

Effect of Lean Management on Corporate Performance

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Abstract: *The study examined lean management and corporate performance of manufacturing firms in Enugu State. The specific objectives of the study were to; determine the effects of value addition on corporate performance of selected manufacturing firms in Enugu State, ascertain the extent to which continuous improvement impact corporate performance of the selected manufacturing firms in Enugu State. The study adopted survey research design; data was collected by structured questionnaire in five point scale format. Data sources were through primary and secondary sources. The target population of the study was 334 members of the selected manufacturing firms in Enugu State. A sample size of 284 was derived from the application of Cochran's formulae for finite population, while Bowley's Proportional allocation was adopted to determine the allocation of questionnaire to each firm. A pilot study revealed a Cronbach's Alpha Coefficient of 0.891, $p < 0.5$. The four hypotheses were listed by regression at 0.05 level of significance. The findings revealed that to a large extent value addition have a significant effect on corporate performance ($r=0.473$; $p < 0.05$); continuous improvement have a significant effect on corporate performance ($r=0.506$; $p < 0.05$); standardization have a significant effect on corporate performance ($r=0.487$; $p < 0.05$) and workflow have a significant effect on corporate performance ($r=0.509$; $p < 0.05$). The study concluded that partial value added operations alone is not enough to drive organizational success; to succeed firm most continuously add value to their offerings so as to meet environmental demands. The study recommends that firms should focus on the whole value adding activities and ensure that suitability which is environmental friendly is put in place.*

Keywords: Lean Management, Corporate Performance, Value Addition, Continuous Improvement and Manufacturing

1.1 INTRODUCTION

Rapid technological advancements and an upsurge in violent competition around the world are both results of globalization. Due to the fierce competition on the world market, such products and services are offered in today's highly volatile business environment. Organizational managers should adopt international best practices and competitive strategies to meet these contemporary challenges, in order to maintain corporate performance that will ultimately result in competitive advantage.

Modern management is undergoing a rapid and apparent constant change that impacts all aspects of organizations and their managers. By implementing various strategic change tools for the improvement of the operations, organizations are attempting to become more decentralized and change their traditional policies (Kotter, 2007). Many organizations have begun embracing Lean as a tool to strengthen their position as they battle to meet the pressure of increasing competition and to remain competitive. It is argued that organizations could gain from the successful application of Lean management practices because it is one of the quality initiatives that they use to increase organizational performance by identifying waste and cutting costs from operations (Maleyeff, 2016).

Particularly, manufacturing organizations face significant challenges in maintaining and controlling inventory, managing and reducing overproduction, and possibly even eliminating waste (Satya, Elmira & Alec, 2017). These manufacturing companies are being forced by the intense competition to look for effective ways to enhance their production methods in order to remain competitive. According to Satya et al. (2017), the adoption of lean management will give business an advantage in managing operations and strategy and will help cut down on waste. Lean management stood out as a top global strategy for improving manufacturing processes, not just as an alternative to the conventional manufacturing process approach. Lean management practices, principles, and strategies are now the focus of existing literature instead of total quality management (TQM), business process reengineering (BPR), queueing theory (QT), just-in-time (JIT), benchmarking (BM), and Kaizen Model (KM). In order to produce excellent products, services, and customer satisfaction, lean management advocates eliminating all business processes from production systems that do not add value (Hira, Naveed, & Mirza, 2020). According to Hira et al., the primary objectives of lean management are to identify customer needs, produce value for customers, reduce waste, and make effective use of resources.

Lean manufacturing, also known as lean production, is a systematic approach developed in the Japanese manufacturing sector for reducing waste (muda) without sacrificing productivity, which can lead to issues. Lean also considers waste produced by workload inequity and excessive burden (muri) (mura). Any action or procedure that a customer would be willing to pay for is considered to have "value" when viewed from the viewpoint of the client who uses a product or service. The goal of lean management is to create a stable organization that is constantly evolving and that helps to find and fix real problems (Holweg, 2007; Kanbanize, 2019).

Lean strategy implementation has led to a 50% reduction in human effort, according to a 2019 study by Hira, Naveed, and Mirza on the impact of lean management on corporate performance. They further asserted that lean manufacturing processes reduced the amount of work required to invest in tools, manufacturing space, and product development. According to Amal and Umarali (2017), lean thinking and practice enables one to accomplish more with a smaller amount of resources, including people, tools, time, and space, bringing one step closer to giving e-customers what they require. Lean manufacturing is focused on cutting costs, minimizing or even eliminating waste, and making the best use of resources to achieve corporate performance.

