Original Research Article

COST REDUCTION TECHNIQUES ON FIRM PERFORMANCE OF SELECTED QUOTED MANUFACTURING COMPANIES IN NIGERIA

Abstract

The operational level managers are always faced in identifying the technique that would help in reducing this cost. Based on this challenges this study examines into the impact of cost reduction techniques on firm performance of selected quoted manufacturing companies in Nigeria. The study employed panel data that was sourced within 2018 to 2022, from the audited financial statement of ten consumer goods companies listed on the Nigeria Stock Exchange. The panel (static) regression analysis was employed to determine inference between the dependent variable and independent variable. The Eview 10 was employed. The findings reveals that administrative cost and Changes in material cost has negative significant effect on Net profit margin while Changes in turnover has positive significant effect on Net profit margin. It is therefore recommended that companies should focus on reducing administrative cost while still maintaining needful administrative functions like streamlining production process, outsourcing non-core functions and implementation of technology solutions. The companies should focus on cost reduction strategies, budget control, managing materials cots like supplier management and in the long-run boost turnover.

Keyword: Cost: Cost Techniques; Financial Performance; Net Profit Margin

Introduction

The current manufacturing sector in Nigeria is facing some challenges that require urgent and rapid attention. The sale of goods in Nigeria has faced strong competition from most imported goods, which are cheaper than those manufactured in Nigeria (Udeh & Okeke 2021). Correspondingly, the market orientation has changed from seller's market to buyer's market. In addition, the advancement in manufacturing technology has shifted from single product manufacturing model to multiple and product mix production approaches, and the life cycles of modern products have also become shortened (Adigbole, Adebayo & Osemene 2020). All the strategic, functional and operational levels in an organization are saddled with the responsibility of minimizing cost and maximizing profit or gain to stimulate the financial and non-financial prowess of the organization. The poor performance of Nigerian manufacturing sector loomed large in the litany of problems bedeviling the Nigerian economy. The 1980's had been, in economic terms, something of a lost decade.

The manufacturing sector was particularly conspicuous in its inability to produce jobs, or to produce commodities that satisfied either the divergent needs of the domestic market or the international market. The apartheid's impact on the skill profile of the work-force, repressive and outmoded industrial relations systems and work organization, poor cost reduction mechanisms by the managers of the corporate bodies are all problems that have affected the manufacturing sectors in aiding the commercial improvement and stimulate profit and performance. In the case of Nigeria the discovery of crude oil had made, the Nigerian economy dependent so much on the oil discovery, not allowing the manufacturing sector perform the functional economic development goals which will only be attained when the strategic level reduce cost and enhance profit (performance).

Cost reduction strategies are techniques that reduce resource wastage within a firm to increase organizational efficiency and effectiveness (Mukira, Kariuki and Muturi, 2022). Cost reduction and revenue maximization are dual phenomenon which the management have to take proper strategic skills towards enhancing performance and encourage the organization to remain a going concern because leaving one at the expense of the other may be an impendent on the firm. This dual phenomenon have made management to be concerned with profitability (which is a measure of business performance) especially in a manufacturing entity, certain cost reduction techniques is very germane to attaining some basic organizational objectives (Oguniake, 2010).

However, cost is the specified amount spent (actual or notional) on a particular activity in a corporate entity (Adeniji, 2009). According to the Chartered Institute of Management Accountant (CIMA), cost reduction is the model for maintaining purpose and quality in permanent reduction in the unit of cost of goods manufactured or services. It is the strategic and continuous decision to reduce baseless costs from the business which will aid to build business financial benefits (Jain, Kapoor, and Nateriga, 2013). Low production costs has become one of the primary ways that organizations compete in a global economy, hence, cost reduction must continually be in the minds of managers of organization (McWatters, Morse, and Zimmerman, 2001). Cost reduction is a planned approach to reduce expenditure. It is a continuous process of examining critically all

elements of cost and each aspect of the business with a view to improving business efficiency. Cost reduction is a corrective function. Cost reduction is the process of cutting down costs incurred by an organization for the purpose of making profit. It starts when cost control ends and considers that no cost is at its optimum level. According to Adeniyi (2001), cost reduction starts with an assumption that current cost levels or planned cost levels are too high despite the fact that cost control may be good and organization experiencing high efficiency levels.

The efficient allocation and management of resources within organizations have always been a critical concern for both academics and practitioners. In todays increasingly competitive and dynamic business environment, the ability to reduce costs while maintaining or enhancing financial performance is a strategic imperative. Cost reduction techniques, encompassing a range of strategies and practices, have gained significant attention as organizations seek to optimize their operations and financial outcomes. However, the complex interplay between these cost-cutting measures and financial performance remains a multifaceted and evolving challenge.

The occurrence of cost and excessive cost could hamper the purpose of a business, which is to maximize profit. Excessive cost cannot be written away due to the extremely bad shape that Nigeria as a country have subdued all organization operating with the economic system (Osakwe, 2016). In the case of a manufacturing company in the country cost of production have continuously been on the increase which have stifled the contribution margin of the country. Many manufacturing firms are faced with the problem of how to embark on cost reduction scheme and also to make it more effective and efficient in order to achieve desired goal. Moreover the problem of inefficiency under the utilization of resource has a tremendous effect on our economy and should be taken into full consideration

However, due to continuous increase in cost of production and operation which makes it near impossible for firms to maintain a cost effect frontier in the daily operation of the organization (De loecker, 2011; Adigbole, et. al 2020). Every organization that want to remain an entity and maintain its consumer must seek to improve on its cost reduction technique which will aid the firm to maintain balance in quality and standard of product. Increase in cost is also an impediment on the firm, so as not to exceed their budget and not to run at a loss, as well as not to jeopardize quality, the organization needs to control cost and reduce their cost to the lowest percentage (Akeem, 2017).

