

LEAN ACCOUNTING AND FINANCIAL PERFORMANCE OF MANUFACTURING COMPANIES IN NIGERIA

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Abstract

This study examined lean accounting and financial performance of listed manufacturing companies in Nigeria. The specific objectives were to examine the influence of kaizen costing on return on asset of manufacturing companies in Nigeria, examine the influence of just-in-time costing on return on asset of manufacturing companies in Nigeria. The study used survey research design. The population of the study is sixty-three (63) manufacturing companies. The unit of respondent of the study were three hundred and seventy-eight (378) knowledgeable and competent staff within the production, marketing and finance departments of the sixty-three (63) manufacturing companies. The sample technique was the census sampling approach. The data was analyzed using descriptive statistics and regression analysis with the aid SPSS. The findings of the study revealed that there is significant influence of kaizen costing on return on asset of manufacturing companies in Nigeria; Just-in-time costing has a significant influence on return on asset of manufacturing companies in Nigeria. The study recommends that to determine the actual performance of the Kaizen system, organizations should bridge the bureaucratic barriers and allow the top management to interact freely with the lower hierarchy members of the organization and build a proper rapport to enhance effective communication, efficient development of ideas, proper adoption of generated ideas and avoid dismissing the simple little ideas given by the junior staff about improvement of the organization. Just-in-time costing (JITC) inventory system should be used by management in other not to run at loss and not to incurring further costs on staff training in other lean accounting knowledge. The study concluded that the introduction of just-in time lean accounting systems should be a process starting with training the staff members, ensuring the supervisors understand that small but gradual improvement are only possible when they bridge the bureaucratic barriers and engagement of employee and relying on their views is very critical

Introduction

Lean Accounting which refers to concepts designed to better reflect the financial performance of a company that has implemented lean service processes. These may include organizing costs by value stream, changing inventory valuation techniques and modifying financial statements to include nonfinancial information (Fagbemi et al 2013) a lean enterprise is focused on increased value to the customer, the elimination of wasteful work and non-value-added activities, and increased throughput to create opportunities for profitable growth. Because the focus of lean is on value, lean looks at costing from the value stream, Lean Accounting techniques provide convenient methods for calculating production costs by

focusing on value flow rather than on products, and that agile accounting tools support the assessment of the performance of economic units at the cell level and the value flow of the economic unit as a whole (Afzal et al, 2024).

Alves, et al (2022) assert that Lean Accounting can be stated as applying lean methods to the accounting processes. Some accounting processes contain muda type 1 (waste that cannot be eliminated at the moment) but most accounting processes are muda type 2 (waste that can be eliminated). The tools of lean must be rigorously applied to our accounting, control, and measurement processes so that waste is relentlessly driven out. This is achieved in the same way waste reduction is achieved anywhere else, through

continuously eliminating waste from the transaction processes, reports, and accounting methods throughout the organization. The tools to achieve this are the value stream maps (current and future state), kaizen (lean continuous improvement), and the venerable Plan-Do-Check-Act (PDCA) problem-solving approach.

These improvements can be made early in the transformation to lean and will open up time for the accounting personnel to work on other Lean Accounting changes. Inevitably these early projects improve processes that will later be eliminated, but they make a good start to the introduction of Lean Accounting into the business (Maskell & Baggaley, 2006). Lean accounting reports and methods actively support lean transformation. This information drives continuous improvement. The financial and nonfinancial reporting reflects the overall value stream flow, not individual products, jobs, or processes. Lean Accounting focuses on measuring and understanding the value created for the customers, and uses this information to enhance customer relationships, product design, product pricing, and lean improvement (Psomas & Deliou 2024).

While Lean Accounting is still a work-in-process, there is now an agreed body of knowledge that is becoming the standard approach to accounting, control, and measurement. These principles, practices, and tools of Lean Accounting have been implemented in a wide range of companies at various stages on the journey to lean transformation. These methods can be readily adjusted to meet your company's specific needs and they rigorously maintain adherence to GAAP and external reporting requirements and regulations (Kbelah, et al, 2019). Lean Accounting is itself lean, low-waste, and visual, and frees up finance and

accounting people's time so they can become actively involved in lean change instead of being merely bean counters. (Maskell & Baggaley 2006).

Knowledge about change in management accounting techniques has expanded rapidly over the last few decades (Macchia 2019). This development in management accounting is clearly in response to the recognition that it is vital for an organization to take strategic initiatives in order to face the shifting winds of change in today's competitive business environment (Jibrin & Maccarthy 2022). To maintain their presence and improve financial performance, companies must change their structure to meet customers' demands with higher quality lower price as well as short delivery time, and also companies have to meet the expectations for instant orders, and with more variety of products. Lean accounting system has emerged under these conditions and obligations. By revealing malfunctions and presenting more effective ways of working, lean accounting provides a competitive advantage for both organizational level and countries (Onowu & Shaka 2023). Jibrin and Maccarthy (2022) advocated that, lean accounting is not just a manufacturing technique, it is an approach that can be applied in many areas such as; service delivery product development, public service, and commercial activities. Thus, a company which adopt lean production system, is a necessity that the accounting system changes lean accounting (Samad et al 2017). The philosophy of lean accounting is based on lean thinking. Lean thinking involves the set of measures taken against wastage. Lean thinking knows that the product will not be affected if the wasteful activities are going to be removed (Onowu & Shaka 2023). Thus, lean accounting is the controlling, measuring and managing

methods that reflect lean thinking and production that make consciously decisions possible by providing precise, understandable and applicable information, deleting unnecessary stages related to traditional cost control and reduction. This type of accounting encourages optimizing activities in long-term by providing criteria's and information reporting. Lean thinking helps the company to get high income by identifying potential financial profits resulted by lean improving policies (Kumar et al, 2022). A traditional accounting system might show impressive numbers by virtue of the fact that you've leveraged economies of scale and made large quantities of a particular part. Nguyen and Ngo (2023), lean accounting is a general term that supports required changes in managing, evaluating, controlling and accounting processes of a company that uses lean system to encourage lean thought and production.

