



Operational Efficiency and Corporate Governance in Nigeria

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ABSTRACT

The paper examines the impact of Corporate Governance on the operational efficiency of privatized Cement Company of Northern Nigeria. The variables studied were operational efficiency as dependent variables and fourteen Corporate Governance proxies as independent variables. Data was collected from secondary source, and the statistical tools employed in the Methodology were Descriptive Statistics, and OLS regressions. The results suggest Cement Company of Northern Nigeria has higher operational efficiency post privatization and the Operational efficiency ratio has positive and significant relationship with workforce and percentage of management staff. However, state ownership and privatization policy with time have negative and significant relationship with operational efficiency. The researcher arrived at the conclusions that corporate governance has significant impact on operational efficiency of Cement Company of Northern Nigeria despite the macroeconomic challenges in the economy. The study recommends Nigerian government need to improve macroeconomic situation of the country particularly, the issue of exchange rate and inflation to improve operational efficiency. The new corporate governance need to adopt more strategies on; monitoring, inventory management and creating benchmark to enable them withstand competition. The corporate governance also need to introduce business analytics and [machine learning](#) software that can optimize operations by predicting trends and automating decision-making processes, thereby reducing time and resource waste.

KEYWORDS: Operational Efficiency, Corporate Governance, privatization, Nigeria

1. INTRODUCTION

Operational efficiency is a key performance indicator that measures how effectively corporate governance manages inputs to maximize outputs, thereby enhancing profitability. It reflects the efficiency of profit generation relative to operating costs, where higher operational efficiency translates to greater profitability. This implies that corporate governance can produce higher cash flow or profit with the same or lower costs compared to alternative uses. Additionally, operational efficiency involves reducing waste in production, maintaining high product quality, and optimizing time, effort, and resources. According to Hayes (2022), operational efficiency involves minimizing waste while still delivering high-quality products or services. Its significance extends to resource utilization, production, distribution, and inventory management. Resource utilization focuses on reducing production waste, while production aims to streamline the production environment. Efficient distribution manages the handling, routing, and delivery of the end product, further underscoring the importance of operational efficiency in enhancing overall organizational performance.

Inventory management involves producing and handling inventory to meet demand while minimizing excess stock. Financial institutions and suppliers often use operational efficiency to evaluate a firm's viability, product volume, and market share. Stakeholders assess operational efficiency based on an organization's ability to monitor inputs and outputs related to efficiency, quality, and value, including metrics like automation accuracy, quality control, and customer satisfaction. Additionally, operational efficiency encompasses sustainability and ESG (environmental, social, and governance) factors, focusing on employee well-being, mental health, work-life balance, and job satisfaction. Engaged employees are generally more productive, enhancing overall operational efficiency.

However, public enterprises often suffer from management inefficiency due to a lack of incentives for management and employees, as noted by Shleifer, Vishny, and Boycko et al. (cited by Masu-Gombe, 2024). Public managers and government representatives on boards may have weak incentives to maximize revenue and minimize costs, unlike private managers who directly benefit from their efforts. This inefficiency contributes to the poor performance of public corporations, which is a key reason for their privatization globally. Privatization is expected to drive public enterprises to become more efficient by focusing on cost management, innovation, and productivity. Unlike public enterprises, which may have operated under soft budget constraints and less competitive pressures, private investors are generally motivated by profit maximization and are likely to implement strategies that improve operational efficiency. This shift can lead to better resource allocation, reduced waste, and improved service quality, ultimately benefiting both the enterprise and its customers. However, it is on this note the study intend to ascertain the impact of corporate governance on the operational efficiency of privatized Cement Company of Northern Nigeria.

Investigation on the impact of corporate governance on operational efficiency of Privatized Cement Company of Northern Nigeria is apt and timely. This is because, operational efficiency measure the ability of corporate governance in managing firm resource to produce high quality and quantity of product with small resource that will maximize profit which is the main objective of privatization policy. Therefore the findings of the study will provides a concrete evidence that whether such objective has been achieved or otherwise which will be useful to policy makers and investors.