Moreover, firm performance have also generated some controversy in terms of the environment where organization are situated in achieving the cost reduction and competitive responsibility. Santos, (2012) noted that even though organizations have formal standards of performance measurement systems, their degree of comprehensiveness is different. The scope of the organization and its association with different international organizations, the experience and qualifications of managers and partners needed for the design and execution of similar performance procedures, the resources required for the introduction of such performance procedure and the uniqueness of the organization and customer association with the need to uphold

impartiality and confidentiality while providing high-quality services are the mainly great challenges that face organizations in measuring their performance and cost reduction (Mohammed, 2015). Other key challenges also include entrepreneurs' characteristics, processes of founding, venture attributes, and environmental characteristics. Due to the incompleteness in literature and few work on the research title this study investigated into the impact of cost reduction techniques on firm performance in selected company in Nigeria. Looking at material cost, labor cost, overhead cost and value analysis proxies identified in Egbide, Adegbola, Bamidele, Sunday & Olufemi (2019).

LITERATURE REVIEW

The resources based theory was propounded by Jay Barney's in 1991 article of "Firm Resources and Sustained Competitive Advantage". Barney's argument was that a firm can be dominant in it's intrinsic value it has at hand to improve its competitive advantage which will stimulate the attainment of strategic goals and plans. Achieving a sustainable competitive advantage lies at the heart of much of the literature in strategic management and strategic marketing (Fahy & Smithee, 1999). The resource-based view offers strategists a means of evaluating potential factors that can be deployed to confer a competitive edge. A key insight arising from the resource-based view is that not all resources are of equal importance, nor do they possess the potential to become a source of sustainable competitive advantage. The sustainability of any competitive advantage depends on the extent to which resources can be imitated or substituted. Barney and others point out that understanding the causal relationship between the sources of advantage and successful strategies can be very difficult in practice. Thus, a great deal of managerial effort must be invested in identifying, understanding and classifying core competencies. In addition, management must invest in organizational learning to develop, nurture and maintain key resources and competencies.

In the resource-based view, strategists select the strategy or competitive position that best exploits the internal resources and capabilities relative to external opportunities. Given that strategic resources represent a complex network of inter-related assets and capabilities, organizations can adopt many possible competitive positions. Although scholars debate the precise categories of competitive positions that are used, there is general agreement, within the literature, that the resource-based view is much more flexible than Porter's prescriptive approach to strategy formulation.

The Resource Based Theory by Barney (1991) notes that organizations are heterogeneous because they possess heterogeneous resources, meaning organizations can have different strategies because they have different resource mixes. The organization's resources are financial, legal, human, organizational, informational and relational; resources are heterogeneous and imperfectly mobile and that management's key task is to understand and organize resources for sustainable competitive advantage. According to the Resource Based theory, an organization's internal capabilities determine the strategic choice it makes in competing in its external environment. This is in line with the influence that strategic management practices have on the performance of an organization. Components of the theory includes; resources; capabilities and competitive advantage. A number of criticisms of RBV have been widely cited, and are as follows; the RBV is tautological; different resource configurations can generate the same value for firms and thus would not be competitive advantage; the role of product markets is underdeveloped in the argument; the theory has limited prescriptive implications. Other criticisms include: the failure to consider factors surrounding

resources; that is, an assumption that they simply exist, rather than a critical investigation of how key capabilities are acquired or developed; it is perhaps difficult (if not impossible) to find a resource which satisfies all of Barney's VRIN criteria; an assumption that a firm can be profitable in a highly competitive market as long as it can exploit advantageous resources does not always hold true. It ignores external factors concerning the industry as a whole; Porter's Industry Structure Analysis ought to also be considered. However, the theory stand to be the main anchor of the study due to the fact that cost reduction techniques is related to how effective and efficient the resources in the organization are used so has to allow the structure maintain it rare competitive edge in the industry which it is located.

Resource Dependency Theory by Pfeffer and Salanci in 1978 is used as a basis to study and explain the influences of environments on organizational relations. The theory states that for smooth production process in the organizations, the organization must depend external parties for resources supply since it doesn't have all resources (Pfeffer & Salanick 1978, Pfeffer 1984). The essential point of this theory is to encourage organizations to develop strategies that will advance their independence and pursue their interests, improve their reputation and embrace their power by understanding internal and external activities of the organizations. Since organizations want to exist and improve their creativity by producing improved products, they therefore need to have enough capital, adequate raw material and experienced labour. This dependence of external resource means that they should move through the principle of scarcity.

Argument on Resource Dependency Theory are summarized as follows: organizations depend on resources; these resources ultimately originate from an organization's environment; the environment, to a considerable extent, contains other organizations; the resources one organization needs are thus often in the hand of other organizations; resources are a basis of power; legally independent organizations can therefore depend on each other; power and resource dependence are directly linked, this implies the organization A's power over organization B is equal to organization B's dependence on organization A's resources; power is thus relational, situational and potentially mutual; organizations depend on multidimensional resources: labor, capital, raw material, etc. Organizations may not be able to come out with countervailing initiatives for all these multiple resources. Hence organization should move through the principle of criticality and principle of scarcity. Critical resources are those the organization must have to function. For example, a burger outlet can't function without bread. An organization may adopt various countervailing strategies, it may associate with more suppliers, or integrate vertically or horizontally.