In recent years, the cost of doing business in Nigeria has been very expensive. This has equally affected cost of raw materials and production cost of manufacturing firms. These cost challenges have made many products manufactured in the country unpatronized by the consumers because of price of the product, and as a result of that expires in the hands of the sellers (Jibrin & Maccarthy, 2022). According to Aziz, et al, (2017), some manufacturing firms end up making use of low-quality materials for production so as to reduce cost of production and maximize profit. Which Nigerians are suffering the consequences currently, by consuming substandard products flooding the market. This is the result of that many manufacturing firms not adopting or instituting better cost reduction strategies or nonadherence to set cost reduction and control strategies. To remain in business over years, manufacturing firms

have necessitated the need to focus on different management cost control and reduction techniques programme crashing, budgetary control, performance budgeting, and material management techniques in order to achieve both the primary and secondary aims of being in business, which include maximization of profit, shareholders' value (growth) and productivity which today have failed and seen as traditional methods.

Today, numerous companies have made a commitment to lean with the implied belief that their commitment will lead to improved operational and financial performance that can be objectively measured through the application of just-in-time costing. Organizations understandably desire to have 'customers willing to pay; investors willing to invest; communities willing to support; and employees willing to commit their trust, confidence, and careers to achieve long-term business sustainability and profitability.

From webmetrix empirical analysis, lean accounting and financial performance of manufacturing companies' studies and literature are mostly dominated in Asian and America and other developed countries, enhance is scarce in Nigeria and other African countries to the best of our knowledge and as thus may not be adequately reflect or represent the actual result in Nigeria. the studies are focused on developed countries. In order to empirically cover the missing gap in scope and content, the study focused on lean accounting and manufacturing companies in Nigeria. The study further filled the content gap by applying just-in-time costing, target costing and time driven activity-based costing

as dimensions of lean accounting and inventory turnover, return on investment and return on assets as measures of financial performance. The study is also unique as the

analytical scope cover 10 years' time lag (2014 - 2023) to fill the problem of obsolescence of empirical information data. Thus, it is on the above premise that cited the researcher in writing on lean accounting and financial performance of manufacturing companies in Nigeria

Aim and Objectives of the Study

The aim of the study is to determine the influence of lean accounting practices on financial performance of manufacturing companies in Nigeria. The specific objectives are to:

1. examine the influence of kaizen costing on return on asset of manufacturing companies in Nigeria.
2. examine the influence of just-in-time costing on return on asset of manufacturing companies in Nigeria.

Research Questions

The problems presented in the study have brought about salient questions for which answers are to be provided. Consequently, the research questions are here under presented:

1. What is the influence of kaizen costing on return on assets of manufacturing companies in Nigeria?
2. What is the influence of just-in-time costing on return on assets of manufacturing companies in Nigeria?

Research Hypotheses

In order to provide answers to the research questions raised, the following hypotheses were stated in null form as presented below:

HO₁: kaizen costing does not have a significant influence on return on

asset of manufacturing companies in Nigeria.

HO₂: Just-in-time costing does not have a significant influence on return on investment of manufacturing companies in Nigeria

Review of Related Literature

Concept of Lean Accounting

Lean Accounting

Lean accounting was developed to support lean manufacturing that originated from the automotive industry but has now been applied in several other sectors and even extended beyond production environments, showing impressive gains (Lawal & Abdullahi, 2020). Lean accounting is an accounting support to lean operations and the use of lean tools within the accounting area (Debusk 2012). It is a collection of principles, practices and tools that are used by lean companies to measure the business, control operations, and make sound financial decisions, ultimately improving all financial results (Alaaraj & Bakr 2019). Enoch (2013) defines lean accounting as the application of lean methods to company's accounting control and measurement processes to support lean management to achieve lean philosophy. Lean accounting is a wide spectrum of changes in managing, evaluating and controlling accounting processes of firms that implement lean strategies (Ahakchi, et al. 2012; Cesaroni & Sentuti, 2014). The basic goals of lean accounting are to eliminate waste, errors and clarify information; and to bring about a radical change in accounting and control. It is to conduct measurement processes to stimulate change and provide the required value to the customers.

Lean accounting draws knowledge from such lean tools like kaizen (concerned with continuous improvement), target costing (concerned with time and cost

reduction as well as quality improvement), value stream (concerned with value added activities aimed to deliver quality goods/services to customer), Just-in-time (discourse mass production and accumulation of inventory), sales operations and financial planning – SOFP- (concerned with eliminating wasteful annual budgeting choreography most firms engaged in), back flush accounting (concerned with loss reduction at all levels), as it's tools build up lean accounting systems. To this end, we describe lean accounting as the assemblage of principles, practices, tools and techniques of lean thinking to provide accurate, timely and easy to understand accounting information for planning, control and decision making, and to promote lean transformation. Lean accounting was initially developed to support lean manufacturing companies, however today; it is fast moving into the other sectors of economic endeavours. Consequently, in accounting, lean accounting is applied to all departments of an organization to have overall meaningful changes and excellent results. The reasons for the application of lean improvement methods to the accounting processes lays in its ability to refine company's operations, encourage finance department staff to learn about lean methods through actual hands-on experience and freeing up finance department time by removing waste in the process (Enoch, 2013; Maskell, & Kennedy, 2007).