Based on the available literature reviewed, study on corporate governance related to privatization and operational efficiency is very limited in Nigeria. It is our humble believe that such findings will bridge the literature gab and be making a new discovery that will contribute to knowledge, cement industry and economy at large.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Operational Efficiency

[Hanna](#) and [Gillis](#) (2023) postulate that Operational efficiency is healthy correlation between output and input that minimize cost and increase turnover. This means a firm organize factors of production in away and manner that it can produce high quality goods in greater quantity with little resources available. According to [Hayes](#), (2022) operational efficiency is primarily a metric that measures the efficiency of profit earned as a function of [operating costs](#). The greater the operational efficiency, the more profitable a firm or investment is. This is because the entity is able to generate greater income or returns for the same or lower cost than an alternative investment. It is an organizational ability to eliminate or reduce waste in process of production, cherish quality product, save time and effort as well as input. He further argues that, Operational efficiency requires a company to be cost-effective in rationalizing operations on the techniques of eliminating redundant processes and waste. This can only be achieved through resource utilization, production, [inventory management](#) and distribution. Resource utilization means minimizing waste in production and operations by making the production environment well planned, orderly and highly organized such that both human labor and production equipment should be geared toward increasing production efficiency. With regards to distribution, the corporate governance must ensure efficient management of the end product which includes daily routing and delivery. Inventory management refers to meticulous production and managing stock to meet the effective market demand without any sense of extravagance. The key ingredient to operational efficiency in modern corporations is digitalization such as automation, computer, internet and agile methodologies. Improving operational efficiency can be achieved through several mechanisms: monitoring performance with dashboards or internal meetings, identifying and minimizing waste, creating benchmarks to compare with competitors, and using business analytics and machine learning software. These tools help optimize operations by predicting trends, automating decision-making processes, and reducing time and resources ([Hanna & Gillis](#), 2023).

Empirical review

Operational efficiency is crucial for businesses as it enables competitive pricing. Although intense competition is typically seen as detrimental to performance, it can also motivate firms to improve efficiency. In competitive markets, companies often cut operational costs to maintain their edge. However, the exact relationship between competition intensity, operational efficiency, and overall performance remains complex and not fully understood. [Handoyo et al.](#) (2023) indicate that while competition can drive efficiency, its precise impact on performance is still being explored. Understanding this relationship is key for firms striving to balance competitive pricing with operational excellence. [Zakari, Hussainatu, and Yelwa](#) (2006) examined the financial and operational efficiency of privatized firms in Nigeria and found mixed results. Some firms showed improvements in certain indicators, while others experienced declines post-privatization. Despite these mixed outcomes, the overall trend indicates that at least half of the firms in the sample saw increased profitability. This suggests that privatization generally led to significant improvements across various efficiency metrics, enhancing profitability for a substantial portion of the privatized firms. Thus, while individual results varied, the broad impact of privatization was positive, reflecting overall progress in efficiency and financial performance.

The study of [Cagla and Arin](#) (2006), on the Effects of Privatization on Efficiency and how Privatization Work, find that ownership effects are sufficient to achieve improvements in labor productivity through work force reductions, allocative efficiency depends on changes in the competitive environment, foreign buyers increase capital and investment of plants significantly.

[Handoyo, Suharman, Ghani, and Soedarsono](#) (2023) explored the impact of internal factors like business strategy, operational efficiency, and ownership structure on manufacturing performance. Their study found that these factors positively and significantly influence manufacturing outcomes. Specifically, operational efficiency improves as business competition intensifies. This indicates that in a competitive environment, high operational efficiency becomes crucial for organizational success. Supporting this view, [Habib et al.](#) (2022) emphasize that operational efficiency is essential for thriving in a highly competitive business landscape. Effective management of internal factors thus plays a key role in enhancing manufacturing performance and ensuring long-term success.

