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Lean Accounting Techniques and Competitive Advantage of Listed Manufacturing Firms in Nigeria

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Abstract: *This study explored lean accounting techniques and the competitive advantage of listed manufacturing firms in Nigeria. The main objective was to determine how the adoption of lean accounting techniques such as value stream, target costing, kaizen costing, Box score reporting and visual reporting enhances firms' strategic competitiveness within Nigerian's dynamic manufacturing sector. A quantitative research design was employed, using structured questionnaires administered to accounting and managerial personnel of selected listed manufacturing firms. Data were analysed using descriptive and inferential statistics, including regression analysis to test the hypothesized associations. The findings revealed that value stream costing has a significant effect on quality improvement and operational efficiency of the listed manufacturing firms in Nigeria, target costing has a significant effect on quality improvement and operational efficiency of the listed manufacturing firms in Nigeria, kaizen costing has a significant effect on quality improvement and operational efficiency of the listed manufacturing firms in Nigeria, box score reporting has a significant effect on quality improvement and operational efficiency of the listed manufacturing firms in Nigeria and visual reporting has a significant effect on quality improvement and operational efficiency of the listed manufacturing firms in Nigeria. The study concludes that the implementation of lean accounting techniques significantly enhances the competitive advantage of listed manufacturing firms in Nigeria. Policymakers and regulatory bodies are encouraged to promote training, awareness, and supportive frameworks for lean practice implementation.*

Keywords: lean accounting, competitive advantage, manufacturing firms, Nigeria, value stream, target costing

INTRODUCTION

In today's highly competitive and dynamic business landscape, firms are under growing pressure to minimize costs, improve quality, enhance customer value and enhance operational reliability to attain sustainable competitive advantage (Al-Shanti et al, 2025). Traditional accounting systems have often been criticized for their inability to provide timely, relevant, and decision-oriented information and service contexts (Kaire et al, 2023; Nguyen & Ngo, 2023; Stronczek, 2023;

Adamu & Maccarthy, 2022). As a response, lean accounting techniques appeared to support lean philosophy by bringing into line financial and non-financial information with lean practices such as waste elimination, value stream management, and continuous improvement (Al-Shanti et al, 2025). The idea of lean accounting has accordingly increased excessive drive towards attaining operational efficiency and justifiable business practices. Hence, the adoption of lean accounting techniques might device different measures that could minimize the adverse effects of challenges in the sector to which they belong and unfavourably influence their operational and financial performance. Altal (2024) explains that in periods when awareness about operational and financial efficiency is on the rise universally, increasing numbers of manufacturing firms are also continuing to adopt lean accounting techniques as a competitive advantage. Al-Shanti et al (2025) argue that the rising interest in operations and financial efficiency has elevated the stakes on firms for better management techniques. This has improved the hopes of firms to start using the lean accounting technique, among others. Stronczek, (2023) argued that the persistent stakeholder hopes that have stayed constant have made firms study and apply lean accounting philosophies in a bid to become competitive in a dynamic business environment. Alves et al. (2022) and Okorie et al. (2023) provide that with the current changes in operational and market dynamics, it is immensely imperative that firms implement appropriate lean accounting strategies focused on waste minimization and inefficiency. Yu et al (2023) argue that with the improvements of operational processes over the last few decades firms must adopt lean accounting techniques as a way of business improvements and growth in the context of effective competition. Nguyen and Ngo (2023) stressed that with the growing demands, more organisations are obligated to explain operational glitches and adopt technologically driven techniques that would assist firms expand operational and financial performance and strengthen their competitive advantage.

Lean accounting moves from the orthodox cost and management accounting by concentrating less on complex standard costing variances and more on value stream costing, box scores, and visual performance measurement tools that directly support decision-making and operational excellence (Al-Shanti et al, 2025; Adamu & Maccarthy, 2022).Lean accounting refers to concepts designed to improve the financial performance of a firm that has implemented lean service processes. These may include organizing costs by value stream, changing inventory valuation techniques and modifying financial statements to include non-financial information and a lean enterprise established on improved value to the customer, the removal of wasteful processes and non-value-added activities, and improvement in throughput to generate opportunities for profitable growth and expansion (Kaire et al, 2023). Lean accounting employs diverse approaches and methods for maximizing production efficiency, consisting of waste elimination, enhancement of quality, just-in-time delivery, and cost control (Alotaibi et al., 2021). Momani et al. (2023) stress that the level of operational performance and competitiveness of a firm can also be reinforced by the accumulation of new and advanced lean activities. Therefore, lean accounting involves the overall set of processes concerning optimization in the areas of acquisition, production, sales, transportation, and recycling of operations. Liu et al., (2023) further states that efficient practices must be inculcated along every step of these processes. Consequently, firms can achieve competitive advantage by using lean accounting techniques such as value stream costing, target costing, kaizen costing, box score and lean performance measures to attain improved performance of the firm.

Competitive advantage refers to the ability of a firm to achieve superior performance relative to competitors through cost leadership, differentiation, or focus strategies. Lean accounting provides firms with accurate insights into cost structures, customer value, and process efficiency (Adamu & Maccarthy, 2022). Lean accounting strengthens the competitive advantage of firms through appropriate cost control and operational effectiveness, enhancing quality products (Alqudah et al., 2023; Alshanti et al., 2024). The use of lean accounting techniques has had a positive outcome on operational performance and has assisted firms to gain competitive advantage (Altal, 2024; Alves et al., 2022). It has also been disclosed to decrease production costs, enhance operational efficiency, and advance quality production, flexibility, and reliability, accordingly, improving competitiveness (Al-Zwaylif &Taher, 2020). Azeem et al (2021) argued that several studies have revealed that the use of lean accounting techniques has enabled long-term competitiveness by concentrating on continuous improvement and value-added cost control. Furthermore, Fabrizio et al., (2022); Farida and Setiawan, (2022) point out that the use of lean accounting techniques in manufacturing procedures has effectively helped waste removal and total cost reduction; these developed efficiencies which have contributed to improved economic performance and determined better competitive advantage. Partnerships and alliances with suppliers have made it very supportive to implement lean accounting techniques which further improved the competitive advantage of firms (Momani et al., 2023).

Empirical evidence suggests substantial association between the lean accounting practices of total cost, value stream, and Kaizen culture on firm performance (Kaire et al, 2023; Adamu & Maccarthy, 2022).It has been observed that these practices improve cost efficiency and quality of products, therefore guaranteeing an increase in overall competitiveness (Al Mubarak & Hamdan, 2023; Alotaibi et al., 2021). Extant studies had not yet considered how LAT influences CA (Alotaibi et al., 2021). Little investigation was done as to how lean accounting techniques affect organizational competitiveness. previous literature has failed to address how LAT affects CA, such as Stronczek (2023). However, while lean accounting has gained recognition in advanced economies, its implementation in emerging markets such as Nigeria remains underexplored. This gap raises questions regarding its applicability, contextual relevance, and potential role in enhancing competitive advantage in a dynamic business landscape. This study seeks to investigate the implications of lean accounting techniques such as value stream accounting, target costing, kaizen costing, box score and lean performance measures on competitive advantage of manufacturing firms in Nigeria. Thus, the study contributes by extending knowledge of lean accounting into an emerging market context. This contributes to the global accounting literature by showing how lean accounting techniques adapt in contexts with resource constraints. Furthermore, the study explores ways through which manufacturing firms in Nigeria can excellently implement lean accounting to attain maximum sustainable competitive advantage. Therefore, the main objective of this study is to investigate the moderating role of organisational culture on the relationship between lean accounting techniques and the competitive advantage of listed manufacturing firms in Nigeria. The specific objectives are as follows:

1. To examine the relationship between value stream costing and the quality improvement and operational reliability of listed manufacturing firms in Nigeria.

2. To assess the relationship between target costing and the quality improvement and operational reliability of listed manufacturing firms in Nigeria.
3. To determine the relationship between kaizen costing and the quality improvement and operational reliability of listed manufacturing firms in Nigeria.
4. To evaluate the relationship between box score reporting and the quality improvement and operational reliability of the listed manufacturing firms in Nigeria.
5. To investigate the relationship between visual reporting and the quality improvement and operational reliability of the listed manufacturing firms in Nigeria.

Research Questions: Based on objectives, the study seeks to answer the following questions:

1. What is the relationship between value stream costing and the quality improvement and operational reliability of the listed manufacturing firms in Nigeria?
2. How does target costing affect the quality improvement and operational reliability of the listed manufacturing firms in Nigeria?
3. To what extent does kaizen costing affect the quality improvement and operational reliability of the listed manufacturing firms in Nigeria?
4. What is the relationship between box score reporting and the quality improvement and operational reliability of the listed manufacturing firms in Nigeria?
5. To what extent does visual reporting affect the quality improvement and operational reliability of the listed manufacturing firms in Nigeria?