In performance measurement, the control of production and other processes is achieved by visual performance measurements at the shop-floor and value stream level. This measurement eliminates the need for the difference tracking and variance reporting favoured by traditional accounting systems.

The continuous improvement is motivated and tracked using value stream performance boards which is updated weekly and used by the value stream continuous improvement team to identify areas and level of improvement, initiate PDCA (Plan-Do-Check-Adjust) projects, and monitor their progress (Chen et al, 2010). In financial reports for lean, the lean operations report is classified into value stream costing, financial statements and transaction costs elimination. The value stream costing reports consists of a simple summary of direct costs of the value streams overheads allocation to provide financial information that can be clearly understood by every worker in the value stream. This in turn leads to excellent decisions, motivate lean improvement across the entire value stream and show clearly accountability for cost and profitability

Kaizen Costing

Kaizen is a term that has its origins in Japan which was popularized by Masaaki Imai and it is a concept of two Japanese words, KAI means change and ZEN means better (Jibrin & Maccarthy, 2022). Kaizen is defined as continuous and in process that involves the whole organization. Khojasteh, (2016), knows Kaizen as fundamental philosophical concept according to the best Japanese management and it is in the concept of an umbrella which covers most of Unique Japanese management practices which has helped to start from zero and overcome upscale Global competitors since 1950s to 1980s. Concepts such as customer satisfaction, Kanban, total quality control, quality improvement, robots , just-in-time systems, quality control cycle, zero waste, suggestions system, small group activities, equipment, collaborative labor management relations, new product development, etc. can be considered among the concepts covered

by Kaizen. Kaizen Management has two major components, including the improvement and maintenance of standard operating procedures. Maintaining standards includes training and discipline. Kaizen is representative of small improvements in the current system while innovation shows Substantial improvements as a result of major changes such as investment in technology or new equipment. All organization members are involved in Kaizen, from the Chief Executive Officer who are responsible for introduction, support and creation of systems to workers who participate in kaizen activities through suggestion system and small group activities. Kaizen meaning continuous improvement is based on three dimensions. Improving the quality of products and services, zero waste, and customer satisfaction through collaborative management based on staff suggestions in the quality control department are dimensions of continuous improvement (Ramezani & Razmeh 2014).

According to Sani & Allahverdzadeh, (2012), Kaizen philosophy is based on the belief that human's family life, employment and society are interrelated and must be improved continuously through required activities. The key for continuous improvement in kaizen is in small innovations and creativities not in great dramatic and revolutionary innovations. Kaizen focuses on small reductions of cost in product life cycle. The focus of this approach is on reducing the target cost and giving power to employees. The purpose of Kaizen is to reduce actual costs below the standards set by Innovation. In kaizen system, goal management determines cost reduction and usually compares it with real results every month. Thus, kaizen is used not only for maintaining standard but also it is used to enhance them. Kaizen, or continuous improvement is short-

term planning system and employees are the source of problem solving in this approach. Kaizen approach is used for cost reduction at production level. Kaizen culture and its interaction between various social layers and organizations in Japan has caused to change company to university, and university to company; workers learn from manager and manager uses workers' ideas.

Kaizen costing is a system of cost reduction via continuous improvement. It tries to maintain present cost levels for products currently being manufactured via systematic efforts to achieve the desired cost level. The word kaizen is a Japanese word meaning continuous improvement. It has two dimensions. One dimension considers product (narrow perspective) and another dimension covers asset and organization (broader perspective). Asset and organization specific kaizen costing activities planned according to the exigencies of each deal. However, product model specific costing activities carried out in special projects with added emphasis on value analysis. It is applied to products that are already in production phase. Prior to kaizen costing, when the products are under development phase, target costing is applied. After targets have been set, they are continuously updated to display past improvements, and projected (expected) improvements. Adopting Kaizen costing requires a change in the method of setting standards. Kaizen costing focuses on cost reduction rather than cost control (Jibrin & Maccarthy 2022).

Kaizen costing is the process of continual cost reduction that occurs after a product design has been completed and is now in production. Cost reduction techniques can include working with suppliers to reduce the costs in their processes, or implementing less costly re-designs of the product, or reducing waste costs. These reductions are

needed to give the seller the option to reduce prices in the face of increased competition later in the life of a product (Dean, 1969).

Just in Time

The Just in Time concept possess a vital role for any company that would like to reduce their production wastes, strength the position in the market and improve the quality of the product (Kannan & Tan, 2005). The Just in Time production principles were developed in Japan by the Toyota Motor Company in the early 1970s (Rama & Holl, 2017).

Although the just in time (JIT) theme is consolidated in the area of operations, investigating its nuances regarding the financial performance of companies is necessary (Lara et al., 2022). Eiji Toyoda developed an approach in which tracing the origin of a problem and correcting it leads to an improvement in the quality of products and processes (Lara et al 2022), and companies that pursue this philosophy still face challenges today. From production, JIT permeates other fields due to its plurality of applications, whether in academic environments (Zamfir, 2021) or the shipping industry (Lara et al., 2022).