[Handoyo, Suharman, Ghani, and Soedarsono](#) (2023) found that under intense competition, manufacturing firms with foreign ownership generally have a competitive edge over those with domestic ownership. Additionally, firms with proactive business strategies significantly outperform those with defensive approaches. In contrast, [Syafuddin Karimi, Taifur, and Ridwan](#) (2023) studied the impact of privatization on Indonesian SOEs from 1996 to 2020. They observed no significant performance differences before and during the crisis, though privatization led to a decline in profitability. However, efficiency improved, and the debt ratio decreased post-privatization. Their analysis showed similar results for long-term versus short-term performance. Factors influencing privatization decisions included corruption perception, profitability, and government ownership levels. Meanwhile, studies by [Mostafa](#) (2010), [Tran et al.](#) (2020), and [Seth et al.](#) (2020) consistently demonstrate that a firm's efficiency positively impacts its overall performance.

Theoretical Framework

Theory of Privatization and Corporate Governance

According to Demsetz and Lehn (1985), Shleifer and Vishny (1986), Jones, Tandon, and Vogelsong (1990), Perotti and Guney (1983), Boycko, Shleifer, and Vishny (1997), La Porta et al. (1999), Allen and Gale (1999), Stiglitz (1999), Claessen et al. (1999), Garton and Schmid (2000), Dyck (2000), Johnson et al. (2000), Rodrik et al. (2002), Salacuse and Braker (2002), Goldman et al. (2009), and D'Souza et al. (2000) as cited by Masu-Gombe (2024), privatization encourages governments to undertake legal reforms essential for enhancing corporate governance. By transferring ownership of public enterprises to private investors, privatization redefines firm objectives, agent responsibilities, and governance structures. It introduces competitive pressures, financial market discipline, and international investment requirements that improve corporate governance mechanisms, thus boosting the operational and financial performance of privatized firms.

3.METHODOLOGY

Operating Performance (TAT) It is an indicator that measures management efficiency. It is calculated by dividing turnover by total assets.

Thus

$$\text{Total Assets Turnover (TAT)} = \frac{\text{Turnover}}{\text{Total assets}} = \frac{\text{Turnover}}{\text{Fixed assets} + \text{current assets}}$$

$$\text{TAT}_{it} = \beta_0 + \beta_1 \text{TMVS}_{1it} + \beta_2 \text{STOWN}_{2it} + \beta_3 \text{INST}_{3it} + \beta_4 \text{MINOWN}_{4it} + \beta_5 \text{FOREI}_{5it} + \beta_6 \text{BSIZE}_{6it} + \beta_7 \text{PED}_{7it} + \beta_8 \text{PNED}_{8it} + \beta_9 \text{DUAL}_{9it} + \beta_{10} \text{CACNE}_{10it} + \beta_{11} \text{WF}_{11it} + \beta_{12} \text{PMS}_{12it} + \beta_{13} \text{PNMS}_{13it} + \beta_{14} \text{PRIV}_{14it} + u_{it}$$

Independent Variable

TMVS represents the market value of shares, while STOWN indicates the percentage of state ownership in the firm. INST refers to institutional investors, and MINOWN denotes minority shareholders. FOREI stands for foreign investment in the corporation. BSIZE is the total number of directors on the board, PED represents the percentage of executive directors, and PNEDED is the percentage of independent directors on the board. DUAL is a binary variable indicating CEOs who also serve as board chairpersons. CACNE denotes the Chairman of the Audit Committee. WF measures the total number of company employees, PMS refers to the percentage of management staff involved in decision-making, and PNMS represents non-management staff not involved in corporate governance. PRIV_t is a dummy variable indicating privatization over time.

