Innovations

Effect of lean management on corporate performance of selected manufacturing firms in Enugu state, South East, Nigeria

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Abstract
This study sought to ascertain effect of lean management on corporate performance of selected manufacturing firms in Enugu State, Nigeria. Data were collected from 284 copies of valid structured questionnaire from the application of Cochran's formula for finite population while Bowley's proportional allocation method was adopted to determine the allocation of questionnaire to each firm. The study reveals that value alone is not enough to drive organisation to success, to succeed firms must continuously add value to their offerings so as to meet environmental demands. This study extends on existing literature by providing empirical evidence showing the effect of lean management on corporate performance of manufacturing firms. The result of this study suggests that firms should focus on those value adding activities and ensure that sustainability which is environment friendly is put in practice.

Keywords: *1.Lean Management, 2.Corporate Performance, 3.Value Addition, 4.Standardisation*

Introduction

Organisations are trying to be more decentralised and transforming their traditional policies by implementing different strategic change tools for the improvement of the operations. Organisations could benefit from successful implementation of Lean management practices. Lean is one of the quality initiatives that organisations apply to improve organisational performance by identifying waste and reducing costs from operations. In 2015, Toyota lead in global auto sales, sells 10.15m cars, compared to 9.93m for Volkswagen and 9.8m for Chevrolet. Camry was top-selling -US passenger car in 2003 and Corolla was the top selling small car in the world (Mohammed, 2016).

Lean manufacturing is centred on cost reduction, waste minimisation or possible elimination and optimal use of materials for corporate performance. Amal and Umarali (2017) posit that lean thinking and practice provides a way to do more and more with less - less human effort, less equipment, less time, less space.

Lean manufacturing is very new to companies in South East region of Nigeria. The report by Manufacturing Association of Nigeria (MAN) that in three years (2015-2017), 196 manufacturing firms were shut down. 20% of the existing ones are battling for survival due to harsh business environment (Hira, Naveed and Mirza, 2015). The Nigeria manufacturing industry is accustomed with mass production. But where there are separate orders or varied demand with special features, mass production comes short. This has been the bane of many manufacturing firms in South-East, Nigeria. Sunnews (2017) contributes that Nigerian manufacturing firms are faced with a lot of challenges.

The ever increasing expenses on essential organizational needs such as cost on maintenance of machines, human resource training and development imports expenditure, electricity generation, brought about high cost of manufacturing, rise in price of finished products, and resultant dwindling demand by consumers. This condition has reduced manufacturing sector to a risk of quick wind up (Adegbie & Adeniji, 2014).

Lean management is seen as a tool to be adopted in actualizing improved corporate performance and competitive advantage. The development of manufacturing organizations is inhibited by many factors, some of them include: high interest rate, inconsistent government policies, company income tax, lack of access to affordable credit, weak corporate governance/poor management skills, low human capital development.

Despite the implementation of lean strategies by some manufacturing firms in the South East, Nigeria, specifically Innoson Group Nig. Ltd., Ernenite Nig. Ltd., Juhel Nig. Ltd., and Dezern Nig. Ltd., majority of studies on its effect of corporate performance so far were conducted in developed economies. The implication is that effect of lean management on performance of manufacturing firms in South-East, Nigeria remains largely unexplored. Thus, the study' focuses on examining the effect of lean management on corporate performance of selected manufacturing firms in Enugu State.

Literature Review

Concept of Lean Management

Today, extant literature has shifted focus from total quality management (TQM), business process reengineering (BPR), Queuing theory (QT), Just in time (JIT), Benchmarking (BM), and Kaizen Model (KM) to lean management practices, principles and strategies. Lean management believes in eliminating all the business processes that are not used to add value-in the production systems, for the attainment of excellentproduct, services (Hira, Naveed, &Mirza, 2015) and customer satisfaction. Hira, Naveed, and Mirza, (2015) posit that the core goal of lean management is the identification of customer needs, creation of value for customer, through waste reduction and effective utilization of materials.