It should be noted that the literature has followed the development of this premise over the years, given the diversity of studies published on the subject. A concern reported by Mia (2000) is the difficulty in establishing a universal definition of JIT, which can generate divergences in its composition. In addition, the JIT philosophy must be implemented as a systematic and comprehensive transformation of production and operation procedures. If the ideal levels of performance are relegated to some elements of production, all the benefits of the change can be diminished, even with the

generation of negative results. Otherwise, the results presented here denote duality, point to growth and long-term stability, and emphasise return on investments that may be barely observable in the short term (Fullerton et al., 2003).

Stakeholders show growing interest in the sustainability of companies, which is sometimes perceived as a conflict between fiduciary responsibility and business strategy; sustainability concerns are generally limited to environmental management or social equity (Funk, 2014). Thus, the different organisational capacities should not be limited to compensations, but should build cumulative capacities through sequential and simultaneous development and relate sustainable development to Lean production and environmental performance (Bergenwall et al., 2012). Magon et al., (2018) points to the positive effects of sustainability on performance, although different mechanisms drive performance-sustainability links according to their contexts.

There is still a concern among professionals and researchers to test lean production practices and provide success in companies. Therefore, research on the relationship between lean practices and business performance (operational, financial, market performance, etc.) has gained prominence between the scientific and business world at world level.

However, there is a paucity of in-depth studies on the non-linear relationship between lean practices and business performance, and Meta Analysis studies are alternative investigations in this field Lara et al. (2022).

Financial Performance

The subject of financial performance has received significant attention from scholars in the various areas of business and

strategic management. The term is used as a general measure and has also been the primary concern of business practitioners in all types of organizations since financial performance has implications to organization's health and ultimately its survival. High performance reflects management effectiveness and efficiency in making use of company's resources and this in turn contributes to the country's economy at large (Babatunde 2023). Financial performance can be described as a measurement of how well a firm uses its assets from its primary model or business and general revenue. The term is also used as general measure of firm's overall financial health over a given period of time. The business directory defines financial performance as measuring results of a firm's policies and operations in monetary terms and these results are reflected in the firm's return on investment, return on assets, among others.

Mahfoudh (2013) investigating the effect of firm size and firm performance totally ignored other potential firm characteristics that had an effect on firm financial performance like investment strategy. Wambui (2018) investigated the relationship between board size and board performance further ignoring investment strategy which is an important element.

Financial performance indicates the performance of an organization quantified in monetary terms and reveals the general health in sustaining its operations (Gartenberg et al, 2019). Financial performance is ascertained by analyzing an organization's financial statements and records for a given period. It requires a well-developed financial management plan to achieve the organization's underlying objectives. In the various areas of strategic management and business, scholars have

concentrated their works on the traditional indicators of financial performance. Babatunde (2023) observed that the traditional indicator of organizational success has often been measured through the various financial matrices and indicators. However, Owuor et al (2021) observed that the perennial dilemma in achieving adequate financial management was the trade-off between profitability, liquidity, and solvency.

Ibrahim and Mustapha (2019), states that financial performance analysis is the process of measuring the results of a firm's policies and operations in monetary terms. Also Bhunia and Sarkar (2011) affirmed that financial performance analysis is the process of determining the operating and financial characteristics of a firm from accounting and financial statements and that the analyst attempts to measure the firm's liquidity, profitability and other indicators that the business is conducted in a rational and normal way; ensuring enough returns to the shareholders to maintain at least its market value.

Gartenberg et al (2019) opined that financial performance is very important for every business especially those looking to upgrade their organizational strategies to improve their liquidity management process, production planning, system, inventory control and planning technique, (investment, financing and operating activities planning) to ensure corporate performance. Performance measures can be grouped into two those that relate to results (outputs or outcomes such as competitiveness or financial performance) and those that focus on the determinants of the results (inputs such as quality, flexibility, resource utilization, and innovation). This suggests that performance measurement frameworks can be built around the concepts of results and determinants. Zaid, et al (2014) on the other hand opined that performance

measurement systems are considered information systems that are used to evaluate both individual and organizational performance.

Return on Asset

In layman's term, ROA is the profit indicator of company which deals with how much profit a company is able to generate from its assets. It is shown in percentage and higher the ROA higher the profit for the company and vice versa. Return on assets (ROA) is a measure of a company's profitability in relation to its total assets. The return on assets (ROA) tells a manager, investor, or analyst how well a company's management is utilizing its assets to generate profits (Okerekeoti, 2021). ROA indicates how much profit was earned from invested money (assets). Wokeh and Nmehielle, (2023) stated that return on assets is a financial ratio that shows the percentage of profit a company earns in relation to its overall resources. It is commonly defined as net income divided by total assets. Net income is derived from the income statement of the company and is the profit after taxes.

Return on Assets (ROA) is a financial performance metric that measures the profitability of a business in relation to its total assets. It is about the ability of a company to earn profit by utilizing its assets. It is an important profitability ratio which is used to interpret effectively the management of assets, both current and non-current assets. The return on investment (ROI) for public corporations can vary significantly and is heavily dependent on the industry. As a result, it's advisable to compare ROA to a business's past ROA results or to the ROA of a similar company when utilizing it as a comparative measure.

Firms invest on a project they expect to earn adequate return on. If return on

assets is more than the firm's cost of borrowing, the project is acceptable, otherwise, it is rejected. The return on assets is very important and provides a standard for gauging how efficiently the management employs the average amount which is invested in the firm's assets, whether the amount comes from investor or creditors (Balogun & Fatogun, 2024). Remember that a company's total assets are the sum of its total liabilities and shareholder's equity.