Corporate performance is the timely and comprehensive accomplishment of an organization's objectives using its resources. These objectives are typically stated in terms of both financial and non-financial indicators, such as goodwill and sales growth, which serve as benchmarks for effective performance measurement (Okere, 2018). Lean management becomes a tool for achieving corporate performance as well as for fostering positive relationships between an organization and its workforce, suppliers, and customers. Additionally, it incorporates the demands of the customers³ into the production process, adding value for them.

Statement of the Problem

It is impossible to overstate the economic benefits of a thriving manufacturing sector for Enugu State and Nigeria as a whole. Given that manufacturing companies' primary responsibilities include the creation of jobs, the development of resources, the transfer of technology, and the production of high-quality goods and services that improve people's quality of life, their performance is essential to the economic health of every country. The growth and development of a country's economy are largely dependent on its manufacturing sector. Experts have argued that manufacturing companies must adopt lean strategies to promote efficiency and waste reduction in order to fulfill these key responsibilities and stay relevant in the face of fierce global competition.

The pitfalls in conventional approaches to value creation and continuous improvement are currently a problem for manufacturing companies in Nigeria, particularly those in the Enugu State. The traditional method of mass production that manufacturing companies in Nigeria typically use is inefficient at cutting waste, meeting customer needs with special features, appeasing different palates, and lowering inventory maintenance costs. Traditional methods' inability to address these issues has led to overproduction and resource waste, which have a detrimental effect on profitability. Commoditization and the production of identical goods are two additional socioeconomic effects of traditional techniques. Low sales among customers with distinctive tastes and characteristics are the result.

As a result, the study's main objective is to investigate how lean management affects the corporate performance of manufacturing firms in Enugu State.

The thrust of the study is assessing the effect of lean management on the corporate performance of manufacturing firms in Enugu State.

The specific objectives are to:

- i. determine the effects of value addition on corporate performance of selected manufacturing firms in Enugu State.
- ii. ascertain the extent to which continuous improvement impact corporate performance of the selected manufacturing firms in Enugu State.

The following hypotheses were formulated to guide the study.

H01: value addition does not have significant effects on corporate performance of the selected manufacturing firms in Enugu State.

H02: continuous improvement does not have significant impact on corporate performance of selected manufacturing firms in Enugu State.

This study emphasized the value of adopting the lean management philosophy, which places a strong emphasis on cutting waste. It distinguishes itself as the only alternative to conventional manufacturing process approaches and, at the same time, a globally best strategy for improving manufacturing processes in order to gain a competitive advantage.

This study would be useful to managers of organizations, people who work for organizations, researchers, stakeholders, and consultants.

Importantly, this study would help organization managers comprehend how quickly technology is developing and how this signals "the emergence of the knowledge society." Since knowledge and information are now the main drivers of organizational life, lean management is the cornerstone for the profitability and "sustainability" of organizations; because it brings order to the crucial duty of every organization to continuously improve operations, lean management is well-liked, and managers at the top levels use it to stay competitive.

REVIEW OF RELATED LITERATURE

Concept of Lean Management

Lean manufacturing has not yet been given a definition that is accepted by all. It has recently been described as a multidimensional production construct that takes into account a variety of management practices within an integrated socio-technical system intended

to reduce waste (Shah & Ward, 2017). Lean management must be viewed as both a culture and a set of technical tools and management philosophies that work together in the organization's best interests, as indicated by the terms "socio" and "technical" (DeMenezes, Wood & Gelade, 2010). To emphasize the goal of purposefully disposing of waste throughout the store network, the term "Lean management" developed from the "Just-In-Time (JIT) generation ideas," which were pioneered at Toyota in Japan and widely adopted during the 1990s (Jacobs, Chase & Aquilano, 2019). The phrase "Lean," which connotes cheapness, was actually coined by James Womack to describe the Toyota manufacturing framework in his book "The machine that changed the world" (Pieterse, Lourens, Louw, Murray & Van der Merwe, 2018).

Therefore, Lean is a management philosophy that focuses on identifying and eliminating waste throughout a production stream, as well as throughout the organisation as a whole and along its entire distribution network.

Lean and Organizational Life Cycle

On when to implement lean management in an organisation, there have been disagreements (Karim & Arif-Uz-Zaman, 2013). Understanding the various stages of an organization's growth and figuring out when lean management can be implemented are essential to the organization's success (Ovans, 2015). This is crucial because implementation can only happen when organisations have the ability to adapt their lean performance as they grow and learn. According to Cap and Gray (2016), the lean organisation life-cycle is based on a physical sciences concept that accepts progressing through the early stages of growth until the organisation is unable to sustain the growth. Organizations that are transitioning from one stage to another face various problems and auxiliary designs depending on their management requirements. Small businesses are frequently at the beginning of improvement and may be having difficulties, whereas big organisations are typically in the development phases of their life cycle. This demands a more immediate approach to the adoption of lean.