The term Lean management advanced from the-'Just-In-Time (JIT) generation ideas, which were spearheaded at Toyota in Japan and was generally embraced during the 1990s to stress the objective of deliberately disposing of waste all through the store network (Jacobs, Chase and Aquilano, 2009). The expression "Lean"-with its reference to cheapness, was really instituted by James Womack in his book titled "The machine that changed the world" to describe the Toyota fabricating framework (Pieterse, Lourens, Louw, Murray and Van der Merwe, 2010).

Lean management is an approach to production that takes into cognizance an array of management practices within an integrated socio-technical system. The terms 'socio' and 'technical' indicate the need to see lean management as both a culture, and as a technical tools and management philosophies (Singh, Garg, Sharraan & Grewal, 2010).

Sawhney and Chason (2005) opine that Lean management usage in an organisation is not constrained to the

manufacturing sector alone, as it can be useful in the health sector, banking and general service industry, as there are instances of fruitful Lean usage in the banking industry most especially in developing economies. In the perspective of Schroeder (2008) the Japanese, attribute lean, management to an absence of waste or effort directed towards developing an antipathy for waste. Subsequently, Lean is a management concept concentrated on recognizing and taking out waste all through a production stream, broadening inside the organisation, as well as along its whole distribution network.

Corporate Performance

Corporate performance management (CPM) is an "umbrella term" used to describe the methodologies and processes that help you manage the success of an organization. CPM is important for every company, but especially those looking to remodel their budget or reduce costs (Wigmore & Rouse, 2015 and Ted, 2015).

Conceptual Model

The conceptual model below shows the relationship between lean management and corporate performance of the study.