Both of these types of financing are used to fund the operations of the company. Since a company's assets are either funded by debt or equity, some analysts and investors disregard the cost of acquiring the asset by adding back interest expense in the formula for ROA

Theory of Lean Management

The theory of lean management developed by John Krafcik in (1988) posits that, companies are in business to make a profit. If they don't, they won't survive. There are two ways to increase profits; raise prices and lower costs. Competitive pressures often limit the ability to do the former, so companies tend to focus on cutting costs. One of the more popular ways for companies to reduce costs is through lean management. Lean management focuses on improving processes. Every step a product takes from raw materials to final assembly is reviewed. Waste or duplication of effort is identified and eliminated to the maximum extent possible. As mentioned above, the focus is on creating benefit (lower costs, quicker turn times, etc.) for the customer. A system of continuous improvement is established to monitor the results on an ongoing basis. The goal is to create the perfect process.

Empirical Review

Refif and Alloune (2024) examine the role of lean accounting methods in cost

reduction, and how the lean accounting methods are implemented in the modern manufacturing environment

Theoretical Framework: Identifying the different meanings pertaining to the lean accounting and defining the principles, practices and tools for lean accounting enforcement. this study was an exploratory study of 180 employees in ten industrial institutions of Blida Stat, using the questioner tool and Microsoft Excel for unloading data and the Statistical Packages for Social Sciences SPSS V25 for processing data, analyzing and explaining results. This study concluded that lean accounting methods contribute in costs reduction from three aspects which are save costs in product planning and designing phase then avoid additional costs in product implementation phase, It also contributes to profit maximization, competition support, and maximizing the value of products from the customer's perspective. The findings suggest providing the elements for implementing the lean accounting tools through replacing the wide production system by the lean production one in order to reduce wastage

Originality/Value: Our study is different from the previous ones as it is among the modern and few studies particularly in the Algerian environment. The study focuses indeed on bringing out the probable implementation of the lean accounting tools in the productive corporations and its contribution in reducing costs in the industrial corporations

Jindaluang and Sumritsakun, (2024), investigated the relationship between lean accounting and the sustainability of businesses, as well as the impact of industry types on the relationship between lean accounting and business sustainability of companies listed on the Stock Exchange of Thailand in the year 2022. The research utilizes Multiple Regression Analysis and

aligns with Contingency Theory and Stakeholder Theory. This study hypothesizes that lean accounting has a positive relationship with business sustainability, and it also posits that industry types have a positive impact on the relationship between lean accounting and the sustainability of businesses. The results of the study indicate that lean accounting has a positive relationship with the sustainability of businesses. When considering the components, it is found that lean accounting in terms of analysis and measurement of value in accounting records and financial reporting has a positive relationship with the sustainability of businesses. This finding is consistent with the hypotheses. On the other hand, this study did not find any significant impact of industry types on the relationship between lean accounting and business sustainability. In other words, the industry type does not affect the relationship between lean accounting and business sustainability. Therefore, the hypothesis regarding the impact of industry types on this relationship is not supported. In conclusion, it can be inferred from this discovery that regardless of the industry type, if each business employs high levels of lean accounting, it will likely lead to higher sustainability.

Nguyen and Ngo (2023), evaluated the impact of various factors on the adoption of lean accounting in Vietnamese garment firms based on data collected from 242 survey questionnaires completed by managers and accountants of Vietnamese garment firms. Through Cronbach's Alpha test, EFA test, and multiple regression analysis to verify and forecast information, eight determinants affecting the adoption of lean accounting in Vietnamese garment firms are arranged in descending order of influence, including leadership, size, cost of implementation,

resources, accounting department, education and training, culture, and competitive pressure. Based on the findings, recommendations are proposed to management businesses and agencies to address shortcomings in the process of applying lean accounting, contributing to making it one of the most effective tools in promoting product development and continuous improvement, enhancing quality and production efficiency.

Ovharhe et al (2023), examined the relationship between lean accounting and lean entrepreneurship in Nigeria. The study adopted a quasi-experimental design and cross-sectional design. Data were generated by quantitative and qualitative method. The employed used purposive sampling techniques and non-proportionate stratified random sampling techniques. A total population of 400, a sample size estimate of 200 was determined using Krejcie and Morgan Table. Also, 200 copies of the questionnaire were distributed to the accessible entrepreneurs', while 189 copies were completed and retrieved. The instruments were validated with a reliability above 0.7 Co-efficient, using Parallel Method to determine the reliability. Two research questions and two hypotheses were raised which were tested with regression analysis and KMO/Bartlett's test for the sampling adequacy for data appropriateness and sphericity respectively via SPSS 25 version. From the findings, the concept of lean accounting positively impacts business creation. In conclusion, lean improvement and lean thinking have a significant influence on the business creation of firms. Based on the findings and conclusion, this study contributes to the knowledge that business creation could be achieved by practicing lean entrepreneurship on value creation, value capture and wealth creation. It could be

recommended that lean improvement and lean thinking should be practiced without compromise and bias. The top management of enterprise should engage services of professionals in lean entrepreneurship to train staff and intrapreneurs on business creation. Business creation should be paramount mindset of the stakeholders of organizations.