The following null hypotheses were tested in this study:

$H0_1$: Value stream costing has no significant association on quality improvement and operational reliability of the listed manufacturing firms in Nigeria.
$H0_2$: Target costing has no significant association on quality improvement and operational reliability of the listed manufacturing firms in Nigeria.
$H0_3$: Kaizen costing has no significant association on quality improvement and operational reliability of the listed manufacturing firms in Nigeria.
$H0_4$: Box score reporting has no significant association on quality improvement and operational reliability of the listed manufacturing firms in Nigeria.
$H0_5$: Visual reporting has no significant association on quality improvement and operational reliability of the listed manufacturing firms in Nigeria.

LITERATURE REVIEW

Concept of Lean Accounting: Lean accounting is an approach to managerial and financial reporting designed to support a lean enterprise by aligning accounting practices with lean principles by eliminating non-value-adding measurement and reporting, making financial and operational information simple and visually accessible, and supporting value stream decision-making rather than traditional product-cost-centered reporting (Abobaker, 2023; Nguyen& Ngo, 2023; Nielson et al, 2023; Rabe, 2023; Shehadeh & Al-Beshtawi, 2023). It is also defined as a series of events to successfully control and cope with costs and improve efficiency to afford better corporate performance and competitive advantages (Sharabati, 2021; Stronczek, 2023). According

to Alqudah et al., (2023); Alshanti et al., (2024), lean accounting strengthens the competitive advantage through appropriate cost control and operational effectiveness, thereby improving product quality in firms. Altal (2024); Alves et al., (2022) explain that the application of lean techniques internally and the formulation of external networks had a positive influence on the operational performance and helped in the improvement of competitive advantage. lean accounting has also revealed to lessen production costs, increase operations efficiency and enhance quality, flexibility, and reliability of operations, therefore improving competitiveness (Al-Zwaylif & Taher, 2020). The application of lean accounting principles in manufacturing and distribution processes has effectively helped waste elimination and the decrease of total cost; these recognized efficiencies therefore contributed to better economic performance and competitive advantage (Fabrizio et al., 2022; Farida & Setiawan, 2022). The use of lean accounting in production and distribution improved the capability to control cost along with successes of operations (Nielsen et al., 2023; Okorie et al., 2023). The studies of Nielsen et al (2023), Okorie et al (2023) revealed a relationship between lean accounting techniques such target costing (TO), kaizen costing (KO), value stream costing (VSO) with operational performance and competitive advantage. Stronczek (2023) noted that VSO and TC impact on the competitiveness of firms because these techniques reduce costs and improve quality while KO improves on the efficiency and reliability of production processes. Zhang et al (2023) further argue that lean accounting techniques have been used in firms to improve their performance through cost management, decrease in operations, and the nurturing of innovation that ultimately decreased waste and improved total competitive advantage. LiU et al (2023) contend that LAT such as VSC, TC and KC improve cost control, quality and operational efficiency of manufacturing firms. Also, Magboul et al (2024) stated that manufacturing companies should partake in coalition with suppliers and stakeholders for the planned exploitation of LAT for improved competitiveness.

Concept of Competitive Advantage: Competitive advantage refers to a firm's ability to achieve superior performance compared to its rivals by offering greater value to customers or operating more efficiently. In contemporary research, competitive advantage is understood as a dynamic capability, that is, the sustained ability to innovate, adapt, and deploy resources in ways that competitors cannot imitate. Goyal and Bansal (2023) contend that sustainability and circular economy practices are increasingly viewed as sources of long-term advantage, enabling firms to meet regulatory and societal expectations while differentiating from competitors. Existing research proved that VSC has a significant positive influence on cost reduction and operational reliability (Zhang et al., 2023). LAT directly established influences on the determinants of firm competitiveness (Al-Zwaylif & Taher, 2020). Corporate competitiveness positively influences operational performance, quality, and innovation (Farida &Setiawan, 2022). LAT provided a significant impact on firm performance and competitive advantage (Liu et al., 2023). Hence, Momani et al. (2023); Nguyen and Ngo (2023) established that competitive pressure has the power to influence firms in Jordan to implement internal and external LAT to improve their processes. Liu et al (2023) contends that LAT improves cost control, the quality and operational efficiency of manufacturing companies. Companies that are engaged in cooperations with suppliers and stakeholders for the strategic exploitation of LATs for improved competitiveness (Magboul et al., 2024). The studies carried out byNguyen and Ngo (2023), and Nielsen et al. (2023) revealed that a significant and positive association between LATs and long-term competitiveness. LATs have

been practiced in manufacturing firms to improve corporate performance using cost management strategies, operations reduction and encouraging innovation that ultimately minimise waste and improve overall competitive advantage (Zhang et al., 2023). Al-Shanti et al (2025) revealed that there is a significantly positive connection between LATs and CA. The authors further noted that LATs have a significant influence on operational reliability, cost reduction, innovation, time efficiency, and quality improvement.

Theoretical Framework: This study is grounded on the resource-based view (RBV). The RBV was first formalized by Jay Barney (1991) with other contributors such as Wernerfelt (1984), Rumelt (1987), Peteraf (1993). It is a strategic management theory that explains how firms achieve and sustain competitive advantage through the possession and deployment of unique internal resources and capabilities. Barney (1991) argued that a firm's internal resources are valuable, rare, inimitable, and non-substitutable (VRIN) that can be a source of sustained competitiveness. Nguyen and Luu (2023), RBV has evolved to emphasize the strategic role of intangible resources, particularly digital technologies, knowledge management, and innovation capabilities. The RBV focuses on firm specific resources, giving managers actionable insights. It provides a clear framework (VRIN) for why some firms consistently outperform others. It helps managers identify and develop unique resources and forms the backbone of studies linking accounting practices, innovation, and competitive advantage. However, RBV suffers from the following criticism: early RBV assumed resources were stable, making it less useful in fast-changing environments. It is difficult to measure what is truly "valuable" or "inimitable" in practice. RBV underemphasizes industry competition and external threats and even if resources are rare today, competitors may essentially replicate or substitute them. Lean accounting practices such as VSC, BS, KC, TC go beyond traditional management and financial reporting. They provide timely, relevant, and simplified financial and non-financial information that aligns with lean operations. These practices serve as valuable resources, are often rare, difficult to imitate and non-substitutable. Empirical evidence supports this application of RBV. Recent studies highlight that lean accounting systems provide decision-relevant information that enhances organizational performance and competitiveness (Fullerton et al, 2023; Kraus et al, 2023). Similarly, research on Indonesian manufacturers shows that management control systems, when aligned with lean practices, function as RBV type resources that mediate the association between lean management and competitive advantage (Rini et al., 2023). Thus, lean accounting practices constitute a strategic resource configuration that enables firms to transform operational efficiency into sustainable competitive advantage. Altal (2023) highlights that lean accounting systems, foster dynamic capabilities that transform ordinary resources into sources of sustained competitiveness, extending RBV into the field of management accounting. Also, Oliveira and Azevedo (2022) provide case-based evidence that firms adopting lean accounting achieve greater cost transparency, improved resource utilization, and long-term efficiency whose outcomes are consistent with RBVs VRIN criteria.

Empirical Review

Al-Shanti et al. (2025) investigated the lean accounting tools and competitive advantage of industries in Jordan. The study adopted a quantitative approach through a cross-sectional survey research design. The population of the study consisted of 32 industrial enterprises and a sample size of 32 companies. Data was collected from secondary sources (books, online sources) and

primary data (from the questionnaire) were employed to offer a good dataset for analysis. The instrument used both convergent and discriminant validity tests were performed to confirm that the measurement model had validity. A total of 400 employees were sent online questionnaires across 32 companies, which produced 293 responses from 18 companies, and the data was validated, and 279 complete responses were analysed. The study used value stream costing (VSC), target costing (TC) and kaizen costing (KC) as measures for lean accounting while the dependent variable competitive advantage was measured using cost reduction (CR), quality improvement (QI), time efficiency (TE), operational reliability (OR) and innovation (INN). The responses obtained from the questionnaire were analysed using descriptive statistics, correlation analysis and multiple regression. The result from the hypotheses tested revealed a higher application of VSC and TC compared to KC. The analysis further disclosed that companies in Jordan incline to emphasis on quality improvement (QI), time efficiency (TE), and operational reliability (OR) more than cost reduction (CR) and innovation (INN). The findings further showed a strong correlation between lean accounting tools and competitive advantage, and LATs revealed a significantly positive association on competitive advantage with lean operations exercising the greatest influence, followed by VSC and TC. While LAT significantly influences QI, INN and TE, it does not have a significant effect on OR or CR.