However, the majority of companies have achieved their development stance through lean improvements from the very beginning of their life cycles, for instance, companies like Toyota, which were empowered to have post-development improvements inside the company through the adoption of lean management that aided the attainment of cost-productivity balance, quality, adaptability, and time management. Lean standards connected to all organizational activities define a lean venture, and as a result, a broad development process toward lean undertaking needs to be adopted within the company. While implementing lean in the organization, organizational learning is essential (Smeds, 2014). Similar to this, Cap and Gray (2016) link management learning and an organization's focus on its success to the organization's life cycle. Understanding an organization's life cycle is essential for learning because it gives management the knowledge necessary to manage the organization's affairs. Each stage of the life cycle reveals insights into the characteristics of both small and large firms. According to Wu and Wee (2019), effective lean management implementation requires a deep understanding of the organization, which is only possible when management has learned from the organization's various growth stages.

Phases of Lean Management

System Operation in an Organization Hines, Holweg and Rich (2014) identify four phases of lean system operation.

Stage One

In this phase, single cells or mechanical production systems are the primary settings for the application of a single or a small number of recorded Lean tools and systems, such as the 5S (housekeeping) and Single Minute Exchange Dies (SMED for Changeover decrease). It is a typical stage that newly adopted Lean organizations go through (Bicheno & Holweg, 2019).

Stage Two

However, at stage two, lean is implemented on the shop floor, for instance, lean is only connected to the assembly area, which is less restricted than stage one, where lean is only connected to single cells or mechanical production systems.

Stage Three

Value stream is the third stage. At this point, lean organizations start to focus on the stream of significant value in the process value, as opposed to focusing on a single cell with the use of a single Lean device and system, or better yet, in the shop floor zone alone. This suggests that the organization is paying attention to supply chains, as well as the means by which customers are interested in a product or the objectives of the company.

Stage Four

The value framework is the fourth and final stage; this stage primarily reflects a learning and genuinely forgiving assembling organisation. According to Hines et al., the Lean maker transcends the value conversation with the customer at this dimension (2014). However, it also takes into account larger factors, such as the size of the organisation, mechanical components, and the available technology. These Lean usage phases will be used to evaluate the organisations conducting the contextual investigation's use of Lean.

Corporate Performance

Corporate performance is then defined as "a composite assessment of how well an organisation executes on its most important parameters, typically financial, market, and shareholder performance" (Wigmore & Rouse, 2015). According to Ted (2015), the term "corporate performance management" (CPM), which also goes by the names "business performance management" (BPM) or "enterprise performance management" (KPM), is used to refer to the methodologies and procedures that assist in managing an organization's success. Corporate performance is thought of as the collective achievements, successes, and failures of an organisation. Every business should consider CPM,

but those aiming to: Remodel their budget;

- i. Reduce costs;
- iii. Better align key performance indicators (KPIs);
- iv. Upgrade their organizational strategy; and
- v. Improve the financial planning process.

Corporate performance management is entirely concerned with the dissemination, balancing, and implementation of organizational strategy. This can be accomplished by developing frameworks for CPM, which are typically subsets of approaches to business intelligence (Ted, 2015). The best way to evaluate performance has been the subject of ongoing debate and scrutiny. According to authors, self-report measures of performance can be both subjective and objective (Taj, 2018). The objective measurements draw on the organization's previously released reports. This performance metric takes into account the organization's identified areas of ration variation. Performance as measured subjectively is more often self-reported. When there are no publicly available reports to gauge performance and when the organizations are unwilling to make their books public, this measure is employed.

However, the performance dimensions used in earlier research have drawn a lot of criticism (Taj, 2018). As an illustration, Hoogh et al. (2014) scrutinized the selection of performance measures in the majority of current organization performance studies for their limited perspective and focus on just a few emotional result measures. Learning from earlier performance studies may result in biased assessments of an organization's performance. The most popular model for measuring the effects of important organisational behaviour relies on followers' self-reports of the organization's goals and their satisfaction with the leadership's suitability. However, some researchers (Taj, 2018) argue that not all studies are biased by these effects of self-report, and meta-scientific findings suggest that self-report can still be relied upon to be accurate if the potential flaws are adequately addressed.

A few studies have used objective organizational results, such as net profit, sales growth, and the percentage of goals achieved in terms of sales performance. These measures of organizational performance have been criticized for being overly restrictive, leading to paradigm insufficiency while reducing potential errors or method difficulties. Because the relationship between initiative conduct and organizational result measures is frequently indirect, the situation is becoming increasingly complicated. The organization's performance dimensions are strongly dependent on ecological constraints and may reveal the organization's management, leading to measure deficiencies (Den Hartog, 2019).