Amahl (2023), examined the lean accounting adoption and financial performance of quoted manufacturing companies in Nigeria. The study adapted Ex-post facto research design and primary data was collected from (40) accounting, marketing, operation, and warehouse managers of each of the sampled quoted manufacturing companies while secondary data were extracted from the 2018-2022 four years financial report of the sampled companies. The data were presented with descriptive while the inferential statistic involves the use of Ordinary least square Regression (Panel data analysis.) was used to determine the relationship between the variables and as well used to test the null hypotheses. The SPSS, statistical software specifically E-view was used to aid the analysis. The findings revealed that there is a strong and positive relationship between lean accounting adoption and financial performance. Based on the findings, the study concludes that there is a significant relationship between lean accounting adoption and the financial performance of limited consumer manufacturing companies in Nigeria. The study recommends that the limited consumer manufacturing companies that seek to improve financial performance should consider the adoption of lean accounting practices

Methodology

This study adopted survey research design. The target population of this study consists of sixty-three (63) manufacturing companies in Rivers State, Nigeria with a total respondent rate of three hundred and seventy-eight (378) from auditors, accountants, directors and managers in the manufacturing companies in Rivers State, Nigeria

Data Analysis

Descriptive Statistics Analysis of the individual Variables

In this part of the study, descriptive analysis has been done on the various variables concerning the statement that related to each of the measures are presented using the modified likert scale are as follows;

Descriptive Statistics of Statement Related to Kaizen Costing

	Items	SA	A	N	D	SD	Total	Mean	SD
1	Kaizen lean manufacturing practice have reduce actual costs below the standards set.	70 21.9 %	66 20.6 %	79 24.7 %	52 16.3 %	53 16.6 %	320 100%	3.150	1.374
2	Kaizen lean manufacturing practice have helped sorting, or identifying items that are no longer useful and getting them out of the way to give continuous zero waste improvement.	77 24.1 %	65 20.3 %	37 11.6 %	89 27.8 %	52 16.3 %	320 100%	3.081	1.446
3	Kaizen lean manufacturing practice meets market demand forecasting and enhance timely delivery to customers.	111 34.7 %	124 38.8 %	13 4.0 %	39 12.2 %	33 10.3 %	320 100%	3.221	1.505
4	Kaizen lean manufacturing practice have achieved in total quality control and continuous quality improvement in products.	125 39.1 %	92 28.8 %	43 13.4 %	52 16.3 %	8 2.5 %	320 100%	3.171	1.184
5	Kaizen lean manufacturing practice has not effectively reduced the losses of theft, obsolescence, wastage, etc.	129 40.3 %	101 31.6 %	15 4.7 %	48 15.0 %	27 8.4 %	320 100%	3.471	1.483

Source: SPSS Output from the Survey Work (2025)

The results in table above revealed the descriptive statistics of kaizen costing. The result indicated that, strongly agreed and agreed had the highest response rate about kaizen costing. The highest Mean value of 3.471 came from question 5 statement and the highest standard deviation of 1.505 came question 3 statement that. This implied that Kaizen Costing endeavor to meet the set goals/objectives that attract financial

performance of manufacturing companies in Nigeria. The figure in histogram above is the likert scale adopted by the study which indicated the percentage for respondents on those scales and the points on the scale indicate opinions or views about extent of the questions. The histogram indicates that, strongly agreed has the highest percentage about the items questions that related to kaizen costing.

Descriptive Statistics of Statement Related to Just-in-Time Costing

	Items	SA	A	N	D	SD	Total	Mean	SD
1	Just in Time manufacturing practices has helped eliminate waste (over production, excess procurement, time waiting, and defective products).	109	87	61	27	36	320		
		34.1 %	27.2 %	19.1 %	8.4 %	11.3 %	100%	3.643	1.326
2	Just in Time manufacturing practices have shorter lead times and improve products quality in Nigeria environment.	109	98	27	60	26	320		
		34.1 %	30.6 %	8.4 %	18.8 %	8.8 %	100%	3.637	1.334
3	Just in Time achieve continuous production objectives in your company's and increase output.	128	54	13	98	27	320		
		40.0 %	16.9 %	4.1 %	30.6 %	8.4 %	100%	3.493	1.474
4	Just in Time manufacturing practices prepares cost report that details value-added and non-value-added costs.	69	121	36	92	2	320		
		21.6 %	37.1 %	11.3 %	28.8 %	0.6 %	100%	3.509	1.139
5	Just in Time lean manufacturing practice meets market demand forecasting and enhance timely delivery to customers.	110	79	25	77	29	320		
		34.4 %	24.7 %	7.8 %	24.1 %	9.1 %	100%	3.512	1.403

Source: SPSS Output from the Survey Work (2025)

The results in table above revealed the descriptive statistics of Just-in-Time Costing. The result indicated that, strongly agreed and agreed had the highest response rate about Just-in-Time Costing. The highest Mean value of 3.643 came from question 1 statement that related Just-in-Time Costing and the highest standard deviation of 1.403 came question 5 statements that related Just-in-Time Costing. This implied that Just-in-Time Costing endeavor to meet the set

goals/objectives that attract financial performance of manufacturing companies in Nigeria. The figure in histogram above is the likert scale adopted by the study which indicated the percentage for respondents on those scales and the points on the scale indicate opinions or views about extent of the questions. The histogram indicates that, strongly agreed has the highest percentage about the items questions that related to Just-in-Time Costing.