Chuku et al (2023) explored the lean accounting and financial performance of listed consumer goods firms in Nigeria. The study adopted triangulation and correlational research design. The population comprised of 336 knowledgeable and competent staff within the production, marketing and finance departments of the 9 consumer goods companies with the use of Taro Yamene sample size formula of 183. Data collection was done using primary data (questionnaire) and secondary data (journals, online materials). The study used lean accounting as independent variable (kaizen costing, just-in-time costing, value stream mapping) while the dependent variable (return on assets). The responses from the questionnaires were analysed using descriptive and inferential statistics. The results from the inferential statistics (multiple regression analysis) indicated an insignificant association between kaizen costing and return on assets of listed consumer goods manufacturing firms in Nigeria. Also, an insignificant link between value stream mapping and return on assets of listed consumer goods manufacturing companies in Nigeria. Furthermore, the findings showed a significant association between just-in-time costing (JITC) and return on asset (ROA) of listed consumer goods manufacturing companies in Nigeria.

Amahi (2023) analysed lean accounting adoption and financial performance of listed consumer goods manufacturing companies in Nigeria. The study employed ex-post facto research design. The study population comprised of 23 listed consumer goods manufacturing firms and convenience sampling method was used to arrive at a sample size of 5 firms. The study used primary data collected from 140 accounting, marketing, operations, and warehousing while secondary data was collected from the financial reports of sampled companies from 2022 to 2024. The study used lean accounting as independent variable while the dependent variable financial performance utilized inventory turnover, return on assets and return on investment. The data obtained were analysed using descriptive and inferential statistics. The result from the ordinary least square analysis showed a significantly positive relationship between lean accounting and inventory turnover of listed consumer goods manufacturing companies in Nigeria. Also, a

significantly positive relationship between lean accounting and return on assets of listed consumer goods manufacturing companies in Nigeria. Furthermore, significantly positive relationship between lean accounting and return on investment of listed consumer goods manufacturing companies in Nigeria.

Adamu and MacCarthy (2022) conducted a study of lean accounting practices and financial performance of listed consumer food products manufacturing companies in Nigeria with firm size as moderator. The study employed triangulation and correlational research design. The target population consisted of 9 listed consumer food products manufacturing companies in Nigeria as of 31 August 2021. The unit of respondents of the study was 336 knowledgeable and competent staff within the production, marketing and finance departments of the sampled manufacturing companies. The independent variable consisted of just-in-time costing and value stream costing while the dependent variable financial performance was measured using return on equity and firm size as the moderator. The sample size was determined using the Taro-Yame sampling techniques of 183. The study data was collected using primary data and secondary data. The data collected were analysed using descriptive and inferential statistics. The multiple regression analysis revealed a significant relationship between just-in-time costing (JITC) and return on equity (ROE) of listed consumer food products manufacturing companies in Nigeria. Meanwhile, there is an insignificant relationship between value stream mapping (VSMC) and return on equity (ROE) of listed consumer food products manufacturing companies in Nigeria. Furthermore, a finding also showed a significant effect of firm size on the relationship between lean accounting practices and financial performance of listed consumer food products manufacturing companies in Nigeria.

Abobaker (2023) carried out a study of lean accounting and reduction of industrial cost in Sudair industrial kingdom, Saudi Arabia. The study employed descriptive-analytical survey research design. The study focused on 30 randomly selected industrial companies located in Sudair industrial city, Saudi Arabia. Data was collected from primary and secondary sources. The primary data was sourced from structured questionnaires while the secondary data was collected from books and journal articles. A total of 80 questionnaires were distributed among participants in the sampled firms. The data collected were analysed via SPSS to test the hypothesis impacts of lean accounting adoption on industrial costs. It also examined barriers hindering the implementation of lean accounting techniques. The findings of the study revealed that lean accounting adoption remains below average, primarily due to limited training and a lack of lean accounting culture with organisations. The study also disclosed that despite the low adoption rate, firms using lean accounting techniques experienced notable reductions in industrial costs, confirming the effectiveness of these techniques when applied. The study further recommended that organisations should invest in training and culture building to overcome adoption barriers. Also, implementing lean accounting can materially support cost efficiency and organizational performance, assisting firms align with strategic objectives.

Ismael (2023) explored lean accounting tools and just-in-time techniques on cost reduction in Saudi companies. It also examined whether ethical standards mediate the association between these variables. The study adopted quantitative research method with primary data collected from a structured questionnaire with closed-ended questions that was distributed online to a sample of 109 managers and accountants in Saudi manufacturing firms. The questionnaires collected from

the participants were processed using SPSS and AMOS, applying both descriptive and inferential statistical techniques. The results revealed both direct and indirect impact of lean accounting tools and JIT techniques on cost reduction in Saudi industrial firms, especially when ethical standards are incorporated as a mediator. The study emphasized that integrating lean accounting with JIT practices, underpinned by ethical standards, significantly enhances sustainable manufacturing and performance outcomes.

Nielsen et al (2023) investigated value stream costing and accounting measures in lean production companies. The study employed cross sectional survey research design and surveyed 368 American production facilities to investigate how integration of lean production, value stream costing and accounting performance measures affects overall performance. Data was collected from questionnaires distributed to managers from production facilities provided survey responses regarding their lean practices and accounting systems. The responses collected from the participants were processed using structural equation modelling by comparing both first order and second-order models to evaluate whether these practices act additively or synergistically. The study explored time with lean as a moderator to examine if experience enhances the joint effect of lean production and lean accounting on performance. The findings explained that lean production and lean-related accounting practices, such as value stream costing and performance variance measures, collectively improve performance more than the sum of their individual effects by suggesting that integration provides greater impact than isolated adoption. The study further disclosed that organizations with longer experience in lean practices reap increasing returns over time, contradicting the traditional belief in diminishing marginal benefits.

Shehadeh and Al-Beshtawi (2023) conducted a study on lean accounting and the value of industrial companies in Jordan. The study aimed to investigate whether lean accounting practices have a positive impact on the value of companies among Jordanian industrial firms listed on the Amman Stock Exchange between 2017 and 2021. The study adopted a descriptive–analytical research design, coupling quantitative survey data collected from archival financial data. A sample of 52 Jordanian industrial companies with data collected from questionnaires directed to managers and accountants, and financial metrics were extracted from annual reports to proxy company value. The data collected were processed using statistical techniques such as correlation and regression. The results from statistical processing revealed that lean accounting tools such as value stream costing, simplified reporting and kaizen costing had a significant positive impact on the firm's value, indicating that these techniques enhance the company's worth. Hence, the study recommended that managers should develop and implement structured strategies to embed lean accounting in a way that supports value creation, excellence and organizational prosperity.

Refif & Alloune (2024) investigated lean accounting methods and cost reduction of industrial institutions of Blida Stat in Algeria. The study employed an exploratory study of 180 staff of 10 industrial institutions of Blida Stat, using primary data collected from a structured questionnaire after validity and reliability tests. The study used lean accounting as the independent variable, while cost reduction was the dependent variable. The data collected from the questionnaire responses were processed using descriptive and inferential statistics. The results revealed a significantly positive relationship between the lean accounting method and the cost reduction of sample companies. The findings indicate that by presenting the elements for employing lean

accounting techniques, through changing the wide production system to a lean production one to reduce wastage.

Ahmad (2022) analysed lean accounting and the competitive advantage of commercial banks in Jordan. The study adopted a descriptive-analytical approach with a population of all administrators working in Jordanian commercial banks that were listed on the Amman stock exchange before the period 31 December 2020, consisting of 13 banks. A purposive sample was chosen, consisting of 78 administrators working in Jordanian commercial banks. The study used primary (questionnaire) and secondary data (journals and online materials). A total of 78 questionnaires were administered, and all were collected from the participants. The questionnaire used validity and reliability tests. The study used lean accounting as an independent variable, consisting of value stream maps, target costing, kaizen costing and employee satisfaction, while competitive advantage was the dependent variable, consisting of cost, quality and creativity. The study questionnaire collected was analysed using descriptive and inferential statistics. The findings indicated a statistically significant and positive relationship between value stream mapping and competitive advantage. Also, there is a statistically significant and positive relationship between target costing and competitive advantage. Furthermore, there is a statistically significant and positive relationship between kaizen costing and competitive advantage. Additionally, there is a statistically significant and positive relationship between employee satisfaction and the competitive advantage of Jordanian commercial banks.