Lean Management and Corporate Performance

A method known as lean manufacturing, which helps businesses perform better, is based on business principles and practices. This theory was first put forth by Taiichi Ono, a Toyota Motor Corporation employee. Through the optimization of every procedure used by an organization, this system seeks to boost performance. Lean manufacturing typically produces excellent outcomes for businesses. Lean management practices give organizations a competitive edge because they enable them to achieve superior performance through the reduction of waste and associated costs (Ohno, 2018). Industries are currently struggling with the issue of widespread production within their organizations, which leads to significant waste. Due to this, a lot of businesses are now dealing with issues like supply-chain waste and the responsibility to produce the right products for customer satisfaction. The adoption of lean production, a business initiative to reduce waste in manufacturing, is a necessity for procurement managers. By implementing the appropriate production systems and technologies, particularly with regard to product quality, shortening product design time, the reduction of wastage, improving end customer satisfaction, and inventory management, to this extent, this initiative leverages businesses to achieve long-term competitive advantages (Womack and Jones). Lean management is both a concept that can be applied at various levels and a commitment to continuous improvement that has a significant impact on the health, wealth, and competitiveness of an organisation. Lean management is a potent strategy for bringing together and integrating change initiatives that are currently underway in a business. It can solve serious organisational problems. Broad production systems used by companies historically made it challenging for them to increase productivity and, consequently, customer satisfaction (Bicheno, 2007). However, for the majority of businesses, implementing a lean production system is now essential and a standard procedure for maximising performance (Emiliani, 2016).

Value Addition and Corporate Performance

According to studies, corporate performance and sustainability are positively correlated. Value addition refers to the improvements a business makes to a product or service before making it available to customers (Heizer & Render, 2011). It could be viewed as an additional special feature included by a producer or company to raise the value of a good or service. Value added describes situations in which a company takes a product that might be viewed as homogeneous with few, if any, differences from that of a competitor and offers potential customers a feature or add-on that increases its perceived value. For instance, a business might give a generic product a brand name or make something in an innovative way. According to Heizer and Render (2011), enhancing the value of goods and services is crucial because it gives customers a reason to buy them, which boosts sales. The price of a good or service minus its production costs is called value added. Based on their perceived value, customers' willingness to pay determines the price. There are numerous ways to add or create value.

A value addition can raise the price or the worth of the product. A value-added feature might include providing one year of free support with a new computer, for instance. Additionally, people can add value to the services they provide by entering the workforce with advanced skills. Consumers can now choose from a wide variety of goods and services whenever they want. As a result,

businesses are always looking for ways to outdo one another in the marketplace. Finding out what customers truly value is essential for the company's product production, packaging, marketing, and delivery strategies (Heizer& Render, 2011). Everything we do either enhances or detracts from the value of the goods or services our business offers. Whether value is added is something that the customer decides. Waste is anything or anyone that does not add value. Simply put, value is something that a customer is willing to pay for. There is no value if a customer is not willing to pay for it. - Consider a manufacturing company that provides free 24-hour customer support for its products. In order to offer the best customer service, you should always have at least one knowledgeable technician on call to respond to inquiries from customers around-the-clock, seven days a week. On the other hand, your competitor only provides email support with a 48-hour response time guarantee, and they charge 5% less for their products than you do. You regularly lose a number of significant customers to your competitor as a result of their lower prices (Graphic Products, 2021).

Continuous Improvement and Corporate Performance

Continuous improvement, also referred to as Kaizen, is essentially an incremental improvement strategy that involves making small, regular improvements. It has a positive impact on sales growth (Duncan, 2019). It is predicated on the idea that a never-ending string of small adjustments can result in continuous improvement. There will always be a need and an opportunity to supplement such strategies and initiatives with ongoing small step changes, even in the face of enormous innovative improvement strategies. Processes are continuously audited and changed based on their sustainability, efficiency, and effectiveness in an ongoing effort to incrementally improve products, services, or processes over time (Duncan, 2019). Continuous improvement is viewed as a religion in Lean. Although it appears to be a straightforward task to complete, teams and leaders who are unfamiliar with process improvement techniques struggle to maintain it. To put this mindset into practise, you must have a clear understanding of what continuous improvement is, the guiding principles you must adhere to, and some of the best practises. If the phrase "continuous improvement" is not used in a specific context, it can sound very ambiguous. In a nutshell, it is the constant pursuit of excellence in everything you do. Continuous improvement is also referred to as Kaizen in lean management. Just after the Second World War ended, Japan is where the concept of kaizen first emerged. It gained a tonne of traction in the industry and served as one of the cornerstones in Toyota's transformation from a small car maker to the biggest automaker on the planet. Continuous improvement in the context of the Lean methodology aims to enhance every process in your business by emphasising the enhancement of the activities that produce the most value for your customers while eliminating as many waste activities as is practical.