Recently, resource dependence theory has been under scrutiny in several review and meta-analytic studies: Hillman et al. (2009); Davis and Cobb (2010); Drees & Heugens (2013); Sharif & Yeoh (2014). Which all indicate and discuss the importance of this theory in explaining the actions of organizations, by forming interlocks, alliances, joint ventures, and mergers and acquisitions, in striving to overcome dependencies and improve an organizational autonomy and legitimacy. While resource dependence theory is one of many theories of organizational studies that characterize organizational behavior, it is not a theory that explains an organization's performance

per se. But still in many ways, resource dependence theory predictions are similar to those of transaction cost economics, but it also shares some aspects with institutional theory.

Empirical Review

In the study of Kipkenei, Naibei and Rotich (2022), effect of cost control systems on performance of medium scale enterprise in Kericho town. The study adopts a survey research design, while questionnaire were administered to the finance, operation and account managers of 173 medium scale enterprises. The study employs regression analysis and it was found that costing control system has a positive significant effect on performance ($p= 0.000$, $p<0.05$). The selected costing control system accounts for 99.9% of the changes in the business performance over time.

In the study Mukura, Kariuki and Muturi (2022) investigates cost reduction strategies and performance of commercial Bank in Kenya. Exploring census approach the study looks at all the fourty one (41) commercial bank in Kenya. The study employ both primary and secondary source of data collection, questionnaires were administered to senior finance and operational managers at the headquarters of these commercial banks, data were also gathered from the audited animal report and account of these bank. From the descriptive analysis of the study it was found that banks cost reduction techniques has a positive significant impact on performance. This shows that banks in Kenya should endeavour to improve their cost reduction strategies as this will in turn result in improved performance and attainment of organizational objective.

Okereke, Zakariyau and Eze (2022) examined the role of construction cost management practice on construction organisation strategic performance. The study aim to establish the resultant effect of cost management of project on the competitive position of construction companies. Primary source of data collection was adopted by administrating questionnaire to construction professionals across the six state of the south-south geo-political zone of Nigeria. Data were analysed using relative importance index [RII]. The study findings shows there are major factors that influence cost management, they include; competence and experience of managers, poor communication of the project, external economic environment as well as weak management support and control. Effective cost management was also seen to play paramount role in the performance of construction companies.

Niyi, Ogungbade, Igbekoyi and Adesuyi (2022) in their study of cost structure and financial performance of quoted industrial goods manufacturing companies in Nigeria. The study sampled 7 industrial goods manufacturing firms quoted in the Nigerian exchange group for the period of 2011 to 2020. Expost facto research design was employed while descriptive analysis was conducted (Regression analysis). The finding of the study indicate that cost structure as a significant effect on financial performance of sampled manufacturing companies and that cost structure should be well analysed, component of cost should be look into in order to control cost and it impact on firm profitability.

In the study of Ali-Momoh, Egbekun, Omoolorun, Omole and Aruna (2022), cost control and financial performance: An empirical investigation of selected quoted manufacturing firm in

Nigeria, ten (10) manufacturing firm were sampled for the period of 2011 to 2020. The study employ descriptive analysis in exploring the effect of administrative cost, selling and distribution cost on PAT (profit after tax) of selected manufacturing firm. The study revealed that administrative cost have insignificant negative effect on PAT of the selected firms, more so, selling and distribution cost indicate insignificant positive effect on PAT. This shows that cost control has both negative as well as negative effect on financial performance of manufacturing firm in Nigeria.

Akinleye and Fajuyagbe (2022) investigate cost control and performance of listed non-financial firm in Nigeria .The study cover the period of 2009-2019. In their study, cost of raw materials, administrative cost, cost of sales turnover ratio as well as expenses of marketing and distribution were examined to see their effect on financial performance of the sampled non-financial firm In Nigeria. The study sampled 20 firms across four (4) sectors employing descriptive analysis. It was revealed that administrative cost has a positive effect on the value of the companies investigated. This indicates that effective cost management foster financial performance of companies in Nigeria.

Udeh and Okeke (2021) examined the application of cost control principles in medium scale industries: the Nigerian experience. Using a case study of Innoson technical industries Nigeria Limited, questionnaires were administrated to 40 management staffs of the companies. Standard deviation was employed in the study while the hypotheses were tested using chi-square analysis. It was discovered that standard costing is of importance to cost control.

Suleimon and Nadiyasu (2020) examined the impact of cost reduction techniques on business stakeholders in the Nigerian upstream hydrocarbon sector. The study adopts a survey design and seven (7) randomly selected oil and gas service companies in the upstream sector. Questionnaires were administered to 70 respondents and the study was analysed using chi-square. It was revealed that there is no significant impact between cost reduction measures adopted by oil and gas companies operating in the upstream sector in Nigeria and business stakeholders.

Adigbole, Adebayo and Osemene (2020), in there study strategic cost management practices and organizational performance: A study of manufacturing firms in Nigeria. The study adopts survey research design, questionnaires were administered and a sample of two hundred and thirty three (233) responses from fifty seven (57) manufacturing firms were employed in the study. Partial least squares-structural equation modeling (PLS-SEM) was used to analysis data obtained and in testing the hypotheses. The findings of the study shows that strategic cost management has a positive effect on organizational performance.

Egbide, Adegbola, Bamidele,Sunday and Olufemi (2019) examines the relationship between cost reduction strategies and the growth of manufacturing companies in Nigeria using data from annual reports of 40 manufacturing companies quoted on the Nigeria Stock Exchange within the period of 2012-2016. 40 manufacturing companies were sampled purposively for this study. The study took changes in material cost, changes in labour cost and changes in administrative overhead as

variables for cost reduction strategies while changes in turnover as the variable for Growth. Correlation analysis was conducted to determine the association cost reduction strategies and growth while, regression analysis was used to determine the impact of cost reduction strategies on the growth of manufacturing companies. Results showed a positive significant relationship between cost reduction strategies and growth of manufacturing companies in Nigeria. The study recommends that manufacturing companies should implement value analysis in order to reduce material costs and the implementation of cost reduction strategies in all manufacturing companies in Nigeria.