METHODOLOGY

This study adopts a quantitative research design, specifically a descriptive survey design, to investigate the connection between lean accounting techniques and competitive advantage. The choice of this design is justified because it enables the investigator to collect empirical data from a larger number of participants and analyse the relationship between variables using statistical methods. The target population comprises the 42 listed consumer and industrial goods manufacturing companies listed on the Nigerian Exchange Group as at 31 December 2025. The unit of analysis for the study was 1,600 knowledgeable and competent staff members within the production, marketing, and accounting departments of the sampled manufacturing companies. These individuals were selected because they are directly involved in the implementation of lean accounting practices and can provide reliable insights into how such practices influence competitive advantage. The sample size was determined using Yamene's (1967) formula for sample size determination, ensuring a statistically adequate representation of the population and the result indicated 320 as sample size. The study relies primarily on primary data, collected through structured questionnaires. Secondary data was also sourced from academic journals, textbooks, and industry reports to support the empirical findings. The major instrument for data collection was a structured questionnaire, designed on a 5-point Likert scale (ranging from 1 = Strongly Disagree to 5 = Strongly Agree). The questionnaire was divided into three sections: section 1 comprising demographic information of respondents; section 2 consisting of lean accounting techniques such as box score reporting, value stream costing, target costing, kaizen costing, and visual reporting. and section 3 comprising competitive advantage(quality improvement and operational reliability) adopted from prior studies such as Ahmad (2022), Adamu and MacCarthy (2022), Shehadeh and Al-Beshtawi (2023), Al-Shanti et al (2025).The

instrument was validated using content validity, where it was reviewed by academics and professionals (ICAN & ANAN) members in Yenagoa, Bayelsa State. Also, Cronbach's Alpha coefficient was used to ascertain the internal consistency of the instrument with a benchmark of 0.70. The questionnaire was administered both physically (paper-based) and electronically (online form) to ensure wider coverage and a higher response rate. Follow-ups were made to increase participation. The data collected was coded and analysed using the Statistical Package for Social Sciences (SPSS). The analysis was performed using descriptive statistics (mean, standard deviation, frequencies) to summarise responses. Correlation analysis was performed to determine the strength and direction of the relationship between lean accounting techniques and competitive advantage, and regression analysis was performed to test the effect of lean accounting on competitive advantage. This study is guided by the functional relationship to test the hypotheses as presented as follows:

$$QIT = \beta_0 + \beta_1 VSC + \beta_2 TAC + \beta_3 KAC + \beta_4 BSR + \beta_5 VIR + \varepsilon \quad \text{---------- (1)}$$

$$ORE = \beta_0 + \beta_1 VSC + \beta_2 TAC + \beta_3 KAC + \beta_4 BSR + \beta_5 VIR + \varepsilon \quad \text{---------- (2)}$$

Where:
QIT = Quality Improvement, ORE = Operational Efficiency, VSC = Value Stream Costing, TAC = Target Costing, KAC = Kaizen Costing, BSR = Box Score Reporting and VIR = Visual Reporting. MAEX = Management Experience, $\beta_0 - \beta_5$ = Coefficients, ε = Standard error. The a priori expectation: $\beta_1 - \beta_5 > 0$, and statistical software was applied in data analysis.

RESULTS AND DISCUSSIONS

Data Presentation

The primary data was collected from respondents using the questionnaire. The questionnaire was distributed and later retrieved by the respondents. The primary data collected was then subjected to analysis. In testing the hypotheses of the study, the Ordinary Least Square (OLS) multiple regression was used. From the sample of 320 copies of the questionnaire were distributed.

Table 1 Questionnaire Distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Number Retrieved	312	97.5	97.5	97.5
	Number not retrieved	5	1.6	1.6	99.1
	Number not properly filed	3	.9	.9	100.0
	Total	320	100.0	100.0	

Table 1 shows the distribution and collection of questionnaires sent to the respondents. It was shown that 320 questionnaires were distributed to the respondents, representing 100%. 312 questionnaires representing 97.5% were correctly filled and successfully retrieved from the

respondents; however, 5 questionnaires representing 1.6% were not retrieved, and 3 questionnaires representing 0.9% were not properly filed.

Table 2 Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	221	70.8	70.8	70.8
	Female	91	29.2	29.2	100.0
	Total	312	100.0	100.0	

Table 2 shows the gender of respondents in the sample of the study. 70.8% which translates to two hundred and twenty-two (222) respondents, are male, while 29.2%, which translates to ninety-one (91) respondents, are female. This implies that there is a diverse gender representation among the target respondents in the listed manufacturing firms in Nigeria.

Table 3 Age Range

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 – 25 years	62	19.9	19.9	19.9
	26 – 35 years	116	37.2	37.2	57.1
	36 – 45 years	60	19.2	19.2	76.3
	46 – 55 years	34	10.9	10.9	87.2
	56 and above years	40	12.8	12.8	100.0
	Total	312	100.0	100.0	

Table 3 shows the age range of respondents. It was shown that 62 respondents representing 19.9% are between the age brackets of 18 – 25 years, 116 respondents representing 37.2% are between the age bracket of 26 – 35 years, 60 respondents representing 19.2% are between the age bracket of 36 – 45 years, 34 respondents representing 10.9% are between the age bracket of 46 – 55 years, 40 respondents representing 12.8% are between the age bracket of 56 and above years.

Table 4 Educational Qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	OND/HND	82	26.3	26.3	26.3
	Bachelor's Degree	90	28.8	28.8	55.1
	Masters Degree	61	19.6	19.6	74.7
	Doctorate Degree	54	17.3	17.3	92.0
	Professional Certification	25	8.0	8.0	100.0
	Total	312	100.0	100.0	

Table 4 presents the educational qualifications of respondents. The majority, 82(26.3%), hold a BSC/HND degree, while 90(28.8%) have a bachelor's degree. 61(19.6%), hold a master's degree. Those with a PhD or other higher qualifications were 54(17.3%), and finally, 25(8.0%) hold a Professional Certification. The cumulative percentage indicates the progressive accumulation of respondents across different educational levels, reaching 100% for all categories combined. This distribution offers insights into the educational backgrounds of the study sample.

Table 5: Job Title/Role

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Accountant	81	26.0	26.0	26.0
	Operations/Production Manager	98	31.4	31.4	57.4
	Internal Auditors	42	13.5	13.5	70.8
	Lean/Process Improvement Officer	43	13.8	13.8	84.6
	General Manager/Executive	48	15.4	15.4	100.0
	Total	312	100.0	100.0	

Table 5 shows the Job Title/Role of respondents. It was shown that 81 respondents representing 26.0% are between the age brackets of 18 – 25 years, 116 respondents representing 37.2% are Accountants, 98 respondents representing 31.4% are Operations/Production Managers, 42 respondents representing 10.9% are Internal Auditors, 43 respondents representing 13.8% are Lean/Process Improvement Officer and 48 respondents representing 15.4% are General Manager/Executive. The analysis is diagrammatically represented in a histogram chart above.

Table 6: Years of Professional Service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 years	60	19.2	19.2	19.2
	1 – 5 years	156	50.0	50.0	69.2
	6 – 10 years	39	12.5	12.5	81.7
	11 – 15 years	27	8.7	8.7	90.4
	over 15 years	30	9.6	9.6	100.0
	Total	312	100.0	100.0	

Table 6 shows the Years of Professional Service of respondents. It was shown that 60 respondents representing 19.2% have worked for less than 1 years, 156 respondents representing 50.0% have worked for 1 – 5 years, 39 respondents representing 12.5% have worked for 6 – 10 years, 27 respondents representing 8.7% have worked for 11 – 15 years and finally, 30 respondents representing 9.6% have worked for over 15 years. The analysis is diagrammatically represented in a histogram chart above.

Table 7: Size of The Organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Small (1 – 49 employees)	126	40.4	40.4	40.4
	Medium (50 – 199 employees	95	30.4	30.4	70.8
	Large (200+ employees	91	29.2	29.2	100.0
	Total	312	100.0	100.0	

Table 7 shows the size of the organization. It was shown that 126 respondents representing 40.4% have small size and employed 1 – 49 employees, 95 respondents representing 30.4% have medium size and employed 50 – 199 employees and finally, 91 respondents representing 29.2% have large size and employed 200+ employees. The analysis is diagrammatically represented in a histogram chart above.

Table 8: Does your organization currently use Lean Accounting techniques

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes – Fully Implemented	94	30.1	30.1	30.1
	Yes – Partially adopted	62	19.9	19.9	50.0
	No -But planning to adopt	60	19.2	19.2	69.2
	No (Not considering adoption)	53	17.0	17.0	86.2
	Not sure	43	13.8	13.8	100.0
	Total	312	100.0	100.0	

Table 8 shows the organization currently uses of lean accounting techniques. It was shown that 94 respondents representing 30.1% stated yes that their organization fully implemented the use of lean accounting techniques, 62 respondents representing 19.9% also stated yes that their organization partially adopted the use of lean accounting techniques, 60 respondents representing 19.2% stated No that their organization planning to adopt the use of lean accounting techniques, 53 respondents representing 17.0% also stated No that their organization not considering adoption of the use of lean accounting techniques and finally, 43 respondents representing 13.8% stated not sure that their organization whether consider the adoption of the use of lean accounting techniques. The analysis is diagrammatically represented in a histogram chart above.