According to a Lean framework's overarching goal, the process should be designed to enable the processing of a variety of goods or services in a continuous stream by eliminating or reducing bottlenecks, such as reducing areas of the process that are overburdened (Stevenson, 2009). This ensures a quick flow of work through the system by distributing the remaining task equally among workstations. Every workstation must be given enough time to complete their assigned tasks, but not enough time to match the process duration, which is frequently referred to as take time. Take time is the process duration necessary in a production framework to synchronise the pace of generation to the interest. It is derived from the German word Taktzeit, which means process duration (Webster, 2008).

Theoretical Reviews

Resource-Based View Theory

Wernerfelt was a major supporter of the resource-based view theory and one of the pioneers who helped other researchers in the field of strategic management build upon his work. The resource-based theory's two main fundamental mechanisms are as follows. Lower costs and product differentiation form the basis of the theory. The manufacturing companies that produce food rely on these elements as their structural foundation everywhere in the world. The business has a competitive advantage because it can lower costs and offer those products on the market (Wernerfelt, 1995).

The theory was born out of the need to explain how businesses can use their resources and competencies to achieve a reasonable competitive advantage. Organizations strive to improve in accordance with the available resources, which can be substantial (physical capital, such as hardware or physical innovation) as well as intangible (expertise, data, and learning). Similar to how resources are rare, imperfectly portable, superior, and non-substitutable in nature, the main goal of lean manufacturing is to eliminate a variety of waste and guarantee lower production costs (Conner, 2001; Barney, 1991).

Lewis argues further that resources (talent, marketing, and technical information) have value when they are authorised by procedures (technological practice, product advancement). As a result, these processes help the organisation learn and create new assets. In any case, the viability of any competitive advantage (lowering costs, item separation) depends on the barriers that prevent rival businesses from copying crucial assets (expertise). The theory provides a basis for the explanation of the variables that are the elements of both the internal and external components of an organisation in the context of this study. Hypotheses two and three were supported by the theory, necessitating an empirical evaluation.

Institutional Theory

The most influential study on contemporary institutional theory is Scott's (1995) social and foundational study. Institutional theory focused on how an organisation typically handles problems with quality administration and its processes for continuous improvement. According to the theory, organisations need to create an institution that promotes quality management and improvement due to the increasing exerting pressures they are facing (Ketokivi& Schroeder, 2004). Organizational isomorphism, which refers to strictly applying one firm's procedural powers to look like or mimic another firm that exists in the same operating environment, is the

central idea of institutional theory (DiMaggio & Powell, 1991). Coercive, regulating, and mimetic component are the three different types of management isomorphic drivers (DiMaggio and Powell, 2010). People with significant influence (such as customers, providers, or controllers) use coercive isomorphic methods to affect the decisions or actions of the organisation (Sharpe, 2011). Government agencies, for instance, can influence an organization's operations through coercion.

Ketokivi and Schroeder (2004) provided guidelines to support the claim. For instance, lean manufacturing is viewed through an institutional mimicry lens focal point mimickers attributed Toyota's success to its manufacturing system and subsequently tried to imitate the manufacturing system some time before the connection to financial performance was firmly established. Similar to how organizations copy one another through coercion, such as Motorola's Six Sigma or Toyota's Lean, which are frequently replicated across organizations One instance of the coercive component is the selection of ISO or HACCP by businesses that are motivated by requests from clients, suppliers, or controllers. This mystery was explained by (Snell, 1996), who wrote that managers experience great strain in maintaining quality and lean operations, whether doing so is intentional or not. This theory better explains how the continuous improvement component of lean management affects performance and supports the continuous improvement variable.

Empirical Reviews

The made references to the following empirical review:

In order to determine the applicability of the implementation of lean management among' selected manufacturing companies in Ogun State, Odeyinka, Oluwaseyi, and Akinyele (2018) conducted a study. Using a purposive sampling technique, 50 medium- and large-sized businesses were randomly chosen for the study. The study used a questionnaire with a Likertscale. Simple percentages were used in the study's analysis of the questionnaires. According to the study, Kaizen, Failure Mode Effect Analysis, and Just in Time were the most popular lean tools. The outcome also demonstrated the use of additional lean manufacturing tools, which were important to the study.

