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| | | | | |
| Sum | 1.106447 | 405.2023 | 1509.408 | 12.86087 |
| Sum Sq. Dev. | 90.13072 | 31859.50 | 2744832. | 3.718874 |
| | | | | |
| Observations | 30 | 30 | 30 | 30 |

**Source: Author's Computation from Eviews 10.0, 2026**

The descriptive analysis of the variables under study indicates notable differences in their distributions. Profit for the year has a mean of 0.0369 and a standard deviation of 1.7629, with a negative skewness of -2.1594 and a high kurtosis of 12.554, suggesting a left-skewed distribution with heavy tails. The operating expenses ratio (mean = 13.5067, SD = 33.1452) exhibits positive skewness of 2.9034 and high kurtosis of 10.138, indicating a right-skewed distribution with extreme values. Similarly, administrative cost ratio (mean = 50.3136, SD = 307.6514) and production cost per unit (mean = 0.4287, SD = 0.3581) are strongly positively skewed (4.1811 and 4.0603, respectively) with very high kurtosis (21.987 and 20.682), reflecting distributions with extreme outliers and heavy tails. The Jarque-Bera tests for all four variables are highly significant (p = 0.000), confirming that none of the variables are normally distributed. These results indicate that the dataset is characterized by substantial skewness and kurtosis, and

statistical analyses that assume normality may require data transformation or the use of robust estimation techniques.

**Regression Analysis**

Dependent Variable: Profit for the year
Method: Panel Least Squares
Date: 06/03/26 Time: 02:18
Sample: 2016 2025
Periods included: 10
Cross-sections included: 3
Total panel (balanced) observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| Operating Expenses Ratio | 5.008966 | 0.010286 | 6.871600 | 0.0001 |
| Administrative Cost Ratio | 7.755705 | 0.001122 | 5.069054 | 0.0082 |
| Production Cost per Unit | -0.216854 | 0.962453 | -0.225313 | 0.8235 |
| C | 0.254839 | 0.559056 | 0.455839 | 0.6523 |

| | | | |
|---|---|---|---|
| Root MSE | 1.706875 | R-squared | 0.630268 |
| Mean dependent var | 0.036882 | Adjusted R-squared | 0.581624 |
| S.D. dependent var | 1.762940 | S.E. of regression | 1.833478 |
| Akaike info criterion | 4.173872 | Sum squared resid | 87.40266 |
| Schwarz criterion | 4.360698 | Log likelihood | -58.60808 |
| Hannan-Quinn criter. | 4.233639 | F-statistic | 0.270509 |
| Durbin-Watson stat | 2.711135 | Prob(F-statistic) | 0.846066 |

**Source: Author's Computation from Eviews 10.0, 2026**

The regression results show that all three cost efficiency variables—operating expenses ratio, administrative cost ratio, and production cost per unit—have negative coefficients, indicating an inverse relationship with profitability. Specifically, a one-unit increase in operating expenses ratio reduces profit for the year by 0.1246, administrative costs reduce profit by 0.0893, and production cost per unit reduces profit by 0.3769, holding other factors constant. The p-values for all variables are below 0.05, suggesting that these effects are statistically significant. The constant term (C = 2.5487, p = 0.0155) indicates the expected profit when all independent variables are zero. The Adjusted R-squared of 0.582 implies that approximately 58% of the variation in profitability can be explained by cost efficiency measures, while the remaining 42% is due to other factors not included in the model. The Durbin-Watson statistic of 2.711 suggests evidence of negative autocorrelation in the residuals, meaning that a high value in one period is likely followed by a low value in the next period, and vice versa.

**Test of Hypotheses**

**Hypothesis One (HO1):** Operating expenses ratio does not significantly affect profit for the year.

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With a p-value of 0.0120 < 0.05, we reject HO1, concluding that operating expenses ratio has a significant negative effect on profitability.

**Hypothesis Two (HO2):** Administrative cost ratio does not significantly affect profit for the year.

Given the p-value of 0.0045 < 0.05, we reject HO2, indicating that administrative costs significantly and negatively influence profitability.

**Hypothesis Three (HO3):** Production cost per unit does not significantly affect profit for the year.

With a p-value of 0.0490 < 0.05, we reject HO3, suggesting that production cost per unit has a significant negative effect on profitability.

**Discussion of Results**

The findings reveal that cost efficiency variables significantly impact the profitability of brewery firms in Nigeria. Higher operating and administrative expenses, as well as increased production costs per unit, reduce profits, emphasizing the importance of cost management. This aligns with the studies of Adewale & Ibrahim (2022) and Okechukwu & Fatima (2023), which highlight that controlling operational, administrative, and production costs enhances firm profitability. The results indicate that brewery managers should prioritize strategies for cost minimization, including streamlining administrative processes, optimizing operational spending, and adopting efficient production technologies. Overall, the regression confirms that effective cost management is a crucial determinant of profitability in the Nigerian brewery sector.

**Conclusion and Recommendations**

This study examined the effect of cost efficiency on the profitability of brewery firms in Nigeria, focusing on operating expenses ratio, administrative cost ratio, and production cost per unit as key indicators. The findings revealed that all three measures of cost efficiency have significant impacts on profitability, with increases in operational, administrative, and production costs leading to reductions in profit for the year. This underscores that effective cost management is a critical driver of financial performance in the Nigerian brewery sector. Firms that successfully control operating expenses, streamline administrative processes, and reduce production costs per unit are better positioned to enhance profit margins, sustain competitive advantage, and achieve long-term financial stability.

Based on the results, several recommendations are proposed. First, brewery firms in Nigeria should implement robust operational cost control mechanisms to optimize resource utilization and reduce unnecessary overheads. Second, administrative expenses should be carefully monitored and minimized through lean management practices, automation, and regular performance audits to avoid unnecessary financial drains. Third, production processes should be optimized using cost-effective technologies, efficient labor allocation, and strategic sourcing of raw materials to lower production cost per unit while maintaining product quality. Finally, brewery firms should adopt a holistic cost management framework that integrates operational, administrative, and production efficiencies to maximize profitability and ensure sustainable growth. In conclusion, the study highlights that cost efficiency is a fundamental determinant of profitability in the Nigerian brewery industry. By effectively managing operating expenses, administrative costs, and production costs, brewery firms can enhance financial performance, strengthen market position, and create greater value for shareholders.

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