Table 9: How long has Lean Accounting been used in your organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 year	120	38.5	38.5	38.5
	1 – 3 years	62	19.9	19.9	58.3
	4 – 6U years	46	14.7	14.7	73.1
	More than 6 years	49	15.7	15.7	88.8
	not applicable	35	11.2	11.2	100.0
	Total	312	100.0	100.0	

Table 9 shows how long lean accounting has been used in your organization. It was shown that 120 respondents representing 38.5% stated that they have used less than 1 year using lean accounting techniques, 62 respondents representing 19.9% stated that they have used 1 – 3 years using lean accounting techniques, 46 respondents representing 14.7% stated that they have used 4 – 6U years using lean accounting techniques, 49 respondents representing 15.7% stated that they have used More than 6 years using lean accounting techniques, 35 respondents representing 11.2% stated that they have not applicable using lean accounting techniques. The analysis is diagrammatically represented in a histogram chart above.

Table 10: Which of the following lean accounting tools are in use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Value stream costing	74	23.7	23.7	23.7
	Box score reporting	70	22.4	22.4	46.2
	Lean performance measures	59	18.9	18.9	65.1
	Kaizen Costing	74	23.7	23.7	88.8
	target costing	35	11.2	11.2	100.0
	Total	312	100.0	100.0	

Table 10 shows the lean accounting tools use. It was shown that 74 respondents representing 23.7% stated that they used value stream costing, 70 respondents representing 22.4% stated that they have used box score reporting, 59 respondents representing 18.9% stated that they have used lean performance measures, 74 respondents representing 23.7% stated that they have used Kaizen Costing, and finally, 35 respondents representing 11.2% stated that they have used target costing. The analysis is diagrammatically represented in a histogram chart above.

Table 11 Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
VSC	312	4.00	1.00	5.00	2.6058	1.34009	1.796
TAC	312	4.00	1.00	5.00	2.6827	1.36515	1.864
KAC	312	4.00	1.00	5.00	2.7853	1.49448	2.233
BSR	312	4.00	1.00	5.00	2.7468	1.37384	1.887
VIR	312	4.00	1.00	5.00	4.0385	.87762	.770
QIT	312	4.00	1.00	5.00	2.4423	1.34303	1.804
ORE	312	4.00	1.00	5.00	2.7564	1.39992	1.960
Valid N (listwise)	312						

Source: Field Survey (2025) **2.8654** **1.313447**

The results in table 11 depicted the descriptive statistics of the Range, Minimum, Maximum Mean, Standard Deviation and Variance of responses on lean accounting techniques dimension (VSC = Value Stream Costing, TAC = Target Costing, KAC = Kaizen Costing, BSR = Box Score Reporting and VIR = Visual Reporting) and competitive advantage measures (QIT = Quality Improvement, ORE = Operational Efficiency) of listed manufacturing firms in Nigeria using five questionnaire items that were designed on a five point Likert scale. Thus, all the variables Mean are above the cut-off point of **2.5**. However, the grand mean and standard deviation responses on the questionnaire items are disclosed (M=**2.8654**; SD=**1.313447**) respectively. This implied that a

lean accounting technique is a significant predictor of competitive advantage of listed manufacturing firms in Nigeria.

Regression Analysis

Table 12a Model Summary of QIT Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.955[a]	.913	.911	.40016

a. Predictors: (Constant), VIR, BSR, KAC, TAC, VSC

Source: Field Survey (2025)

Table 12a provides the R and R values. The R-value represents the simple correlation and is a 0 .955 (the R column), which indicates a high degree of correlation. The explanatory power R^2 of the regression model shows that VSC = Value Stream Costing, TAC = Target Costing, KAC = Kaizen Costing, BSR = Box Score Reporting and VIR = Visual Reporting revealed strong ability to predict competitive advantage proxy - Quality Improvement (QIT) as they accounted for about 91.3% of the cross sectional variations in the dependent variable of Quality Improvement (QIT). This implies that the remaining 8.7% variation in Quality Improvement (QIT) cannot be explained because it may be related to other variables which are not depicted in this model. The implication is that there may be number of variables which can have effect on competitive advantage of listed manufacturing firms in Nigeria.

Table 12b ANOVA of QIT Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	511.963	5	102.393	639.453	.000[b]
	Residual	48.998	306	.160		
	Total	560.962	311			

a. Dependent Variable: QIT

b. Predictors: (Constant), VIR, BSR, KAC, TAC, VSC

The F-ratio in the ANOVA tests whether the overall regression model is a good fit for the data. The table shows that the independent variables proxies statistically and significantly predict the dependent variable, F = 639.453, P (0.000) < .05 (i.e., the regression model is a good fit of the data).

Table 12c Coefficients of QIT Model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.668	.288		12.759	.000
	VSC	.259	.045	.259	5.822	.000
	TAC	.104	.040	.105	2.562	.011
	KAC	.147	.021	.164	6.916	.000
	BSR	.082	.029	.084	2.856	.005
	VIR	-.697	.050	-.455	-14.002	.000

a. Dependent Variable: QIT

Test of Hypotheses

Statement 1: Value stream costing has no significant effect on the quality improvement of the listed manufacturing firms in Nigeria.
The result in the above table 12c shows that the coefficient and P-value of value stream costing (VSC) is 0.259; Prob 0.000 <0.05, which has the expected sign and result that it has a significant and positive effect on quality improvement (QIT) in the listed manufacturing firms in Nigeria. This implies that 1% change in value stream costing directly and substantially improved quality in the listed manufacturing firms in Nigeria. Therefore, the null hypothesis is rejected while the alternative hypothesis is accepted, which states that value stream costing has a significant effect on quality improvement of the listed manufacturing firms in Nigeria.

Statement 2: Target costing has no significant effect on the quality improvement of the listed manufacturing firms in Nigeria.
The result in the above table 12c shows that the coefficient and P-value of target costing (TAC) is 0.104; Prob 0.011<0.05, which has the expected sign and result that it has a significant and positive effect on quality improvement (QIT) in the listed manufacturing firms in Nigeria. This implies that 1% change in target costing directly and substantially improved quality in the listed manufacturing firms in Nigeria. Therefore, the null hypothesis is rejected while the alternative hypothesis is accepted, which states that target costing has a significant effect on quality improvement of the listed manufacturing firms in Nigeria.

Statement 3: Kaizen costing has no significant effect on the quality improvement of the listed manufacturing firms in Nigeria.
The result in the above table 12c shows that the coefficient and P-value of Kaizen costing (KAC) is 0.147; Prob 0.000<0.05, which has the expected sign and result that it has a significant and positive effect on quality improvement (QIT) in the listed manufacturing firms in Nigeria. This implies that 1% change in Kaizen costing directly and substantially improved quality in the listed manufacturing firms in Nigeria. Therefore, the null hypothesis is rejected while the alternative

hypothesis is accepted, which states that Kaizen costing has a significant effect on quality improvement of the listed manufacturing firms in Nigeria.

Statement 4: Box score reporting has no significant effect on the quality improvement of the listed manufacturing firms in Nigeria.
The result in the above table 12c shows that the coefficient and P-value of Box score reporting (BSR) is 0.082; Prob 0.005<0.05, which has the expected sign and result that it has a significant and positive effect on quality improvement (QIT) in the listed manufacturing firms in Nigeria. This implies that 1% change in box score reporting directly and substantially improved quality in the listed manufacturing firms in Nigeria. Therefore, the null hypothesis is rejected while the alternative hypothesis is accepted, which states that box score reporting has a significant effect on quality improvement of the listed manufacturing firms in Nigeria.

Statement 5: Visual reporting has no significant effect on the quality improvement of the listed manufacturing firms in Nigeria.
The result in the above table 12c shows that the coefficient and P-value of visual reporting (VIR) is -0.697; Prob 0.000<0.05, which does not have the expected sign and result; it has a significant and negative effect on quality improvement (QIT) in the listed manufacturing firms in Nigeria. This implies that 1% change in visual reporting directly and substantially improved quality in the listed manufacturing firms in Nigeria. Therefore, the null hypothesis is rejected while the alternative hypothesis is accepted, which states that visual reporting has a significant effect on quality improvement of the listed manufacturing firms in Nigeria.

Table 13a Model Summary of ORE Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.930[a]	.866	.864	.51713

a. Predictors: (Constant), VIR, BSR, KAC, TAC, VSC
Source: Field Survey (2025)

Table 13a provides the R and R values. The R-value represents the simple correlation and is a 0.930 (the R column), which indicates a high degree of correlation. The explanatory power R^2 of the regression model shows that VSC = Value Stream Costing, TAC = Target Costing, KAC = Kaizen Costing, BSR = Box Score Reporting and VIR = Visual Reporting revealed strong ability to predict competitive advantage proxy - operational efficiency (ORE) as they accounted for about 86.6% of the cross sectional variations in the dependent variable of operational efficiency (ORE). This implies that the remaining 13.4% variation in operational efficiency (ORE) cannot be explained because it may be related to other variables which are not depicted in this model. The implication is that there may be several variables which can affect competitive advantage of listed manufacturing firms in Nigeria.