Onyelzugbe and Ike (2016) targeted towards ascertaining the influence of lean management on improving the performance of Oil and Gas firms in Nigeria. The study used a quantitative methodology and aimed to offer an empirical viewpoint to add to the literature. For oil and gas companies, the drop in oil prices brought about both new difficulties and opportunities. The study focused in particular on the connection between cellular production, one of these companies' lean production strategies, and service delivery. To test the hypothesis, the study used a descriptive design with correlation using Pearson Product Moment Correlation. According to the study, these companies' cellular production and service delivery are significantly positively correlated. In conclusion, the author recommends that lean production can be used to resolve severe organizational performance problems in the oil and gas industry in Rivers State of Nigeria.

Okpala (2013) carried out a survey on lean accounting and lean business philosophy in Nigeria using an exploratory approach. The goal of the study was to identify the lean accounting approach best suited for implementing the lean business philosophy in Nigerian manufacturing companies. Using a sample of 1,123 companies from the Nigerian stock exchange that were purposefully chosen for the study. The author discovered a strong connection between the lean business philosophy and lean accounting. According to the study, Nigerian lean management implementation is still minimal. The study's recommendations show that lean business implementation is urgently needed because it will benefit the lean business philosophy, which will inevitably have an impact on Nigerian society and the economy.

Keitany and Riwo-Abudho (2014) carried out their study on assessing lean production on organizational performance of flour producing company in Kenya. The study identified the elements of lean production, the impact of lean management on quality, and methods for minimising waste. The author used a questionnaire in a descriptive survey design. Simple percentages and bar charts were used to analyse the data. According to the study, management style significantly affects how lean management influences performance. The study comes to the conclusion that businesses should work to implement lean management practises.

Krisz-tma, David, Zsolt and Istvan, (2009) investigated lean management on business competitiveness. Case studies and empirical questionnaires were both used in the study's mixed method approach. The study found that organisations can become leaner through their workforce, which opens up new business opportunities. The study used a sample of 97 participants, and 83 of them were focused on enhancing the organization's business. The study discovered that operational measures are impacted by lean tools and methods.

Manimay (2012) investigated the lean manufacturing performance among Indian Manufacturing firms. The goal of the study was to evaluate the state of lean adoption in the nation. A questionnaire survey was used to collect information from 79 of the 400 randomly chosen companies for the study. The study was quantitative, used an empirical methodology, and was only focused on businesses that were actively operating. Lean management is a multi-dimensional concept, according to the study. The study also shows that 80 percent of the participating businesses have adopted some aspects of lean. However, it has increased their productivity, lead-time, and operational metrics.

Rosemary, Frances and Sally (2014) study was on assessing on how lean must be adopted as a holistic business strategy, rather than an activity isolated in operations. The emphasis was on how lean MAP can assist operations staff with internal decision-making as well as operations executives' and business leaders' goal of improving lean operations performance as part of a comprehensive lean enterprise strategy. A quantitative methodology was used in the study. Data for the study survey came from 244 active manufacturing companies in the US. Statistical equation modelling was used for the data analysis. The study discovered a direct correlation between lean manufacturing practises and operations performance. More importantly, lean manufacturing techniques also indirectly impact how well operations perform

METHODOLOGY

The study used a survey design approach. The study's design, which entails gathering information about a target population from a sample and extrapolating its findings to the entire population, led researchers to choose this approach. This approach is deemed appropriate because it reveals, interprets, integrates, and identifies implications and relationships for the data. The 4 registered manufacturing companies with the Manufacturers Association of Nigeria in Enugu State, Nigeria, make up the study's population. These manufacturing companies' names, addresses, and primary businesses are on file with the Manufacturing Association of Nigeria, Enugu Branch. The four businesses were chosen at random from the population using a simple random sampling technique. The 4 selected manufacturing companies in Enugu state—Emenite Nigeria Ltd, Juhel Nigeria Ltd, Innoson Nigeria Ltd, and Dezern Nigeria Ltd employed a total of 324 employees, including top/middle management and lower management staff. Enugu, the capital of Enugu State and home to 17 local governments, serves as the location of this study. To make sure that the sample is representative-of each of the group proportionate stratified random sampling was employed to study 5% of the population which is approximately four manufacturing organizations. This makes the proportion of the sample from each firm to conform to the pattern of the population and increase the accuracy of the study. Formula adopted in determining the sample size for this study was Cochran's formula. This formula is adopted because the population is finite.