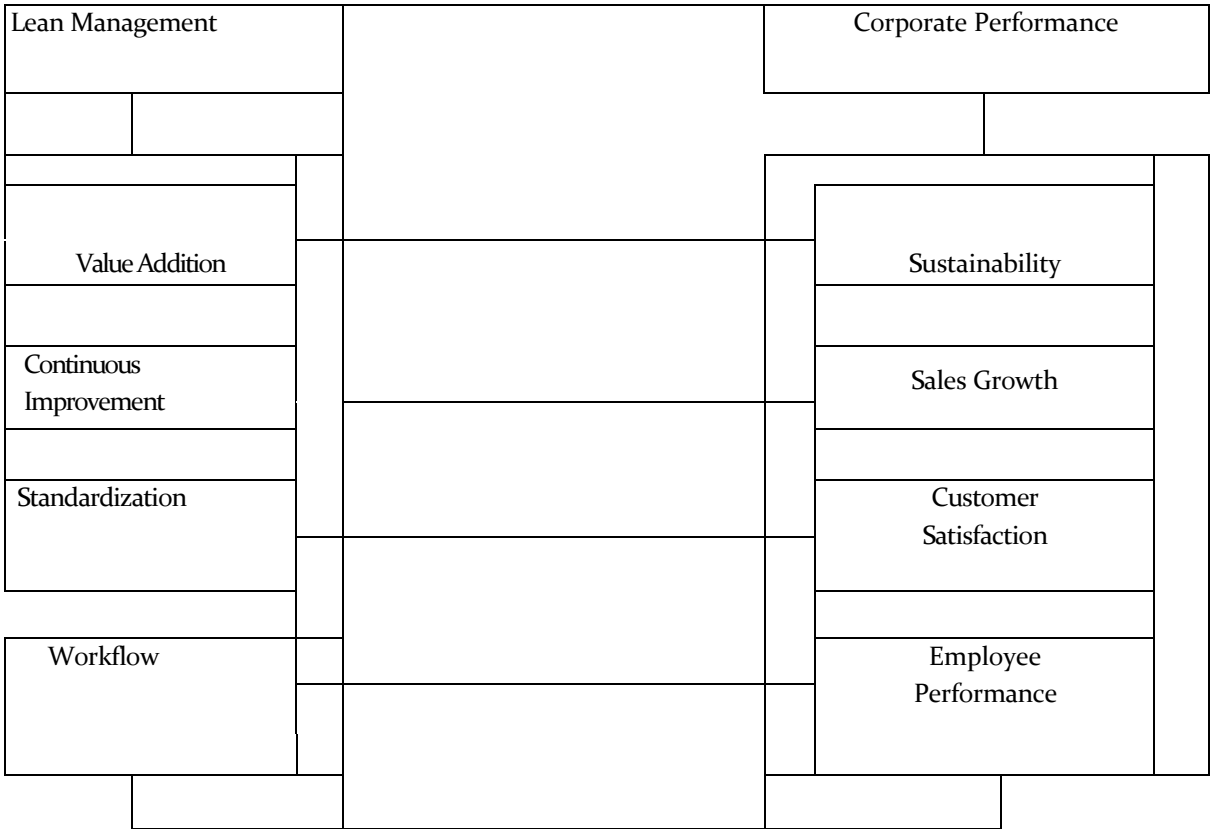

Figure 2.1: Conceptual Model on the Study variables

Source: Researcher's Conceptualization

The independent variable in this study is lean management. The proxies are value addition, continuous improvement, standardization and workflow, which were adopted from Herzog and Tonchia (2014). On the other hand, the dependent variable for this study is corporate performance. The measures of corporate performance are value addition, profitability, sales growth and employee performance. The measures were adopted from Sanchez and Perez (2001).

Theoretical Framework

The contingency theory looks at how a firm could accomplish better and more competent operational performance by considering that there exist a fit in both the internal and external components of that makes the organisation. Size of the organisation does make a difference in a few different ways. Initial, a more elevated amount of manufacturing performance was found in bigger firms contrasted with, littler firms (Shah & Ward, 2003).

Contingency theory provides a basis for assessing the variables of the study and identifying the variable that underlies lean management in manufacturing firms (Davies and Kochhar, 2002). Organisations are not closed frameworks and are always presented. To possibility factors that ought to be considered at the season of picking their assembling systems (Schoonhoven, 1981).

Empirical Review

Lean production can be used to resolve severe organizational performance problems in the oil and gas industry in Rivers State of Nigeria (Onyelzugbe & Ike, 2016). The study found that there is a significant positive relationship between cellular production and service delivery of these companies. The study adopted a quantitative approach to the study and sought to provide an empirical perspective.

A study by Onwughalu, Okekeke, and Henry (2017) on lean production and its effect on manufacturing organisation took an empirical perspective to the study. It relied on data from questionnaires surveys from selected managers from selected production units. The authors found that lean management implementation have positive significant relationship with reduced variations associated with process time, demand and suppliers.

Keitany and Riwo-Abudho (2014) studied the effect of lean production on organisational performance of flour producing company in Kenya. They found that management style has significant effect on the influence of lean management on performance. The study concludes that organisations should make efforts towards adopting lean management in their operation.

Methodology

Study focused on some selected manufacturing firms such as Emenite Nigeria Ltd, Juhel Nigeria Ltd and Innoson Nigeria Ltd. The primary data was gotten from 218questionnaire(s) dispatched to various respondents to herring there view on the hypothesis sub-questions raised.

All items were assessed on a five point likert scale, ranging from 1-5 (Strongly Disagree to Strongly Agree). Cronbach Alpha coefficient of 0.891, $p<0.5$ was used for estimating the reliability of the questionnaire. Favourable reliable scores were obtained from all the items since all values were above the coefficient value of 0.6, exceeding the common threshold of Cronbach Alpha value recommended by Malhotra (2004). The distributed copies of questionnaire were 218 in line with the sample size of the study and as indicated from the table 4.1.1. 178(82%) copies of distributed questionnaire were completely filled and returned, 22(10%) copies were not properly filled but returned, and 18(8%) copies were not returned. Subsequent analysis was carried out using the 178 copies of the instrument returned given a reasonable return rate of 82%.