Table 13b ANOVA of ORE Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	527.656	5	105.531	394.623	.000[b]
	Residual	81.831	306	.267		
	Total	609.487	311			

a. Dependent Variable: ORE

b. Predictors: (Constant), VIR, BSR, KAC, TAC, VSC

The F-ratio in the ANOVA tests whether the overall regression model is a good fit for the data. The table shows that the independent variables statistically and significantly predict the dependent variable, F = 394.623, P (0.000) < .05 (i.e., the regression model is a good fit of the data).

Table 13c Coefficients of ORE Model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.639	.372		-1.720	.086
	VSC	1.273	.058	1.218	22.124	.000
	TAC	-.075	.052	-.074	-1.442	.150
	KAC	-.101	.027	-.107	-3.661	.000
	BSR	-.094	.037	-.092	-2.545	.011
	VIR	.203	.064	.127	3.159	.002

a. Dependent Variable: ORE

Test of Hypotheses

Statement 6: Value stream costing has no significant effect on the quality improvement of the listed manufacturing firms in Nigeria.

The result in the above table 13c shows that the coefficient and P-value of value stream costing (VSC) is 1.273; Prob 0.000 <0.05, which has the expected sign and result that it has a significant and positive effect on operational efficiency (ORE) in the listed manufacturing firms in Nigeria. This implies that 1% change in value stream costing directly and substantially improved operational efficiency in the listed manufacturing firms in Nigeria. Therefore, the null hypothesis is rejected while the alternative hypothesis is accepted, which states that value stream costing has a significant effect on the operational efficiency of the listed manufacturing firms in Nigeria.

Statement 7: Target costing has no significant effect on the operational efficiency of the listed manufacturing firms in Nigeria.

The result in the above table 13c shows that the coefficient and P-value of target costing (TAC) is -0.075; Prob 0.150>0.05, which did not have the expected sign and result; it has an insignificant and negative effect on operational efficiency (ORE) in the listed manufacturing firms in Nigeria.

This implies that 1% change in target costing directly and substantially did not improve operational efficiency in the listed manufacturing firms in Nigeria. Therefore, the null hypothesis is accepted while the alternative hypothesis is rejected, which states that target costing has no significant effect on the operational efficiency of the listed manufacturing firms in Nigeria.

Statement 8: Kaizen costing has no significant effect on the operational efficiency of the listed manufacturing firms in Nigeria.
The result in the above table 13c shows that the coefficient and P-value of Kaizen costing (KAC) is -0.101; Prob 0.000<0.05, which has the expected sign and result that it has a significant and negative effect on operational efficiency (ORE) in the listed manufacturing firms in Nigeria. This implies that 1% change in Kaizen costing directly and substantially did not improve operational efficiency in the listed manufacturing firms in Nigeria. Therefore, the null hypothesis is rejected while the alternative hypothesis is accepted, which states that Kaizen costing has a significant effect on quality improvement of the listed manufacturing firms in Nigeria.

Statement 9: Box score reporting has no significant effect on the operational efficiency of the listed manufacturing firms in Nigeria.
The result in the above table 13c shows that the coefficient and P-value of Box score reporting (BSR) is -0.092; Prob 0.011<0.05, which has the expected sign and result that it has a significant and negative effect on operational efficiency (ORE) in the listed manufacturing firms in Nigeria. This implies that 1% change in box score reporting directly and substantially did not improve operational efficiency in the listed manufacturing firms in Nigeria. Therefore, the null hypothesis is rejected while the alternative hypothesis is accepted, which states that box score reporting has a significant effect on the operational efficiency of the listed manufacturing firms in Nigeria.

Statement 10: Visual reporting has no significant effect on the operational efficiency of the listed manufacturing firms in Nigeria.
The result in the above table 13c shows that the coefficient and P-value of visual reporting (VIR) is 0.203; Prob 0.002<0.05, which has the expected sign and result that it has a significant and negative effect on operational efficiency (ORE) in the listed manufacturing firms in Nigeria. This implies that 1% change in visual reporting directly and substantially improved operational efficiency in the listed manufacturing firms in Nigeria. Therefore, the null hypothesis is rejected while the alternative hypothesis is accepted, which states that visual reporting has a significant effect on the operational efficiency of the listed manufacturing firms in Nigeria.

DISCUSSION OF FINDINGS

Value Stream Costing and Competitive Advantage: The findings of this study revealed a positive and significant relationship between value stream costing and competitive advantage (quality improvement and operational efficiency) of listed manufacturing firms in Nigeria. The findings of this study concur with the investigation conducted by Almashkor et al (2021), Al-Shammari and Al-Husseini (2022), Ismail (2023) that value stream costing influences quality improvement and operational efficiency of firms. However, studies carried out by Nielsen et al (2023), Hamid and Habidin (2024) that value stream accounting had an insignificant association

on manufacturing performance. The result suggests that organisations adopting lean accounting techniques are better positioned to outperform competitors in terms of cost leadership, quality, responsiveness, and customer value creation. This relationship is consistent with lean management theory, strategic cost management principles, and empirical evidence showing that firms that align their accounting systems with value-creating processes gain clearer cost visibility and make superior operational decisions.

Target Costing and Competitive Advantage: The findings of this study revealed a positive and significant relationship between target costing and competitive advantage (quality improvement and operational efficiency) of listed manufacturing firms in Nigeria. The outcome of this study agrees with the findings of Otieno et al (2024), Mchavi and Ngwakwe (2024), Ghafel (2024) finds a statistically significant effect of target costing on financial performance, arguing that target costing drives cost competitiveness. However, several studies showed a negative association between target costing and competitive advantage. Umelo et al (2021) study revealed a negative and no significant association between target costing and return on equity of manufacturing firms in Nigeria. The findings indicate that firms applying target costing practices are more capable of developing products that meet customer expectations at the lowest possible cost while maintaining required quality standards. This simultaneously supports cost leadership, differentiation, and market responsiveness, which are core elements of competitiveness. This link aligns with strategic cost management theory and the customer-driven orientation of modern manufacturing.

Kaizen Costing and Competitive Advantage: The findings of this study revealed a positive and significant relationship between kaizen costing and competitive advantage (quality improvement and operational efficiency) of listed manufacturing firms in Nigeria. This study concurs with the study of Al-Barghuthi et al (2020), Alkababji (2023). Al-Barghuthi et al (2020) study revealed that the use of Kaizen costing significantly reduces costs and contributes to competitive advantage. The study found that high levels of kaizen costing application were positively linked to sustainable competitive advantage, measured via cost reduction, market share, and differentiation. Nevertheless, several other studies showed a negative link between kaizen costing and competitive advantage. The result indicates that firms adopting continuous cost-reduction practices gain superior performance positions in their markets. Kaizen costing, which is rooted in the philosophy of continuous improvement, emphasizes incremental, ongoing reductions in production cost, waste elimination-driven innovations. These improvements collectively improve a firm's ability to compete effectively through cost leadership, quality enhancement, flexibility, and innovations, which are foundational dimensions of competitive advantage.

Box Score Reporting and Competitive Advantage: The findings of this study revealed a positive and significant relationship between box score reporting and competitive advantage (quality improvement and operational efficiency) of listed manufacturing firms in Nigeria. The study of Kaldirim (2020) showed that the box score helps make operational, capacity, and financial performance visible at the value stream level. Cecevic and Djordjevic (2020) found that lean accounting including value stream costing and box score reporting supports lean business processes and contributes to competitive efficiency. Thus, some other studies showed a negative link between box score reporting and competitive advantage. The finding suggests that firms using

this lean accounting technique are better equipped to make timely, accurate, and strategically aligned decisions that enhance their market position. Box score reporting, which is an integral part of lean accounting, provides a simple but powerful dashboard with operational, capacity, and financial performance metrics. This transparency supports cost efficiency, quality improvement, speed, and continuous improvement, which are key components of competitive advantage.

Quality Improvement and Competitive Advantage: The findings of this study revealed a positive and significant relationship between quality improvement and competitive advantage (quality improvement and operational efficiency) of listed manufacturing firms in Nigeria. Some studies such as Makinde et al (2023), Chelangat (2020) showed that quality management have a significant effect on competitive advantage of manufacturing firms. The finding indicates that firms that actively enhance the quality of their products, processes, and services achieve superior market performance, and services achieve superior market performance compared to those that do not. Quality improvement, through defect reduction, process stabilization, customer driven decision, and continuous improvement directly enhances a firm's ability to compete on cost, customer satisfaction, and operational excellence, which are the foundational dimensions of competitive advantage.