Descriptive Statistics of Statement Related to Return on Assets

	Items	SA	A	N	D	SD	Total	Mean	SD
1	Lean accounting practice helps to improve return on assets	110	125	38	24	23	320		
		34.4 %	39.1 %	17.7 %	7.5 %	7.1 %	100%	3.859	1.180
2	Lean accounting eliminates of wasteful work	100	103	27	53	37	320		
		31.3 %	32.2 %	8.4 %	16.6 %	11.6 %	100%	3.550	1.379

3	Lean accounting improves efficiency	92	61	23	106	38	320		
		28.8%	19.1%	7.2%	33.1%	11.9%	100%	3.196	1.454
4	Your company uses lean accounting practices to manage costs	104	111	32	51	22	320		
		32.5%	34.7%	10.0%	15.9%	6.9%	100%	3.700	1.263
5	Lean accounting encourages teamwork, thereby leads to improved return on assets	99	82	40	61	38	320		
		30.9%	25.6%	12.5%	19.1%	11.9%	100%	3.446	1.402

Source: SPSS Output from the Survey Work (2025)

The results in table above revealed the descriptive statistics of return on assets. The result indicated that, strongly agreed and agreed had the highest response rate about return on assets. The highest Mean value of 3.859 came from question 1 statement that related Return on assets of financial performance and the highest standard deviation of 1.454 came question 3 statements that related Return on assets. This implied that Return on assets of financial performance endeavor to meet the set goals/objectives that attract financial performance of manufacturing companies in Nigeria. The figure in histogram above is the likert scale adopted by the study which indicated the percentage for respondents on those scales and the points on the scale indicate opinions or views about extent of the questions. The histogram indicates that, strongly agreed has the highest percentage about the items questions that related to Return on assets of financial performance.

Multivariate (Regression) Analysis

The objective of this analysis is to determine the effect of Lean Accounting Practices and financial performance of manufacturing companies in Nigeria. Specifically, we want to estimate the return on assets and Return on investment response Coefficients of kaizen costing and Just-in-Time Costing. Accordingly, a two-prong action plan is implemented. The first plan is testing for the significant of the estimated Coefficient; secondly, establishing the direction of estimated Coefficient. The parameter for gauging the significant of the estimated Coefficients is the P-value. If the P-value of the estimated Coefficient is less than 0.05, then the Coefficient is significant otherwise it is not significant. On the other hand, the basis of establishing the direction of the response is the sign of the Coefficient. If the Coefficient is negative (-ve) then it means return on assets decreases for every unit increase of the variable associated with the Coefficient. If the Coefficient is positive, then it means return on assets increases for every unit increase in the variable associated with the Coefficient.

Model One Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.934 ^a	.873	.872	5.68864	1.614

a. Predictors: (Constant), KAC, JITC

b. Dependent Variable: ROA

The above model summary table produced a correlation Coefficient; $R = 0.934$ showed that there is a strong correlation between return on asset (ROA) and Kaizen Costing (KAC), and Just-in-Time Costing (JITC). Our R^2 stood at 0.873 which implies that about 87% of variations in the dependent variable Financial Performance (FP) attributed to changes in the independent variables of Kaizen Costing (KAC)

and Just-in-Time Costing (JITC). The remaining variation is the error term and is attributed to other factors not included in the model. The remaining value for return on asset (ROA) is low since the unexplained variation is only 13%. The Durbin-Watson $d = 1.614$ indicate that there is no first order linear autocorrelation in the data and it shows that the model has goodness of fitness.

Model One ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	70418.935	3	23472.978	725.356	.000 ^b
	Residual	10225.953	316	32.361		
	Total	80644.887	319			

a. Dependent Variable: ROA

b. Predictors: (Constant), KAC, JITC,

The table above indicated a regression significant P-value of $0.000 < 0.05$ and $F(725.356)$ indicating that the overall model is statistically significant at 0.05

between the dependent variable of return on asset (ROA) and the independent variables of Kaizen Costing (KAC), and Just-in-Time Costing (JITC)

Model One Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.778	1.356		.574	.567
	KAC	.809	.042	.786	19.437	.000
	JITC	.175	.043	.166	4.104	.000

a. Dependent Variable: ROA

Test of Hypotheses Under Model One

Decision: Reject the null hypotheses; probability value is less than 5% significant

level. Otherwise; accepted the alternate hypotheses

Statement of Hypotheses

H₀₁: kaizen costing does not have a significant influence on return on asset of manufacturing companies in Nigeria

H₀₂: Just-in-time costing does not have a significant influence on on return on asset of manufacturing companies in Nigeria

Decision:

The Coefficient and t-Statistics of the estimated marginal effect of Kaizen Costing (KAC) on Return on assets (ROA) of manufacturing companies in Nigeria. The Coefficient and t-statistics of Kaizen Costing (KAC) and Return on assets (ROA) was 0.786 and 19.437, indicating that Kaizen Costing (KAC) positively affects Return on assets (ROA) of manufacturing companies in Nigeria. This positive effect is significant since the absolute value of P-value (0.000) was less than 0.05. This simply indicated that the null hypothesis (**H₀₁**) is rejected and the alternate hypothesis (**H_{a1}**) was accepted. Therefore, it was concluded that there is a significant effect of Kaizen Costing on Return on assets of manufacturing companies in Nigeria.

Furthermore, the Coefficient and t-Statistics of the estimated marginal effect of Just-in-Time Costing (JITC) on Return on assets (ROA) of manufacturing companies in Nigeria. The Coefficient and t-statistics of Just-in-Time Costing (JITC) and return on assets (ROA) was 0.166 and 4.104, indicating that Just-in-Time Costing (JITC) positively affects Return on assets (ROA) of manufacturing companies in Nigeria. This positive effect is significant since the absolute value of P-value (0.000) was less than 0.05. This simply indicated that the null hypothesis (**H₀₂**) is rejected and the alternate hypothesis (**H_{a2}**) was accepted. Therefore, it was concluded that there is a significant effect of

Just-in-Time Costing on Return on assets of manufacturing companies in Nigeria.