4. RESULT AND DISCUSSION

Challenges of Corporate Governance Efficiency on the Performance of Cement Company of Northern Nigeria

Table 1: Distribution of Operational Efficiency Performance Trend Analysis Results of Cement Company of Northern Nigeria

Observation	Operational Efficiency Ratios
1990	0.38
1991	0.39
1992	0.5
1993	0.15
1994	0.75
1995	0.6
1996	0.59
1997	0.5
1998	0.5
1999	0.55
2000	-----
2001	9.0

2002	18.00
2003	1.00
2004	1.00
2005	1.00
2006	1.00
2007	1.00
2008	1.00
2009	1.00
2010	1.00
2011	1.00
2012	1.25
2013	1.05
2014	1.05
2015	1.05
2016	1.10
2017	1.00
2018	1.10
2019	1.00
2020	1.15
2021	1.10
2022	1.00

Source: Authors' computation,, (2024)

In 1990, the corporate governance of Cement Company of Northern Nigeria became proactive in discharging duty of Care by deciding effort and resources to build and commission a 5MW power plant aimed at containing and alleviating the problem of energy sector crisis, being one of the major inputs of cement production that has been threatening efficient daily operational activities of the company. It approved the purchase of new Pay Loader to relieve the pressure of quarry operation and computerized its finance department to enhance efficiency in keeping financial records. These measures, eventually, culminated in increasing plants' capacity utilization to 49% in 1990 which resulted in increasing cement production to 240,567 tones and clinker production to 243,761 tones. Admirably, the multiplier effects of the capital investment decision manifested in Operational Efficiency results of table1 where the ratio of turnover to company's assets were 0.38 times in 1990, 0.39 times in 1991 and 0.5 times, in 1992. However, in 1993 the company was saddled with serious macroeconomic problems that led to the reduction of plants utilization capacity to 40%. This had negatively affected operational efficiency from 0.5 times in 1992 to 0.15 times in 1993. In spite of the macroeconomic challenges in 1994, the corporate governance of Cement Company of Northern Nigeria carried out installation of three units of screw compressors that boosted air supply to all areas of the plant to facilitate their productive efficiency. This measure increased performance with 42.94% over 1993. Consequently, the operational efficiency rose to 0.75times and decline to 0.6times in 1995.

In 1996 the company was faced with many challenges. Prominent among them were; coolers inefficiency that accounted for about 50% loss of kiln production. In addition, the problem of transportation and packing system that also accounted for additional loss of kiln production. To arrest this situation the corporate board contracted the supply of cooler refurbishing which was accomplished in December 1996 and commenced operation in early 1997. Furthermore, macro-economic instability such as slowdown in construction industry, fuel shortage, Naira devaluation that led to cost push inflation in the economy affected the cost of spare parts that increased the cost of production as well as caused general lack of demand for the company products. Similarly, the Operational Efficiency declined to 0.59 times in 1996, and 0.5 times in 1997. However, in 1998 the spillover crisis of energy sector increased the cost of production being part of the major inputs of cement production, coupled with importation of cheap cement which also reduced the demand for domestic cement products as well as denied the company any opportunity to adjust cement prices to match the cost of production. A fire incident caused the company to shutdown the kiln for 33 days. This calamity and other factors mentioned above resulted in reducing company operational capacity by 19%. In effect, the Operational Efficiency declined to 0.5 times. In 1999, the corporate governance of the company planned to float right issue shares to augment working capital and signed a technical management agreement with China to enhance company's productivity. Unfortunately, both efforts were frustrated by privatization programme. Therefore, lack of working capital and spare parts, consumables and fuel scarcity hampered the

productivity of the company. Above all the company was short-listed among the companies to be privatized in Nigeria same year. These problems adversely affected the productivity of the company to the tune of 104,653 tons of cement with 5,077 tone less than 1998. Despite that the Operational Efficiency rose to 0.55.

Notably 2000 was the transition period of Cement Company of Northern Nigeria from public ownership to private ownership. Therefore, the performance trend of the company was not interpreted. So the dawn of privatization of the company commenced in 2001, as expected, it culminated into a lot of structural adjustment that impacted negatively on the overall performance. The company was closed for a while for the rehabilitation of the ageing plant, late delivery of the imported spare parts and machineries and repair of the broken down kiln. In 2002 the corporate governance of the company took viable capital investment such as replacement of 19.5 meters of kiln shell, girth gear of cement mill, quarry equipment, installation of 2 new packing machines and general repair of production equipment. However, breakdown of kiln bucket elevator and fuel pumps and frequent fuel shortages caused the closure of the company for three weeks. In view of that the company produced 54,207 tons in 2001 and 154,912 tons in 2002. Consequently, the operational efficiency was 9.0 times in 2001, 18.00 times in 2002, and declined to 1.0 times from 2003 up to 2010. Nevertheless, the operational efficiency appeared to be higher post privatization.