CONCLUSION, POLICY IMPLICATIONS, LIMITATIONS AND FUTURE RESEARCH

This study investigated the effects of lean accounting techniques on the competitive advantage of listed manufacturing firms in Nigeria. The findings from the regression analysis revealed that value stream costing has a significant effect on quality improvement and operational efficiency of the listed manufacturing firms in Nigeria, target costing has a significant effect on quality improvement and operational efficiency of the listed manufacturing firms in Nigeria, kaizen costing has a significant effect on quality improvement and operational efficiency of the listed manufacturing firms in Nigeria, box score reporting has a significant effect on quality improvement and operational efficiency of the listed manufacturing firms in Nigeria and visual reporting has a significant effect on quality improvement and operational efficiency of the listed manufacturing firms in Nigeria. The study concludes that the implementation of lean accounting techniques significantly enhances the competitive advantage of listed manufacturing firms in Nigeria. Lean accounting, by focusing on value stream management, target costing, kaizen costing, box score reporting, and visual reporting provides a robust framework for improving operational excellence and strategic decision-making. Firms that adopt these techniques tend to experience superior product quality, reduced production costs, and improved customer satisfaction, all of which contribute to sustainable competitive positioning within an increasingly dynamic market environment.

The positive and significant link between lean accounting techniques and competitive advantage of listed manufacturing firms in Nigeria carries several vital implications for government agencies, regulatory bodies, industry stakeholders and management. First, the findings suggest a need for policy frameworks that promote the adoption of lean accounting practices across the manufacturing sector. Government institutions such as the Federal Ministry of Industry, Trade and

Investment, in collaboration with professional accounting bodies, should design and implement capacity-building programs to enhance managerial and technical competence in lean principles. Such initiatives could include workshops, certificates courses, and integration of lean accounting modules into university and professional curricula. Secondly, policymakers should provide incentives for firms that adopt lean-based management systems. These incentives would encourage firms to invest in process improvement, digital accounting technologies, and staff training necessary for successful lean implementation. Thirdly, regulatory agencies, such as the Financial Reporting Council of Nigeria (FRCN) and the Institute of Chartered Accountants of Nigeria (ICAN) should consider developing guidelines or standards that incorporates lean accounting principles into corporate reporting and performance measurements frameworks. This would help ensure consistency, transparency, and comparability of financial information among manufacturing firms. Fourthly, managers are encouraged to integrate lean accounting principles into their organizational culture and decision-making processes. This involves shifting focus from traditional cost accounting systems to lean-based systems that emphasise value creation, process efficiency, and continuous improvement.

Although this study provides valuable considerations into the link between lean accounting techniques and competitive advantage among listed manufacturing firms in Nigeria, several limitations should be acknowledged. First, the study was limited to listed manufacturing firms, which may not fully represent the broader manufacturing sector, including small and medium-sized enterprises (SMEs) that often operate under different structural and financial conditions. This restricts the generalizability of the findings to the entire industry. Second, the study relied primarily on self-reported data obtained through questionnaires, which may be subject to bias or inaccurate reporting due to social desirability or limited managerial awareness of lean accounting practices. Future research could mitigate this by combining survey responses with objective financial performance data or case study evidence for more robust validation. Third, the research adopted a cross-sectional design, capturing data at a single point in time. This limits the ability to establish causal associations between lean accounting adoption and competitive advantage. Future research could employ longitudinal designs to track changes over time and better understand how lean accounting practices evolve and influence performance in the long term. Fourth, the study focused primarily on quantitative measures of competitive advantages, potentially overlooking qualitative factors such as organizational culture, employee motivation, and innovation capability, which may also mediate the effectiveness of lean accounting. Future research could therefore adopt a mixed-method approach to capture both quantitative and qualitative methods. Finally, contextual factors unique to the Nigerian business environment such as infrastructure deficits, regulatory inconsistencies, and economic volatility may have influenced firms' ability to implement lean accounting fully. Comparative studies across different sectors or nations could provide aa broader understanding of how institutional environment shapes the impact of lean accounting on competitiveness. Hence, this study advances understanding of lean accounting as a strategic performance tool in Nigeria's manufacturing sector, future study should adopt more diverse samples, longitudinal data and mixed methods to provide deeper and more generalizable understanding into the influence of lean accounting in enhancing firm competitiveness.

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References

Abobaker, A. G. E. (2023). The impact of applying lean accounting tools in reducing industrial costs on a sample of companies operating in Sudair Industrial – Kingdom of Saudi Arabia. *International Journal of Professional Business Review,* 8(5), e01991. https://doi.or/10.26668/businessreview/2023.v8i5.1991

Adamu, A.J. & Maccarthy, M. I. T. (2022). Lean accounting practices and financial performance of listed consumer food products manufacturing companies in Nigeria. *Innovative Journal of Research in Management, Marketing and Accounting*, 10(2), 40 -59.

Ahmad, F. B. A. (2022). The extent of using lean accounting tools and their impact on the achievement of a competitive advantage in Jordanian commercial banks. *WSEAS Transactions on Business and Economics,* 19, 1353 – 1372. https://doi.org/10.37394/23207

Al-Barghuthi, S. B., Singh, H., Dannoun, Z., & Al-Barghuthi, N. B. (2020). Effect of the kaizen costing approach on the reduced costs, competitive advantage, and rationalizing strategic cost management of industrial companies listed on the Amman Stock Exchange in Jordan. *International Journal of Innovation, Creativity and Change,* 14(4), 1002 – 1021.

Alkababji, M. W. (2023). The impact of applying the target costing and continuous improvement (kaizen) on achieving the sustainable competitive advantage of Palestinian industrial companies. *Journal of Business and Socio-Economic Development,* 3(4), 372 – 387. httsp://doi.org/10.1108/JBSED-11-2022-0121

Almashkor, I., Alshawi, E. J., & Ali, J. H. (2021). The impact of integrating quality costing and value stream costing concerning competitive advantage: Applied study in Iraqi industrial sector. *Studies of Applied Economics,* 39(11). https://doi.org/10.25115/eea.v39i11.5949

Al Mubarak, M., & Hamdan, A. (2023). *Sustainable competitive advantage through technological innovation: an introduction. in Technological sustainability and business competitive advantage*. Springer International Publishing.

Alotaibi, D. A. A., Al-Kawaz, S. M. J., & Abbas, A. A. (2021). Improving product quality under the application of lean accounting tools within the behavioural approach. *International Journal of Economics and Financial Issues,* 11(2), 76–87. https://doi.org/10.32479/ijefi.10975

Alqudah, H., Lutfi, A., Abualoush, S. H., Al Qudah, M. Z., Alshira'h, A. F., Almaiah, M. A., Alrawad, M., &Tork, M. (2023). The impact of empowering internal auditors on the quality of electronic internal audits: A case of Jordanian listed services companies. *International Journal of Information Management Data Insights*, 3(2), 100183. https://doi. org/10.1016/j.jjimei.2023.100183

Al-Shammari, M. W. A., & Al-Husseini, S. H. A. S. (2022). Using value stream costing as a method to reduce costs and improve quality of cost information. *Al-Ghary Journal of Economic and Administrative Sciences*, 18(4), 521 – 548. https://doi.org/10.36325/ghjec.v18i4.14077

AlShanti, A M., Al-Refae, K. M. A., & Jebbreel, M. (2025). Lean accounting tools and competitive advantage in Jordan industrial companies. *Cogent Business & Management*, 12(1), 2447414. https://doi.org/10.1080/23311975.2024.2447414

Alshanti, A. M., Al-Azab, H. A. H., Humeedat, M. M., & AlQudah, M. Z. (2024). exploring the evolution of creative accounting and external auditors: Bibliometric analysis. *Cogent Business & Management*, 11(1), 2300500. https://doi. org/10.1080/23311975.2023.2300500

Altal, A. F. (2023). Lean management practices and competitive advantage: Extending the resource-based view. International *Journal of Productivity and Performance Management*, 72(5), 1347 – 1364. https://doi.org/10.1108/IJPPM-03-2022-0159

Altal, A. F. (2024). The impact of Jordanian public shareholding companies using lean accounting methods to reduce costs. *International Journal on Humanities & Social Sciences*, 55(1), 112 – 125.

Alves, r. F., Vieira Neto, J., De Mattos Nascimento, D. l., De Andrade, F. E., Tortorella, G. l., & Garza Reyes, J. A. (2022). Lean accounting: a structured literature review. *The TQM Journal*, 34(6), 1547–1571. https://doi.org/10.1108/ tQM-06-2021-0185.

Al-Zwaylif, I. M., & Taher, l. (2020). The effect of six sigma approach as a tool for strategic cost management on achieving competitive advantage: the case of Jordanian industrial public shareholding companies. *International Journal of Six Sigma and Competitive Advantage*, 12(2/3), 120–135. https://doi.org/10.1504/iJsscA.2020.110973

Amahi, F. U. (2023). Lean accounting adoption and financial performance of limited consumer manufacturing companies in Nigeria. *Journal of Xidian University*, 17(7), 349 – 367.

Azeem, M., Ahmed, M., Haider, S., &Sajjad, M. (2021). expanding competitive advantage through organizational culture, knowledge sharing and organizational innovation. *Technology in Society*, 66, 101635. https://doi. org/10.1016/j.techsoc.2021.101635.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99 – 120. https://doi.org/10.1177/014906391017001 08

Cecevic, B. N., & Djordjevic, M. (2020). Lean accounting and value stream costing for more efficient business processes. *Economic Themes*, 58(4), 573 – 592.