Mutya (2018) examined cost control: A fundamental tool towards organization performance. The study use Mount Elgon Millers Limited as a case study. This study adopt primary some of data collection by conducting interviews and administering questionnaires to 67 respondent. Data were analysis using frequency table, percentage. The findings of the study revealed that budgeting explain the change in the firms performance to 8.5% (R^2 =0.085) while standard costing explain the change in the firms performance by 5.8% (R^2=0.058). This indicate that there exist a significant positive correction between cost control and firms performance.

Kegera & Nzulwa (2018) examines the effect of cost reduction strategies on the performance of Kenya Forest Service specifically planned recruitment and training, process automation, service outsourcing and community participation as a cost reduction strategy on the performance of Kenya Forest Service. The study targeted 219 employees of Kenya Forest Service from which a sample size of 33 employees were selected to represent 219 employees from various management levels of Kenya Forest Service. The data was obtained from the respondents by use of structured closed and open-ended questionnaires. The study found out that planned recruitment and training has enhanced the performance of Kenya Forest Service through improved operations and reduction of conflict between the staff and members of the public as well as defining the job holder's position. Process automation has improved saving in revenue through increased revenue collection, its average use in community and security operations due the sensitivity of security matters that requires dialogue and consultations. Further, the study revealed that service outsourcing helps to improve skills and knowledge that improve the performance of an organization. Community participation was found to be very important in an organization's performance through structured guidelines, policies and regulations.

Nzisa, Njeje and Namida (2017) examines influence of cost leadership strategy on growth of hotel chains in the country. Porter's Generic Competitive Strategies Theory guided the study. The study adopted a survey research design and targeted 66 managers drawn from the branches of 13 hotel chains in the country using purposive sampling. Out of these 45 participated in the study. Pre-tested questionnaires were used for data collection. The data was analyzed using both descriptive and inferential statistics. The findings revealed that cost leadership significantly influenced growth of hotel chains in the country as most of the hotel chains pursued the cost leadership as a competitive strategy in order to grow their business. The study, however, recommended that the hotel chains should explore models of costing that best fit their operations such as activity-based-

costing or performance based costing so as to enable them identify the most optimal cost strategy fit that they can implement in the long run to achieve the desired growth.

Duarto, Brito, Serio and Martins (2015) investigated into effect of operational practices in financial performance has been, however, limited due to research design and the inherent difficulties of using performance as a dependent variable. In this paper, we tested the relationship between selected operational practices (quality management, just in time, ISO certification and services outsourcing) in financial performance outcomes of profitability and growth. A sample of 1200 firms, operating in São Paulo, Brazil, was used. Analysis using multiple regression explored the direct effect of practices and their interaction with industry dummies. Results did not support the existence of a positive relationship with financial performance. A negative relationship of outsourcing with both profitability and growth was found, supporting some critical views of the outsourcing practice. A weaker negative relationship between ISO certification and growth was also found. Some interactions between practices and industries were also significant, with mixed results, indicating that the effect of practices on performance might be context dependent.

Atikiya, Mukulu,Kihoro and Waiganjo (2015) investigated the effect of cost leadership strategy on performance of manufacturing firms in Kenya. A survey questionnaire and an interview guide was used to collect data from 131 firms drawn from 12 key industrial subsectors located within Nairobi and its environs. The study adopted two tools of analysis namely; Pearson's correlation to indicate positive correlation between the input and the output variable and regression analysis to explain the nature of relationship between the input and output variable. F-statistics was also used to determine the validity of the model while R-squared was used to help determine the model goodness of fit. The study adopted descriptive and explanatory research design. The findings revealed that performance of manufacturing firms are significantly influenced by cost leadership strategy. Arising from the findings, the study concludes that the managers of manufacturing firms adopt cost leadership strategy to increase their competitiveness and performance.

Methodology

The study employs the descriptive research design. The study used panel data (time series and cross sectional) covering the period of five (5) years from 2018 to 2022, was gathered from the financial statement of quoted manufacturing firms in Nigeria. The stratified and simple random sampling technique was employed in selecting ten consumer goods companies, which is the sector that has the largest number of listed companies in the entire industries.

Model Specification

The model that was used in testing the hypotheses was formulated in this section. Based on the quantitative nature of the study, a mathematical model was constructed to improve the objective of investigating the impact of cost reduction techniques and performance of firm in Nigeria These models were adapted and adjusted to suit the present study from the study of Egbide, Adegbola , Bamidele, (2022), Sunday & Olufemi (2019) and Akeem (2017).
The linear equation is given below;

$FP_{t(NPM)} = f(CRT_t)$……1

$CRT_{i,t} = f(TUR_{i,t,}MER_{i,t,}AC_{i,t,}FAC_{i,t,})$……2

$NPM_t = f(AC, FAC, MER, TUR)$……..3

$NPM_{i,t} = (\alpha_0 + \beta_1 AC_{i,t} + \beta_2 FAC_{i,t} + \beta_3 MER_{i,t} + \beta_3 TUR_{i,t} + \mu_t)$…….4

Where:
FP= Firm Performance at time t
CRS= Cost Reduction Strategies at time t
μ= Disturbance term/White noise at time t

Independent Variables

TUR: Change in turnover at time t
MER: Change in material cost at time t
FAC: Factory overhead cost at time t
AC; Administrative Cost at time t