Thus, this is shown mathematically

$$n = \frac{Z^2 pq}{\frac{e^2}{1 + (Z^2 p - 1)} + \frac{e^2}{N}}$$

Where n - sample size

N = population of the study

Z = selected critical value of desired confidence level (99% = 2.58)

E = desired level of precision ($\pm 5\%$ or 0.05)

p = estimated proportion of an attribute that is present in the population (0.5)

q = 1-p (1-0.5 = 0.5)

To calculate n we have:

$$n = \frac{(2.58)^2 (0.5) (0.5)}{(0.05)^2} \cdot \frac{1 + (2.58)^2 (0.5) (0.5) - 1}{(0.05)^2} \cdot \frac{1}{324}$$

$$n = \frac{666}{1 + \frac{666-1}{324}}$$

$$n = \frac{666}{1 + \frac{665}{324}} = \frac{666}{3.052469}$$

$$n = 218.184033967 = 218$$

Thus, 218 represent the sample size, Bowley proportional allocation statistical techniques was used to determine the sample for each firm.

The formula is given below:

$$N_h = \frac{n N_h}{N}$$

Where:

nh - Number of units allocated to each public organization staff category

Nh - Number of employee in the public organization stratum in the population

n = Sample Size

N = Total population size under study

Table 1: Sample Size Distribution

S/N	Names of Manufacturing Firms	Population	Sample
1.	Innoson Group Nig Ltd	'94	61
2	EmeniteNig Ltd	SI	55
3	JuhelNig Ltd	113	76
4	DezernNig. Ltd	36	25
	Total	324	218

Source: Field Survey, 2022.

The consistency of a research tool's results across trials is a measure of its reliability. The Cronbach Alpha Coefficient was used to determine the instrument's internal consistency. If it rises above 0.70, the Cronbach Alpha Coefficient is regarded as reliable. The instrument was altered after the pre-test in order to guarantee reliability before being used on the study's chosen samples. The pilot study found that the study's instrument had a Cronbach Alpha Coefficient of 0.891, $p < 0.5$. The pilot study's findings show that the instrument is trustworthy. See figure 3.1 in appendix II, which displays the Cronbach Alpha Coefficient demonstrating the Reliability of the Research Instrument. Descriptive and inferential statistics were used to analyse the completed copies of the questionnaire after they had been gathered, compiled, coded, and collected. To illustrate the percentage of occurrence in each category of a given variable, the data were presented in frequency distribution tables. Because regression analysis requires a dependent and an independent variable, it was used to examine the hypotheses. Data analysis was carried out using the computer programme SPSS Version 25. Reject H_0 if the p-value in any of the results is greater than the critical value at 0.05 level of significance. Do not reject otherwise

RESULTS

Demographic Data of the respondents that participated in the survey

Table 2: Sex of the Respondents

	Frequency	Percent Percent	Valid Percent	Cumulative
Valid Male	112	63	63	37
Female	66	37	37	100.0
Total	178	100.0	100.0	

Source: Field Survey, 2022

Table 2 shows that 112(63%) of the respondents were males while 66(37%) were female that participated in this study. The result indicates that the number of males is higher than the number of females in the manufacturing sector that was studied.

Table 3: How long have you been a staff of the organization?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Less than 5 years	43	24.2	24.2	24.2
6-10 years	61	34.3	34.3	58.4
10 years and above	74	41.6	41.6	100.0
Total	178	100.0	100.0	

Source: Field Survey, 2022

Table 3 displays that 43(24.2%) of the staff of the selected manufacturing firms were less than 5 years. 61(34.3%) of them Were between 6-10 years while those with 10 years and above were 74(41.6%) that took part in the survey. This implies that staff of the selected manufacturing firms that have worked for 10 years and above had highest.

Table 4: What category of staff are you?

	Frequency	Percent	Valid Percent	Cumulative Percent
Top/middle level -manager	97	54.5	54.5	54.5
Lower level manager	81	45.5	45.5	100.0
Total	178	100.0	100.0	

Source: Field Survey, 2022

Table 4 shows the managerial level of the respondents that participated in the study in which 97(54.5%) were Top/middle level managers, while 81(45.5%) were lower level managers that took part in the survey.

Table 5: What is your highest academic qualification?

	Frequency	Percent	Valid Percent	Cumulative Percent
OND/NCE	62	34.8	34.8	34.8
BSC/HND	87	48.9	48.9	83.7
MBA/MSC	29	16.3	16.3	100.0
Total	178	100.0	100.0	

Source: Field Survey, 2021

Table 5 indicates that 62(34.8%) of the respondents were OND/NCE holders, the BSC/HND were 87(48.8%), while the MBA/MSC holders were 29(16.3%) that participated in the survey. B.Sc./HND has the highest frequency followed by OND/NCE.

Test of Hypotheses

Model Summary on continuous improvement influence on Corporate Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.506 ^a	.256	.252	2.83230

a. Predictors: (Constant), Continuous improvement

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.545	1.435		3.167	.002
	Continuous improvement	.675	.087	.506	7.779	.000

Hypothesis One

H01: value addition does not have a significant effect on the corporate performance of the selected manufacturing firms in Enugu State.