Chelangat, B. (2020). Quality management practices and organizational performance: A critical review of literature. *European Journal of Management and Marketing Research*, 5(2), 123 – 137.

Chuku, U., Onowu, J. C., & Shaka, E. S. (2023). Lean accounting and financial performance of listed consumer goods manufacturing companies in Nigeria. *RIK International Journal of Economics and Finance*, 9(1), 96 – 115.

Fabrizio, C. M., Kaczam, F., De Moura, G. L., Da Silva,l. S. C. V., Da Silva, W. V., &Da Veiga, C. P. (2022). Competitive advantage and dynamic capability in small and medium-sized enterprises: a systematic literature review and future research directions. *Review of Managerial Science*, 16(3), 617–648. https://doi.org/10.1007/s11846-021-00459-8

Farida, I., & Setiawan, D. (2022). Business strategies and competitive advantages: the role of performance and innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 163. https://doi.org/10.3390/joit mc8030163

Fullerton, R. R., & Kennedy, F. A., & Widener, S. K. (2023). Lean manufacturing and management accounting: Synergies for sustained competitive advantage. *Management Accounting Research*, 60, 100826. https://doi.org/10.1016/j.mar.2023.100826

Ghafel, H. J. (2024). The possibility of using the target costing technique to achieve competitive advantage – an applied study in the men's clothing factory in Najaf. *Iraqi Journal for Administrative Sciences,* 14(55), 277 – 294.

Goyal, P., & Bansal, S. (2023). Sustainable business strategies and competitive advantage: Evidence from emerging markets. *Journal of Cleaner Production*, 406, 136940. https://doi.org/10.1016/j.jclepro.2023.136940

Hamid, M. A., & Hadidin, N. F. (2024). Lean accounting and manufacturing performance: The contribution of lean management accounting practices. *International Journal of Research and Innovation in Social Sciences (IJRISS),* 8(19), 202 – 216. https://doi.org/10.47772/IJRISS.2024.ICAME2417

Ismael, A. Y. (2023). The impact of integration between lean accounting and just-in-time technique on cost reduction in modern sustainable manufacturing environments in Saudi companies. *Humanities and Social Sciences Letters,* 12(4), 858 – 874. https://doi.org/10.18488/73.v12i4.3918

Ismail, K. I. (2022). Value stream baste cost (VBC) and their impact on accounting measurement efficiency (Applied Study). *American Journal of Economics and Business Management*, 5(8). https://doi.org/10.31150/ajebm.v5i8.1438

Kaire, K. K., Kirui, E. K., & Ndurudi, G. M. (2023). Relationship between lean accounting and financial performance of commercial banks in Eldoret Town, Kenya. European *Journal of Economics and Financial Research*, 7(1), 189 – 207.

Kaldirim, Y. (2020). Performance measurement and reporting in lean manufacturing environment: Integration of balanced scorecard and lean accounting box score. *Journal of Business Research – Turk*, 12(2), 1098 – 1108.

Kraus, S., Clauss, T., Breier, M., & Jones, P. (2023). Strategic agility and innovation ecosystems as drivers of competitive advantage in turbulent environments. *Technological Forecasting and Social Change*, 189, 122385. https://doi.org/10.1016/j.techfore.2023.122385

Liu, C. H., Horng, J. S., Chou, S. F., Zhang, S. N., &Lin, J. Y. (2023). creating competitive advantage through entrepreneurial factors, collaboration and learning. *Management Decision*, 61(7), 1888–1911. https://doi.org/10.1108/ MD-07-2022-0914

Magboul, I., Jebreel, M., Shawtri, F., Qabajeh, M., Shanti, A., Alqudah, M., & Abu Huson, Y. (2024). Factors influencing accounting information system usage by oil companies & performance outcomes. *Cogent Business & Management,* 11(1), 2369211. https://doi.org/10.1080/23311975.2024.2369211

Makinde, O. G., Akinlabi, B. H., & Adefulu, A. D. (2023). Quality management practices and competitive advantages of selected food & beverage manufacturing firms in Lagos State, Nigeria. *European Journal of Human Resource Management,* 6(2), 160 – 176. https://oapub.org/soc/index.php/EJHRMS/article/download/1487/2065

Mchavi, N. D., & Ngwakwe, C.C. (2024). An assessment of the impact of target costing on the financial performance of South Africa State-owned entities. *Accounting and Management Journal*, 8(2), 62 – 83. https://doi.org/10.33086/amj.v8i2.6518

Momani, M. A. K. A., Alharahasheh, K. A., & Alqudah, M. (2023). Digital learning in sciences education: A literature review. *Cogent Education,* 10(2), 2277007. https://doi.org/10.1080/2331186X.2023.2277007

Nguyen, T. M. P., &Ngo, T. H. C. (2023). Determinants influencing the application of lean accounting: the case of Vietnamese garment firms. *Journal of Risk and Financial Management,* 16(5), 279. https://doi.org/10.3390/ jrfm16050279

Nielsen, H., Kristensen, T. B., & Grasso, l. (2023). Performance effects of value stream costing and accounting performance measures in lean production companies–accounting for time compression. *Production Planning & Control*, 34(7), 641–657. https://doi.org/10.1080/09537287.2021.1949506

Okorie, O., Russell, J., Cherrington, R., Fisher, O., &Charnley, F. (2023). Digital transformation and the circular economy: creating a competitive advantage from the transition towards net Zero Manufacturing. *Resources, Conservation and Recycling*, 189, 106756. https://doi.org/10.1016/j.resconrec.2022.106756

Oliveira, J., & Azevedo, S. G. (2022). Lean accounting and operational efficiency: Evidence from European manufacturing firms. *Journal of Cleaner Production*, 362, 132255. https://doi.org/10.1016/j.jclepro.2022.132255

Otieno, H., Ngari, C., & Ayuma, C. (2024). Target costing application and its impact on financial performance of manufacturing companies in North Rift Economic Bloc, Kenya. *International Journal of Research and Innovation in Social Science (IJRSS),* 8(1), 417 – 429.https://doi.org/10.47772/IJRISS.2024.801031

Peteraf, M. A. (1993). The cornerstone of competitive advantage: A resource-based view. *Strategic Management Journal,* 14(3), 179 – 191. https://doi.org/10.1002/smj.4250140303

Rabe, M. (2023). Lean management accounting: Elimination of waste in the accounting process. Journal of Sustainable Development. *Tourism and Logistics,* 2(3), 191 – 205. https://jsdtl.sciview.net/index.php/jsdti/article/view/191

Refif, K., & Alloune, M. L. (2024). The role of lean accounting methods in cost reduction: Exploratory study for a sample of industrial institutions in Blinda Stat. International *Journal of Professional Business Review,* 9(7), 01 – 33.

Rini, N., Kusuma, H. & Yulianto, A. (2023). Lean management, management control systems and competitive advantage: Evidence from Indonesian manufacturing firms. *Journal of Applied Accounting Research,* 24(3), 589 – 610. https://doi.org/10.11

Rumelt, R. P. (1987). *Theory, strategy and entrepreneurship*. In D. J. Teece (Ed.). The competitive challenge: Strategies for industrial innovation and renewal (pp. 137 – 158). Ballinger.

Shariati, A. A. A. (2021). Green supply chain management and the competitive advantage of Jordanian pharmaceutical industry. *Sustainability*, 13(23), 13315. https://doi.org/10.3390/su132313315

Shehadeh, M. A. & Al-Beshtawi, S. (2023). Impact of lean accounting on the value of the company at the Jordanian industrial companies. *International Review of Management and Marketing,* 13(3), 45 – 55. https://doi.org/10.32479/irmm.13681

Stronczek, A. (2023). Barriers of lean accounting implementation in polish enterprises: Dematel approach. *Sustainability*, 15(15), 12008. https://doi.org/10.3390/su151512008

Umelo, K., Ibanichuka, E., & Ironkwe, C. (2021). Strategic management accounting practices and return on equity in Nigerian manufacturing firms. *International Journal of Business and Law Research*, 9(2), 12 – 23. https://www.seahipublications.org/wp-content/upholds/2024/05/IJBLR-D-11-2021.PDF

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171 – 180. https://doi.org/10.1002/smj.4250050207

Yu, S., Lin, F., Zhao, g., Chen, J., Zhang, Z., & Zhang, H. (2023). Accurate carbon accounting based on industrial metabolism for the lean management of carbon emission. *Energy Reports*, 9, 3872–3880. https://doi.org/10.1016/j. egyr.2023.02.081

Zhang, X., chu, Z., ren, l., & Xing, J. (2023). Open innovation and sustainable competitive advantage: the role of organizational learning. *Technological Forecasting and Social Change*, 186, 122114. https://doi.org/10.1016/j.tech fore.2022.122114