Dependent Variables

NPM; Net profit margin at time t

Table 1- Measurement of Variables

Variables	Description	Measurement	Source
	Dependent Variable		
NPM	It is the operating profit of the organisation without deduction of expenses	It is measured by revenue-cost/divided by revenue	Fasua and Osifo (2020)
	Independent Variables		
TUR	It is the changes in the level of turnover from previous year to the current period	It will be calculate by period I minus period 0 divided by period 1	Egbide, Adegbola, Bamidele,Sunday & Olufemi (2019)
MER	It is the changes in the material cost of previous year to the current period	It will be calculate by period I minus period 0 divided by period 1	Egbide, Adegbola, Bamidele,Sunday & Olufemi (2019); Adigbole, Adebayo and Osemene (2020)
FAC	It is the value of the factory overhead cost within the period	It will be value of the cost of factory overhead in the income statement of the selected organisation	Egbide, Adegbola, Bamidele,Sunday & Olufemi (2019)
AC	It is the administrative cost of the firm within the period.	It will be value of the cost of factory overhead in the	Egbide, Adegbola, Bamidele,Sunday & Olufemi (2019)

income statement of the selected organisation

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Results and Discussion

Table 2- Descriptive Analysis

	ROE	ROA	NPM	TUR	MER	FAC	AC
Mean	0.207555	0.061332	5.872415	0.792475	2.510886	0.164682	0.058334
Median	0.106744	0.041915	4.931335	0.884071	7.571648	0.179290	0.050540
Maximum	1.338432	0.264935	19.46147	0.002754	1.239708	0.490872	0.202962
Minimum	-0.111526	-0.071565	-12.26659	-1.111526	1.993245	0.013651	0.005078
Std. Dev.	0.286478	0.067201	5.860026	0.255364	3.243849	0.124574	0.049134
Skewness	2.268229	1.283486	-0.122900	1.839362	1.508401	0.378706	1.133374
Kurtosis	7.901274	4.733844	3.882143	5.638454	4.110299	2.302324	3.940719
Jarque-Bera	92.92070	19.99076	1.747070	34.15742	17.22309	2.209220	12.54812
Probability	0.000000	0.000046	0.417473	0.000000	0.000182	0.331340	0.001885
Sum	10.37776	3.066584	293.6208	-31.69898	1.005309	8.234119	2.916699
Sum Sq. Dev.	4.021403	0.221281	1682.655	2.543213	4.106316	0.760415	0.118294
Observations	50	50	50	50	50	50	50

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ROE (Return on equity), ROA (Return on asset), NPM (Net profit margin), TUR (Change in turnover), MER (Change in material cost), FAC (Factory overhead cost), AC (Administrative cost)

The mean value revealed that ROE (Return on equity) has an average value of 0.20 and median value of 0.10. ROA (Return on asset) has an average value of 0.06 and median value of 0.04. NPM (Net profit margin) has an average value of 5.87 and median value of 4.93. TUR (Change in turnover) has an average value of 0.79 and median value of 0.88. MER (Change in material cost) has an average value of 2.51 and median value of 7.57. FAC (Factory overhead cost) has an average value of 0.16 and median value of 0.17. AC (Administrative cost) has an average value of 0.05 and median value of 0.05.

The ROE (Return on equity) has a minimum value of -0.11 and a maximum value of 1.33. ROA (Return on asset) has a minimum value of -0.07 and a maximum value of 0.26. NPM (Net profit margin) has a minimum value of -12.2 and maximum value of 19.4. TUR (Change in turnover) has a minimum value of -1.11 and maximum value of 0.00. MER (Change in material cost) has a minimum value of 1.99 and maximum value of 1.23. FAC (Factory overhead cost) has a minimum value of 0.01 and maximum value of 0.49. AC (Administrative cost) has a minimum value of 0.00 and maximum value of 0.20.

The ROE (Return on equity) has a long right tail which is positively skewed at 2.26, indicating it has a higher value than the sample mean. ROA (Return on asset) has a long right tail which is positively skewed at 1.28, indicating it has a higher value than the sample mean. NPM (Net profit margin) has a short right tail which is negatively skewed at -0.12, indicating it has a lower value than the sample mean. TUR (Change in turnover) has long right tail which is positively skewed at 1.83, indicating it has higher value than the sample mean. MER (Changes in material cost) has a long right tail which is positively skewed at 1.50, indicating it has a higher value than the sample mean. FAC (Factory overhead cost) has a long right tail which is positively skewed at 0.37, indicating it has a higher value than the sample mean. AC (Administrative cost) has a long right tail which is positively skewed at 1.13, indicating it has a higher value than the sample mean.

The Kurtosis (measures the peakedness or flatness of the distribution of the series). ROE (Return on equity) is leptokurtic (greater than 3) at 7.90 (peaked curve, higher value for the same mean). ROA (Return on asset) is leptokurtic (greater than 3) at 4.73 (peaked curve, higher value for the same mean). NPM (Net profit margin) is mesokurtic (equal to 3) at 3.88 (peaked curve, higher value for the same mean). TUR (Change in turnover) is leptokurtic (greater than 3) at 5.63 (peaked curve, higher value for the same mean). MER (Changes in material cost) is leptokurtic (greater than 3) at 4.11 (peaked curve, higher value for the same mean). FAC (Factory overhead cost) is platykurtic (less than 3) at 2.30 (peaked curve, higher value for the same mean). AC (Administrative cost) is mesokurtic (equal to 3) at 3.94 (peaked curve, higher value for the same mean).