The ratio fluctuates continued over the years, indicating variable operational efficiency. The highest efficiency from 2011 was observed in 2020, while the lowest was in 2011, 2017, 2019, and 2022. This variability might be attributed to changes in management practices, external economic conditions, or operational adjustments.

Correlation Results of Cement Company of Northern Nigeria

Table 2: Distribution of Correlation Results of Cement Company of Northern Nigeria

	TMVS	STOWN	INST	MINO WN	FOR EI	BSIZE	PED	PNED	FSIZE	WF	PMS	PMS	PRIV
TMVS	1												
STOWN	0.083												
INST	0.289	0.691											
MINO WN	0.039	-0.521	-0.531										
FOREI	0.133	-0.974	0.753	0.454									
BSIZE	0.349	0.713	0.531	-0.269	-0.689								
PED	0.169	-0.473	0.037	0.314	0.344	-0.119							
PNED	0.169	0.473	-0.037	-0.314	-0.344	0.119	-1.000						
FSIZE	0.108	-0.799	-0.457	0.423	0.683	-0.527	0.504	-0.504					
WF	0.195	0.923	0.699	-0.373	0.949	0.670	-0.352	0.352	0.683				
PMS	-0.097	-0.854	-0.582	0.260	0.889	-0.617	0.325	-0.325	0.621	-0.962			
PMS	0.097	0.854	0.582										
PRIV	0.150	-0.966	-0.756	0.999	0.465	-0.691	0.335	-0.334	0.650	-0.926	0.865	-0.865	

Source: Authors' computation, (2024)

TMVS had weak negative relationship with PMS positive with the remaining variable. Stown had perfectly positive relationship with INST, bsize, WF, PMS and weak positive with PED. However, it had negative relation with other variables. INST had strong positive relationship with FOREI, BSIZE, WF, PMS and weak positive with PED and negative with others. MINOWN has weak negative with BSIZE, PNED and WF and strong positive with all others. FOREI had negative with BSIZE and PNED, and strong positive with others. BSIZE had strong negative with PED, FSIZE, PMS and PRIVT and strong positive with others. PED had strong negative with PNED, WF, and weak positive with others. PNED had strong negative with FSIZE, PMS, PRIVT and strong positive with others. FSIZE had strong positive with all. WF had strong negative with all. PMS had strong negative with PNMS and strong positive with PRIVT. PNMS had strong negative with PRIV.

5. IMPACT OF CORPORATE GOVERNANCE ON THE PERFORMANCE OF CEMENT COMPANY OF NORTHERN NIGERIA

Under this subheading, the multiple regression results were analyzed to examine the relationship between company performance proxies (dependent variables) and corporate governance proxies (independent variables). These results enable us to infer the impact of corporate governance on the Cement Company of Northern Nigeria's performance before and after privatization. The summary of the inferential statistics is presented in the table below. Notably, of the fourteen independent variables tested against the five dependent variables, only eleven showed significant results. The remaining four variables were excluded due to collinearity issues (see Appendix 2.6). This analysis highlights which aspects of corporate governance are most influential on performance in different phases of privatization.

Table 3: Distribution of Regression Results of Operational Efficiency on the Set of Independent Variables of Cement Company of Northern Nigeria

Independent variables	Coefficient	Significance
CONST	1994.964	0.125
TMVS	-1.035E-7	0.664
STOWN	-3292.012	0.029
INST	-863.895	0.314
MINOWN	-1.476	0.803
FOREI	3928.809	0.294
BSIZE	-29.143	0.303
PED	-17.662	0.296
PNED	1.918	0.769
DUAL	25.669	0.878
WF	0.984	0.075
PMS	3182.143	0.000
PNMS	-493.672	0.647
PRIV	-3040.282	0.073
R	0.986	
R ²	0.973	
Ajd R ²	0.913	
F stat	16.708	0.001

Null Hypothesis: Corporate Governance does not have significant impact on Cement Company of Northern Nigeria's performance (Operational Efficiently).