The results in appendix I show the regression result on hypothesis one. The mean value of the variables indicates a good spread of the data. The overall model (value addition) was evaluated in terms of its ability to predict corporate performance of manufacturing firms. The R= .473, R² .224, adjusted R² .220, SD = 2.530. The relationship coefficient between the predictor (value addition) and the criterion variable (corporate performance) was 473. This means value addition has 47.3% shared significant relationship with corporate performance of manufacturing firms. The predictor (value addition) accounted for 22.4% of the

variance of sustainability. This means that 22.4% of the variance in sustainability is as a result of the independent variable (value addition). The model is fit given the significant F-statistics indicates (50.829, $p < 0.05$) and the p-value is less than 0.05. Hence, the alternate hypothesis is accepted. The coefficient table (table 4.4.1c) that shows the standardized coefficient beta value indicates that value addition makes 47.3% contribution in explaining corporate performance in manufacturing firms. Hence, this is accepted.

Hypothesis Two

H02: continuous improvement does not have significant positive effect on corporate performance of the selected manufacturing firms in Enugu State.

The tables in appendix II show the regression result on hypothesis two. The mean value of the variables indicates a good spread of the data. The overall model (continuous improvement) was evaluated in terms of its ability to predict corporate performance of manufacturing firms. The $R = .506$, $R^2 = .256$, adjusted $R^2 = .252$, $SD = 2,832$. The relationship coefficient between the predictor (continuous improvement) and the criterion variable (corporate performance) was .506. This means continuous improvement has 50.6% shared significant relationship on sales growth of manufacturing firms. The predictor (continuous improvement) accounted for 25.6% of the variance of sales growth. This means that 25.6% of the variance in corporate performance is as a result of the independent variable (continuous improvement). The model is fit given the significant F-statistics indicates (60.506, $p < 0.05$) and the p-value is less than 0.05. Hence, the alternate hypothesis is accepted. The coefficient table (table 4.4.2c) shows the standardized coefficient beta value indicates that continuous improvement makes 50.6% contribution in explaining corporate performance in manufacturing firms. Hence, H_1 is accepted.

Discussion of Findings

The hypothesis one on value addition was found to have a positive significant influence on sustainability. The result indicates that value addition has 47.3% shared significant relationship with sustainability of manufacturing firms. The result showed that 22.4% of the changes in sustainability in the firms used for the study is as a result of value addition to their product and services offered to customers. The analysis showed that value addition makes 47.3% contribution in explaining sustainability in manufacturing firms. Hence, given the p-value is less than 0.05, it means the hypothesis was rejected and the alternate accepted, thus indicating that value addition has a positive significant influence on sustainability. This finding agrees with the study of Onyeizugbe and Ike (2016). Similarly, the study of Onwughalu, Okeke, and Henry (2017) that was on lean production and its effect on manufacturing organization was supported with the findings of this study.

Further, hypothesis two that assessed continuous improvement as a proxy of lean management indicated that it has positive significant influence on sales growth of manufacturing firms. The result indicates that continuous improvement has 50.6% shared significant relationship on sales growth of manufacturing firms. Further, it indicated that continuous improvement accounted for 25.6% of the variance of corporate performance, which means that 25.6% of possible changes in sales growth are as a result of continuous improvement. The analysis showed that continuous improvement makes 50.6% contribution in explaining corporate performance in manufacturing firms. Hence, given the p-value is less than the threshold of 0.05, it means the hypothesis is rejected, which means that continuous improvement has significant relationship on sales growth of manufacturing firms. The finding supports the finding of Okpala (2013) that carried out a survey on lean accounting and lean business philosophy in Nigeria using an exploratory approach. Similarly, the finding agrees with the study of Keitany and RiwoAbudho, (2014) that assessed lean production on organizational performance of flour producing company in Kenya.

Conclusion

Value by itself cannot propel an organization to success; instead, businesses must constantly improve their products' value in order to satisfy customer needs and environmental requirements. To increase sales growth, businesses must continuously improve the products and services they provide. When people and materials are well organized, it frees up space for value addition, saves time and money, improves manufacturing service and boost corporate performance. We draw the conclusion that lean management had a significant impact on the corporate performance of manufacturing firms in Enugu, Nigeria, based on the findings.

Recommendations

The following suggestions are made in light of the findings previously mentioned:

1. Businesses should concentrate on activities that add value and make sure that sustainability and environmental friendliness are implemented;
2. Organizations must be aware of the dynamic business environment, the constantly evolving consumer tastes and fashion trends, and the need for a culture of continuous improvement.

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