ROE (Return on equity) has value of 92.92070 at 0.0000 indicating that the variable is not normally distributed. ROA (Return on asset) has value of 19.9907 at 0.0000 indicating that the variable is not normally distributed. NPM (Net profit margin) has a value of 1.7470 at 0.41747 indicating that the variable is normally distributed. TUR (Change in turnover) has value of 34.1574 at 0.0000 indicating that the variable is not normally distributed. MER (Change in material cost) has value of 17.22309 at 0.0000 indicating that the variable is not normally distributed. FAC (Factory overhead cost) has a value of 2.2092 at 0.33134 indicating that the variable is normally distributed. AC (Administrative cost) has value of 12.54812 at 0.001885 indicating that the variable is not normally distributed.

Table 3- Correlation Matrix

	ROE	ROA	NPM	TUR	MER	FAC	AC
ROE	1						
ROA	0.8981	1					
NPM	0.7092	0.9016	1				
TUR	0.1264	0.8981	0.7092	1			
MER	0.3063	0.3921	0.3241	0.3063	1		
FAC	0.3694	0.4658	0.3024	0.3694	0.6151	1	
AC	0.0042	0.1336	0.1368	0.0042	0.1742	0.5694	1

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The table helps to determine the presence of multi-collinearity between the dependent variables and independent variable. According to Iyoha 2004 and Oseni, 2016, the threshold should be below 0.75. It shows above that return on equity, return on equity and net profit margin has positive relationship with change in turnover, change in material cost, factory overhead and administrative cost.

Panel Regression Analysis

Table 4- ,Dependent Variable: Net Profit Margin

Variables	Pooled	Fixed	Random
C	18.3998	28.7533	-21.9597
	(0.0000)	(0.0000)	(0.0000)
	26.9463	-105.607	4.4256
AC	(0.1502)	(0.0660)***	(0.8590)
	-9.6020	28.5132	-7.7233
FAC	(0.2830)	(0.3816)	(0.5351)
	3.4323	-1.3074	1.9222
MER	(0.0109)*	(0.0066)*	(0.0235)**
	16.4992	22.5736	19.2594
TUR	(0.0000)*	(0.0000)*	(0.0000)*
R^2	0.6444	0.8025	0.6034
Adjusted R-square	0.5923	0.7038	0.5467
Durbin-Watson	1.5326	2.0128	1.1649
F-statistics	10.4561	8.1292	8.8733
Prob (F-statistics)	0.0000	0.0000	0.0000
Hausman Test		0.0350	

Author's Compilation, 2024

The pooled regression model revealed that AC (Administrative cost) has a positive insignificant effect on NPM (Net profit margin) which implies that a percentage increase in AC (Administrative cost) leads to 26.94 increase in NPM (Net profit margin). FAC (Factory overhead cost) has a negative insignificant effect on NPM (Net profit margin) which implies that a percentage increase in FAC (Factory overhead cost) leads to -9.60 decrease in NPM (Net profit margin). MER (Changes in material cost) has a positive significant effect on NPM (Net profit margin) which implies that a percentage increase in MER (Changes in material cost) leads to 3.43 increase in NPM (Net profit margin). TUR (Changes in turnover) has a positive significant effect on NPM (Net profit margin) which implies that a percentage increase in TUR (Changes in turnover) leads to 16.49 increase in NPM (Net profit margin). The coefficient of determination using r-squared shows that the independent variable AC (Administrative cost), FAC (Factory overhead cost), MER (Changes in material cost) and TUR (Changes in turnover) explained 64.44% variation in the selected manufacturing companies in Nigeria. Adjusted R-squared is 59.22% of other variables that was not included in the model.

The fixed regression model revealed that AC (Administrative cost) has a negative significant effect on NPM (Net profit margin) which implies that a percentage increase in AC (Administrative cost) leads to -105.6 decrease in NPM (Net profit margin). FAC (Factory overhead cost) has a positive insignificant effect on NPM (Net profit margin) which implies that a percentage increase in FAC (Factory overhead cost) leads to 28.5 increase in NPM (Net profit margin). MER (Changes in material cost) has a negative significant effect on NPM (Net profit margin) which implies that a percentage increase in MER (Changes in material cost) leads to -1.30 decrease in NPM (Net profit margin). TUR (Changes in turnover) has a positive significant effect on NPM (Net profit margin) which implies that a percentage increase in TUR (Changes in turnover) leads to 22.57 increase in NPM (Net profit margin). The coefficient of determination using r-squared shows that the independent variable AC (Administrative cost), FAC (Factory overhead cost), MER (Changes in material cost) and TUR (Changes in turnover) explained 80.25% variation in the selected manufacturing companies in Nigeria. Adjusted R-squared is 70.38% of other variables that was not included in the model.

The random regression model revealed that AC (Administrative cost) has a positive insignificant effect on NPM (Net profit margin) which implies that a percentage increase in AC (Administrative cost) leads to 4.425 increase in NPM (Net profit margin). FAC (Factory overhead cost) has a negative insignificant effect on NPM (Net profit margin) which implies that a percentage increase in FAC (Factory overhead cost) leads to -7.72 decrease in NPM (Net profit margin). MER (Changes in material cost) has a positive significant effect on NPM (Net profit margin) which implies that a percentage increase in MER (Changes in material cost) leads to 1.92 increase in NPM (Net profit margin). TUR (Changes in turnover) has a positive significant effect on NPM (Net profit margin) which implies that a percentage increase in TUR (Changes in turnover) leads to 19.25 increase in NPM (Net profit margin). The coefficient of determination using r-squared shows that the independent variable AC (Administrative cost), FAC (Factory overhead cost), MER (Changes in material cost) and TUR (Changes in turnover) explained 60.34% variation in the selected manufacturing companies in Nigeria. Adjusted R-squared is 54.65% of other variables that was not included in the model.