Alternative Hypothesis: Corporate Governance has significant impact on Cement Company of Northern Nigeria's performance (Operational Efficiently).

Management efficiency, or Operational Efficiency (dependent variable), which measures asset utilization to generate turnover, is strongly associated with corporate governance proxies (independent variables) at $R = 98.6\%$. This indicates a significant relationship between operational efficiency (TAT) and corporate governance performance. Furthermore, the R^2 value shows that approximately 97.3% of the variation in operational efficiency (TAT) is explained by corporate governance proxies. This strong correlation reflects the critical role of production efficiency and marketing strategies in operational performance. Additionally, the Adjusted R^2 reveals that corporate governance proxies collectively account for 91.5% of the variance in operational efficiency, underscoring their substantial impact on performance outcomes.

The calculated F-statistics was 16.708 and the estimated significant value was 0.001. Conducting the test at 1% statistical significance, the model is strong in explaining the variation in the operational efficiency of Cement Company of Northern Nigeria. In view of that we conclude that the model has a good fit.

The constant value of 1994.964 represents the average operational efficiency (TAT) when corporate governance variables are absent. The coefficient of TMVS is -1.035E-7, with an insignificant p-value of 0.664, indicating that a unit increase in TMVS decreases operational efficiency slightly. This result contradicts expectations, as market value is typically seen as reflecting investors' positive assessment of corporate governance and performance. However,

the insignificant p-value suggests that the total market value of shares has a negative but negligible impact on operational efficiency, highlighting its limited relevance in explaining performance variations in this context.

The result shows that the coefficient for state ownership (STOWN) is -3292.012, with a significant p-value of 0.029. This indicates that a unit increase in state ownership leads to a decrease of -3292.012 in the company's performance (TAT). The negative coefficient aligns with expectations, suggesting that higher state ownership promotes corporate governance inefficiency. This supports the argument that state ownership often leads to appointing incompetent individuals to managerial roles and board positions based on personal and political connections (Okeahalam & Akinbode, 2003). The p-value further confirms that state ownership significantly impacts operational efficiency, reinforcing the view that it negatively influences company performance.

The coefficient for institutional ownership (INST) is -863.895, with an insignificant p-value of 0.314. This indicates that a unit increase in institutional ownership leads to a decrease of -863.895 in the company's performance (TAT). This result contradicts the expected positive impact of institutional ownership, which is typically seen as enhancing corporate governance quality. The insignificant p-value suggests that institutional ownership has a negative but statistically insignificant effect on company performance, indicating that it may not play a substantial role in improving operational efficiency in this context.

A unit increase in minority ownership (MINOWN) leads to a decrease of -1.476 in operational efficiency (TAT), with an insignificant p-value of 0.803. The negative coefficient aligns with expectations, suggesting that higher minority ownership might enable management to manipulate decisions to favor concentrated shareholders and serve illegitimate interests, potentially harming other stakeholders. The p-value indicates that minority ownership has a negative but statistically insignificant impact on the company's performance. This result suggests that, while the potential for governance issues exists with increased minority ownership, its actual influence on operational efficiency is minimal and not significant in this context.

The results indicate that the coefficient for foreign ownership (FOREI) is 3928.809, with an insignificant p-value of 0.294. A unit increase in foreign ownership leads to a significant rise in operational efficiency for the Cement Company of Northern Nigeria. This positive coefficient aligns with expectations, highlighting the role of foreign ownership in introducing new talent and technology, enhancing transparency, and boosting liquidity by integrating privatized firms into global capital markets (Dyck, 2000). Despite these advantages, the p-value reveals that foreign ownership has a statistically insignificant impact on company performance, suggesting that while foreign involvement can contribute to operational efficiency, its influence may not be substantial or consistent enough to be considered significant in this case.