Research Hypotheses

The following hypotheses are formulated to guide the study.

i. To what degree does value addition contribute to sustainability of the selected manufacturing firms in South-East Region of Nigeria?
ii. To what extent does continuous improvement affect sales growth of the selected manufacturing firms in South-East Region of Nigeria?

Table 3a: Model Summary on value addition influence on sustainability

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.473[a]	.224	.220	2.53090

a. Predictors: (Constant), Value addition Job design.
b. Source: Authors' computation, 2022

Table 3b: ANOVA on value addition influence on sustainability

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	325.583	1	325.583	50.829	.000
	Residual	1127.360	176	6.405		
	Total	1452,944	177			

a. Dependent Variable: Sustainability
b. Predictors: (Constant), Value addition
Source: Authors' computation, 2022.

Table 3c; Coefficients on value addition influence on sustainability

		Unstandardized Coefficients		Standardized Coefficients		Si
Model		B	Std. Error	Beta	T	
1	(Constant) Value addition	7.481 .533	1.233 .075	.473	6.067 7.129	.0 .0

a. Dependent Variable: Sustainability
b. Source: Authors' computation, 2022.

Hypothesis One

To a large degree value addition has a significant effect on the sustainability of the selected manufacturing firms in Enugu State.

The results in table 3a - 3c 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 sustainability of manufacturing firms. The R= .473, R^ .224, adjusted R^.220, SD = 2.530. The relationship coefficient between the predictor (value addition) and the criterion variable (sustainability) was 473. This means value addition has 47.3% shared significant relationship with sustainability 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 sustainability in manufacturing firms. Hence, Hi is accepted.

Table 4 a: Model Summary on continuous improvement influence on sales growth

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

a. Predictors: (Constant), Continuous improvement
Source: Authors' computation, 2022.

Table 4.b: ANOVA on continuous improvement influence on sales growth

Model		Sum of Squares	d.f	Mean Square	F	Sig.
1	Regression	485.37?	1	485.377'	60.506	.003[b]
	Residual	1411.859	176.	8.022		
	Total	1897.236	177			

a. Dependent Variable: Sales Growth
b. Predictors: (Constant), Continuous improvement
Source: Authors' computation, 2022.

Table 4 c: Coefficients on continuous improvement influence on sales growth

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

a. Dependent Variable: Sales Growth
Source: Authors' computation, 2022.

Hypothesis Two

Continuous improvement has a significant positive effect on sales growth of the selected manufacturing firms in Enugu State.

The tables 4a - 4c 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 sales growth 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 (sales growth) 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 sales growth 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 sales growth in manufacturing firms. Hence, Hi is accepted.

Discussion of findings

Based on the foregoing, findings therefore revealed that all the variables observed such as value added, and continuous improvement are good fit of the study and, all have positive statistical significant relationship on corporate performance such as sustainability and sales growth. This implies that effective lean management has impact on corporate performance. 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 organisation was supported with the findings of this study. Also, finding agrees with the study of Keitany and RiwoAbudho, (2014) that assessed lean production on organisational performance of flour producing company in Kenya.

Conclusion and Recommendations

Based on the findings, the study concludes that lean management has impact on corporate performance. Therefore, value alone is not enough to drive organization to success, to succeed firms must continuously add value to their offerings so as to meet environmental demands. There is need for continuous improvement both in the products and services firms offer in order to enhance sales growth. In view of the findings earlier stated, the following recommendations are made:

1. Firms should focus on those value adding activities and ensure that sustainability which is environment friendly is put in practice;
2. Organisation must to be mindful of the dynamic business environment, the ever changing tastes and styles of customers, a culture of continuous improvement is prerequisite for sales growth
3. Standardization is crucial to production process and it leads to customer satisfaction, we recommend organization should emphasis on standardization, as it provides improvement on customer satisfaction;

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