The Hausman test helps to depict the accurate model for determining inference between fixed and random effect model. The Hausman test with an F (p-value) of 0.0350 shows that acceptance of the fixed effect model for drawing inference for the model. This findings from the fixed effect model agree with the works of Kegera & Nzulwa (2018), Adigbole, Adebayo and Osemene (2020), Oluwagbemiga, Olugbenga and Zaccheua (2014), and Egbide, Adegbola, Bamidele, Sunday and Olufemi (2019) but disagree with the works of Akinleye and Fajuyagbe (2022) and Akeem (2017).

Conclusion and Recommendations

Based on the findings from the fixed effect model that AC (Administrative cost) and MER (Changes in material cost) has negative significant effect on NPM (Net profit margin) while TUR (Changes in turnover) has positive significant effect on NPM (Net profit margin). It implies that

the three cost concepts have their increasing and decreasing impact on the net profit margin of the organization. It is therefore recommended that companies should focus on reducing administrative cost while still maintaining needful administrative functions like streamlining production process, outsourcing non-core functions and implementation of technology solutions. The companies should focus on cost reduction strategies, budget control, managing materials cots like supplier management and in the long-run boost turnover.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

Disclaimer (Artificial intelligence)

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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Details of the AI usage are given below:

1.

2.

3.

REFERENCES

1. Adeniji, A. A. (2011). *Cost Accounting: A Managerial Approach* (5 ed.). ibadan: El Toda Ventures Ltd.
2. Adigbole, E. A., Adebayo, A. O., & Osemene, O. F. (2020). Strategic cost management practices and organizational performance: a study of manufacturing firms in Nigeria. *Global Journal of Accounting & Finance (GJAF)*, *4*(1), 23-39.
3. Aduwo, O. O. (2023). Effect of cost control strategies on growth of manufacturing companies in Nigeria.*Fuoye Journal of Finance and Contemporary Issues*, 4(2), 157-170.
4. Akeem, L. B. (2017). Effect of cost control and cost reduction techniques in organizational performance. *International business and management*, 14(3), 19-26.
5. Akinleye, G. T., & Fajuyagbe, S. B. (2022). Cost control and performance of listed non-financial firms in Nigeria. *Fuoye Journal of Accounting and Management*, *5*(1), 23-32.
6. Akintoye, I. R. (2010). Quick insight in to research methodology. Akoka-Yaba, Lagos, Nigeria: Unique Educational Publishers.
7. cc Cost control and financial performance: an empirical investigation of selected quoted manufacturing firms in Nigeria. *The Journal of Accounting and Management*, *12*(2), 11- 24.
8. Alsoboa, S., Al-Ghazzawi, A., & Joudeh, A. (2015). The impact of strategic costing techniques on the performance of Jordanian listed manufacturing companies. *Research Journal of Finance and Accounting*, *6*(10), 116-127.
9. Amadeo, K. (2017). *What is Economic Growth.* Retrieved december 17, from The balance: https://www.thebalance.com/what-is-economic-growth-3306014
10. Arthur, E. (2016). *8 Ways to Measure Your Business Growth and Know If Its Profitable or not.* Retrieved October 27, 2017, from Info Guide Nigeria: https://infoguidenigeria.com/measure-business-growth.
11. Asaolu & Nassar. (2007). Essential of management accounting and financial management (2nd edition.). Ile-Ife, Nigeria: Cedar Productions Ltd.
12. Asika, N. (2005). Research methodology in behavioral science. Lagos: Longman Nigeria Plc.
13. Awotomilusi, N. S., Ogungbade, I. O., Igbekoyi, E. O., & Adesuyi, Y. T. (2022). Cost structure and financial performance of quoted industrial goods manufacturing companies in Nigeria. *International Journal of Management, Accounting & Economics*, *9*(11), 23-31.
14. Betts P. W. (1994). Supervisory Management (6th ed.). London: Pitman Publishing Services.

15. Cokins, G. (2002). Integrating target costing and ABC. Journal of Cost Management, 22-29.
16. Cooper, et al. (2000).The design of cost management systems. New York: Prentice Hall, Upper Saddle River.
17. De Loecker, J. (2011). *Product Differentiation, Multiproduct firms, and estimating the impact of trade liberalization on productivity.* Econometrica
18. Duarte, A. L. D. C. M., Brito, L. A. L., Di Serio, L. C., & Martins, G. S. (2015). Operational practices and financial performance: An empirical analysis of Brazilian manufacturing companies. *BAR-Brazilian Administration Review*, *8*, 395-411.
19. Dury, C. (1985). Management and Cost Accounting. London: Venn Strand Reinhold.
20. Egbunike, P. A., & Adeniyi, I. S. (2017). Cost reduction strategy and firm profitability during recession period: Nigerian banking industry experience. *Acta Universitatis Danubius*, *13*(6), 148-155.
21. Egbide, B. C., Adegbola, O., Rasak, B., Sunday, A., Olufemi, O., & Ruth, E. (2019). Cost reduction strategies and the growth of selected manufacturing companies in Nigeria. *International Journal of Mechanical Engineering and Technology*, *10*(3), 305- 312.
22. Figar, N., & Ivanovic, V. (2015). Cost reduction strategy: process and effects. *Journal of Current Research, 12(1),* 15-26.
23. Gichuki, C. W. (2014). Effect of cost management strategies on the financial performance of manufacturing companies listed on the Nairobi Securities Exchange (Doctoral dissertation, University of Nairobi).
24. Kegera, J.A. & Nzulwa, J. (2018). Effect of cost reduction strategies on organization performance: A case of Kenya Forest Service. J*ournal of International Business, Innovation and Strategic Management*, 1(7), 270 – 290
25. Kipkenei, C., Naibei, I. K., & Rotich, J. K. (2022). Effect of Cost Control Systems on Performance of Medium Scale Enterprises in Kericho Town.
26. Lockey, K. (2002). Factory and production (4th ed.). London: Dp Publisher.
27. Lucey, T. (1996). Management Accounting (4th ed.). London: Contimium Publisher.
28. McWatters, C. S., Morse, D. C., & Zimmerman, J. L. (2001). *Management Accounting: Analysis and Interpretation* (2 ed.). Anited states of America: McGraw Hill Companies, Inc.
29. Mohamed, M. B., Ndinya, A., & Ogada, M. (2019). Influence of cost leadership strategy on performance of medium scale miners in Taita Taveta County, Kenya. *International Journal of Development and Management Review*, *14*(1), 151-163.
30. Miralles, A. (2008). The link between privatization and price distribution among consumer types: Municipal water services in the Spanish region of Catalonia. *Environment and Planning C: Government Policy 26*, pp. 159- 172.