The results show that a unit increase in board size (BSIZE) results in a -29.143 decrease in operational efficiency (TAT), with an insignificant p-value of 0.303. While the study initially expected a positive impact, assuming that a larger board with qualified members would enhance decision-making and performance oversight, the negative coefficient contradicts this assumption. This suggests that increasing board size may not necessarily lead to better governance or efficiency. Similarly, the percentage of executive directors (PED) shows a coefficient of -17.662, with an insignificant p-value of 0.296. The negative coefficient aligns with expectations that a lower percentage of executive directors promotes board independence. However, the insignificant p-value suggests that the influence of both BSIZE and PED on operational efficiency is minimal. Therefore, neither board size nor the proportion of executive directors significantly impacts the company's performance.

The results show that a unit increase in the percentage of non-executive directors (PNED) leads to a 1.918 increase in operational efficiency (TAT), with an estimated p-value of 0.769. The positive coefficient aligns with expectations, indicating that a higher proportion of non-executive directors can enhance board independence, ensuring that board decisions are not overly influenced by management. This suggests effective performance by statutory committees in maintaining accountability and reliability in financial reporting. However, the high p-value indicates that PNED's impact on operational efficiency is statistically insignificant. Similarly, duality of the board chairman and CEO roles (DUAL) shows a positive coefficient of 25.669 but an insignificant p-value of 0.878, suggesting minimal influence on the company's performance.

The results indicate that a unit increase in workforce (WF) leads to a 0.984 increase in Total Assets Turnover (TAT) with a p-value of 0.075, suggesting a significant impact at the 10% level. Contrary to the expected negative relationship, this result shows that an increased workforce has a positive and significant effect on operational efficiency at Cement Company of Northern Nigeria. Similarly, a unit increase in the percentage of management staff (PMS) results in a significant 3182.143 increase in operational efficiency (TAT), with a p-value of 0.000. The positive coefficient aligns with the study's expectations, reflecting that having more management staff involved in decision-making and policy implementation enhances coordination between the board's strategies and operational activities. Consequently, PMS has a positive and significant impact on company performance, indicating effective corporate governance and operational alignment.

A unit increase in PNMS (percentage of non-management staff) results in a decrease of -493.672 in Total Assets Turnover (TAT), with an estimated significance value of 0.647. This negative coefficient aligns with the study's expectation that an increase in non-management staff would lead to a decline in company performance. The rationale is that a higher proportion of non-management employees might not contribute effectively to decision-making processes that drive operational efficiency. However, the p-value of 0.647 suggests that PNMS has no statistically significant impact on the company's performance, indicating the relationship is weak and not a key determinant of operational efficiency.

The results show a -3040.282 difference in Total Assets Turnover (TAT) post-privatization compared to pre-privatization, with an estimated p-value of 0.073. This negative coefficient contradicts the study's expectation that privatization would enhance corporate governance and positively impact company performance. The findings support the trend analysis that indicated higher operational efficiency before privatization. Despite the anticipated benefits of

privatization, the negative coefficient and significant p-value suggest that privatization has had a detrimental effect on performance. This indicates that privatization has led to a significant decline in operational efficiency, contrary to the expected improvements in governance and performance.

6.CONCLUSION AND RECOMMENDATIONS

Based on the above findings, the researcher arrived at the conclusions that corporate governance has significant impact on operational efficiency of Cement Company of Northern Nigeria despite the macroeconomic challenges in the economy. Impliedly, the result rejected null hypothesis that privatization has no significant impact on operational efficiency of cement company of Northern Nigeria.

Recommendations

In view of the findings and the drawn conclusions, the researcher made the following recommendations;

- i. Nigerian government need to improve macroeconomic situation of the country particularly the issue of exchange rate and inflation to improve operational efficiency.
- ii. The new investors need to adopt more strategies on monitoring, inventory management and creating benchmark to enable them withstand competition.
- iii. The corporate governance also need to introduce business analytics and [machine learning](#) software that can optimize operations by predicting trends and automating decision-making processes, thereby reducing time and resource waste.

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