Discussion of Findings

Based on the analysis carried out above as observed in hypotheses:

The present study examined statistically the effect of lean accounting practices on financial performance of manufacturing companies in Nigeria. The lean accounting practices was measured by kaizen costing and just-in-time costing while financial performance was measure by return on assets. From the empirical analysis of the study, there are certain issues that call for more discussion in terms of the outcomes. First, the study has shown that there is significant effect of kaizen costing on return on asset of manufacturing companies in Nigeria. Therefore, the null hypothesis was rejected.

The finding is in line with the study of Siyanda (2017), who evaluates whether implementing kaizen costing will improve cost management at the water and electricity departments in the kwini municipality. Studies have shown that there are a lot of unexploited benefits which can be gained by South African municipalities as well as other organisations by implementing kaizen costing.

This is a quantitative descriptive case study of the water and sanitation and electricity departments in the kwini Municipality where data was collected from the target respondents using questionnaires. The 320 questionnaires, which consisted of predominantly closed-ended questions, were self-administered to the target respondents. The results were analysed using the IBM Statistical Package for Social Sciences (SPSS) version 22.0. The findings of this study revealed that the adoption of kaizen costing may be successful in improving the cost management inefficiencies faced by South

African municipalities. Based on the findings, the majority of the respondents indicated that they would embrace and support the application of kaizen at the water and sanitation and electricity departments in the Kwini Municipality.

The study recommends that the Water and Sanitation and Electricity Departments in the Kwini Municipality should consider implementing kaizen costing to improve their cost management. Also, Olabisi et al. (2012), investigate the relationship between the Kaizen cost-cutting technique and the profitability of small and medium-sized businesses in Ogun State, Nigeria. It evaluates the nature of the Kaizen cost management technique and how it can be adopted to reduce and control the operational costs of SMEs. The study used primary data, and a sample of 269 respondents from the Agro-allied, confectionery, general trading, and transportation industries in Ogun State, Nigeria, were chosen at random.

The study population comprised 2,685 enterprises obtained through a preliminary survey of SMEs in the three senatorial districts of Ogun State, namely Ogun West, Ogun East, and Ogun Central. The Statistical Package for Social Sciences (SPSS) was adopted to analyze the questionnaire. The result of the statistical test of the hypothesis shows that there is a significant relationship between Kaizen cost management technique and the profitability of SMEs.

Secondly, the study also found that Just-in-time costing has significant impact on return on asset of manufacturing companies in Nigeria. This is consistent with the work of Fernando et al. (2017), described some links between Just in Time (JIT) manufacturing strategy and performance financial analysis in financial statements. A rational, deductive, analytical and objective method was used;

based on previous findings, a series of functions along with pre-post and linear regression analyses models are described as explicative of the relationships between JIT and financial statements analysis.

Results show that the Dirac function, value transformation function, and transform kernel provide the foundations for a conceptual link between JIT and company performance in financial statements. Besides, the JIT relationship to business performance is explained by the following three models, selected from literature: a) the pre-post model, which explains changes in inventory and asset turnover and their relationship to JIT; b) the two-stage self-selection regression analysis model, which explains how sales, inventory, company size, and JIT adoption influence ROA changes; and c) the lean manufacturing model, which includes JIT and allows for the explanation of firm financial data.

The conclusion is that JIT is part of a financial sequence of analysis strongly related to the structure of financial statements and company performance. Also, Adamu and Maccarthy (2022) in a study on Lean accounting practices and financial performance of listed consumer goods manufacturing companies in Nigeria found that there is significant relationship between just-in-time costing (JITC) and return on investment (ROI) of listed consumer goods manufacturing companies in Nigeria.

Conclusions

In the light of the aforementioned findings, kaizen costing can be proposed as a 'new science and necessary tool' for achieving more accurate results in the preparation of financial performance of manufacturing companies in Nigeria. Despite the fact that kaizen costing is still in its infancy, there are signs that this

method of accounting is becoming more standardized. The principles and procedures of kaizen costing are easily adaptable to the diverse needs of businesses and accounting requirements. Due to the demonstrated benefits of lean thinking and production, the use of traditional accounting is practicable when kaizen costing and production methods are implemented in businesses.

By teaching kaizen costing to managers and those responsible for financial lists, it is possible to provide a tool for integrating lean thinking and production and presenting financial lists that are relevant, understandable, and in accordance with accounting standards. The study further concluded that the introduction of just-in time lean accounting systems should be a process starting with training the staff members, ensuring the supervisors understand that small but gradual improvement are only possible when they bridge the bureaucratic barriers and engagement of employee and relying on their views is very critical.

Recommendations

Given the findings mentioned above on the impact of audit reports on investment decisions of manufacturing companies, the following were suggested:

- i. The study further recommended that to determine the actual performance of the Kaizen system, organizations should bridge the bureaucratic barriers and allow the top management to interact freely with the lower hierarchy members of the organization and build a proper rapport to enhance effective communication, efficient development of ideas, proper

adoption of generated ideas and avoid dismissing the simple little ideas given by the junior staff about improvement of the organization.

- ii. Just-in-time costing (JITC) inventory system should be used by management in other not to run at loss and not to incurring further costs on staff training in other lean accounting knowledge.

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