31. Mugo, F. (2006). Lessons of Eastern Africa's Unsustainable Charcoal Trade. *ICRAF Working Paper no.20*, 107.
32. Mukira, A. R., Kariuki, P., & Muturi, W. (2022). Cost reduction strategies and performance of commercial banks in Kenya. *Journal of Strategic Management, 7*(1), 52-63.
33. Mutya, T. (2018). Cost control: A fundamental tool towards organisation performance. *Journal of Accounting & Marketing, 7*(3), 1-11.
34. Mamidu, A. A., & Akinola, A. O. (2019). Cost management and corporate performance in quoted manufacturing companies in Nigeria [J]. *The International Journal of Business and Management, 3*(5), 79-85.
35. Mwai, M. (2013). Strategic planning and performance of the state corporations of the Government of Kenya. *Doctoral dissertation, University of Nairobi*.
36. Mwai, M. (2013). Strategic planning and performance of the state corporations of the Government of Kenya. *Doctoral dissertation, University of Nairobi*.
37. Ogunnaike, M. W. (2010). Cost management and profitability in manufacturing companies (Undergraduate Thesis). Covenant University, Ota, Ogun State, Nigeria.
38. Ogutu, M. and Mbula, C.S. (2012). Strategies adopted by multinational corporations to cope with competition in Kenya. *DBA Africa Management Review*, 3(2), 69-82.
39. Okezie, R. A., Okezie, B. N., & Ogbu, U. G. (2017). Indirect costs and firm performance of quoted companies in Nigeria. *Journal of Accounting, Federal University of Business and Finance*, 1 (1), 151-160.
40. Okereke, R. A., Zakariyau, M., & Emmanuel, E. Z. E. (2022). The role of construction cost management practices on construction organisations' strategic performance. *Journal Of Project Management Practice (JPMP), 2*(1), 20-39.
41. Oksanen, T. P. (2003). Forest in poverty reduction strategies: Capturing the potential. *EFI Proceedings no.47*. Joensuu: European Forestry Institute.
42. Ologbenla, P. (2021). Impact of standard cost on cost of production in the Nigerian manufacturing firms. *International Journal of Business Management and Economic Review*, 4 (3), 149-161.
43. Onwuliri, Okechukwu (2009) Entrepreneurship Development: Principles and Practices: first edition: Kaduna: Wolsak Printers Ltd.
44. Oyedokun, G. E., Tomomewo, A. O., & Owolabi, S. A. (2019). Cost control and profitability of selected manufacturing companies in Nigeria. *Journal of Accounting and Strategic Finance*, *2*(1), 14-33.
45. Olalekan, L. I., & Tajudeen, N. F. (2015). Cost control and its impact on the survival of nigeria firms: a case study of Nigeria Bottling Company Plc. *International Journal of Management, Accounting & Economics*, *2*(4), 32-43.
46. Oparanma, A. O., Ohaka, J. (2015). Cost reduction and control in Nigerian manufacturing firms. *Integrated Social and Management Science Journal*, 1(2), 33-40.

47. Pfeffer, J. S. (2002). *The External Control of Organization: A Resource Dependence Perspective* New York: Harper and Row.
48. PwC. (2016). Seizing the Future. *19th Annual Global CEO Survey*.
49. Reeve, J. M., & Philpot, J. W. (1988). Applications of statistical process control for financial management. Journal of Cost Management(fall), Master of Accounting Program, 33-40.
50. Sikka, T. R. (2003). Fundamentals of cost accounting (5th ed.). India Viva Books. Private Ltd.
51. Suleimon and Nadiyasu (2020). The impact of cost reduction techniques on business stakeholders in the Nigerian upstream hydrocarbon sector. *International Journal of Innovative Research in Social Sciences and Strategic Management Techniques*, 7(1), 226-237.
52. Tamer, B. (2009). The relationship between service outsourcing and organizational performance: Is it myth or reality for the hotel industry? *International Journal of Contemporary Hospitality Management, Vol. 21 Issue: 1*, pp. 7-23.
53. Udeh, S. N., & Okeke, C. K. (2021). Application of cost control principles in medium scale industries: The Nigerian experience. *Advance Journal of Financial Innovation and Reporting*, *5*(1), 17-33.
54. Vetchagool, W., Augustyn, M. M., & Tayles, M. (2020). Impacts of activity-based costing on organizational performance: evidence from Thailand. *Asian Review of Accounting*, *28*(3), 329-349.