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## Conceptual Issues to Relevancy of Adopting Lean Production Approach in Nigeria Manufacturing Companies

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### Abstract

The paper aim to investigate lean production approach in Nigeria manufacturing sector. It is imperative to look into the relevance of adopting lean production in the manufacturing sector and how lean practices influence performance. Therefore, the study further reviews some relevant issues in the aspect of lean production practices in manufacturing companies and the acceptance of this aspect to help to meet organizational performance. Based on this analysis, the study applied a contemporary systematic review of literature from lean production as a methodical approach for the study using various books and selected articles from journals. The study further drawn some conclusions on the importance of lean production in relation to productivity in the manufacturing industry. The findings from the conceptual review show that there is no dissension in adopting lean production in the manufacturing sector; the acceptance or approval of lean practices will provide the desired support and quality that are important to improved performance in manufacturing companies. The study argues that the manufacturing sector will have control over waste minimization and cost reduction that will meet better quality and improved performance. Further, findings show that the manufacturing sector should accept the variant of lean production if performance improvement is to be achieved through adaptation in the manufacturing sector. Therefore, this review serves as a resource for researchers and lean managers at a fundamental level to contribute to the input and implementation of lean approaches. Future studies need to establish the empirical relationship or a quantitative approach between the various dimension of lean by testing hypotheses on the lean-approach. The model can be used to measure the adoption of lean production and the level of performance improvement in the context of pure service. This, implications are discussed in the study.

**Keywords:** Lean Manufacturing, Lean Practices, Performance Measurement, Manufacturing Companies, Literature Review, Nigeria.

### Introduction

Nigeria is gradually setting off as a destination for manufactured goods in the global scene due to the viability of the marketing prospect in Africa. Manufacturing companies have not

only presented abundance of opportunities for the Nigerian economy but has presented Nigeria with the opportunity to heighten local and international competition as well as creating an international hub for manufacturers and businesses being the largest economy in Africa (Okocha & Daud, 2020). However, to endure competitive and fierce in the contemporary market – the manufacturing companies essentially encounter some issues. These issues are to make better the performance and regulations of manufacturing aspect, thus to improve the supply chain performance through various strategies (Panwar et al., 2018). Several studies have recounted that the issue of service quality improvement is another important aspect to be considered for a manufacturing sector to attain competitiveness in a dynamic market to satisfy its customers (Ogiemwonyi et al., 2015; Ogiemwonyi et al., 2020; Ogiemwonyi et al., 2020; Othman et al., 2020). Furthermore, inventory turnover has remained low in the Nigerian economic industries (Okocha & Daud, 2020), and many other economies manufacturing (Othman et al., 2020). Thus, expenses are stagnated for a lengthy/extended period in the manufacturing sector. Soaring numbers of defectives, inadequacies, persistent breakdown, and population increase, vis-à-vis manufacturing equipment related issues among others are visible in the Nigeria manufacturing sector. Subsequently, due to the feature of manufacturing aspect, the consumption of energy is high in the sector (Wesseling et al., 2017). This aspect is aggravated with inflated energy usage in Nigeria. That being so, the manufacturing businesses are driving to uncover a way to decrease consumption of energy for operational quality (Ogiemwonyi et al., 2020).

Following these aspects, the Nigerian manufacturing sector needs to restructure its operations and exert a desire for problem solving on the quality to compete internationally and expand the capacity of its share and profit. Furthermore, the need to replace outdated methodologies with new approaches such as lean production and flexible manufacturing has been argued and is being observed in the manufacturing sector (Okocha & Daud, 2020). Several studies have emphasized that lean production help to targets the elimination of non-value-added aspect of the process by reducing manufacturing waste (Tortorella et al., 2020). While some studies further argued that lean production help to improve the manufacturing process and customer service (Antony et al., 2020). Management studies in manufacturing sector state that lean production and flexible manufacturing is the most effective strategies in modern management tool to rectify the contemporary issue (Okocha & Daud, 2020; Gupta & Sharma, 2016). Subsequently, in adopting lean approaches and flexible manufacturing can also present some sustainable outcomes Helleno et al (2017), and these aspects can contribute to operational and performance on the improvement with environmental concern or conduct (Henao et al., 2019).

In Nigeria, there is compelling affirmation in the acceptance of lean production Onwughalu et al (2017), and flexible manufacturing Idowu (2020) practices. Nevertheless, the measure of acceptance is still unmotivated and not encouraging with regards to the measure of performance in the aspect of production (Okocha & Daud, 2020). These misgivings lead to the investigation of these practices in Nigeria. Some studies argued that the acceptance of lean will enhance productivity in corporate sector (Jasti et al., 2000). While in the same manufacturing sector, some studies perceived flexible manufacturing and lean production are less significant Small et al., (2011), in comparison with other initiatives such as financial performance (Galeazzo, 2021; Hofer et al., 2012). Another compelling issue is that the implementation of the lean production process is limited in Nigeria and only a few studies examined has focused on specific process sector such as oil and gas Uzochukwu & Ossai

(2016), building industry Babalola et al (2018), SMEs Belhadi et al (2018). Similarly, there are no prior studies on the implementation of these aspects on manufacturing process in manufacturing companies in Nigeria with the scope confirming to a specific aspect of the economic sector and these processes are highlighted by Okocha & Daud (2020). Therefore, the conceptual review confirms that limited study has focused on issues to relevancy of adopting of these approaches in cooperate sector most especially in Nigeria context, on manufacturing process, with regards to issues of performance of manufacturing companies in Nigeria.

Therefore, the study objective is stated following the perspective discussed;

- **RO1.** To examine the conceptual issues in the adoption of lean production in manufacturing companies.
- **RO2.** To examine the impact of lean production in the manufacturing sector.
- **RO3.** To examine lean production on performance improvement in the manufacturing sector.

In line with the research objective highlighted above, the following section discussed the background of the study as it examines various aspects of the lean production approach in the manufacturing sector.

## **Background of Literature Review**

### **Lean Practices in Manufacturing Sector**

Lean production manufacturing is the process that aims to eliminate unnecessary waste and maintain continuous flow of manufacturing to solve problems through ceaseless refinement and development of manufacturing company to generate desirability for customers in the Kaizen system (Tortorella & Fettermann, 2018). Lean production manufacturing has to implement up to date precision to suit brand new applications. The uncertainty about what lean manufacturing means is evident – and lean argued to entails strategic and operational components Hines et al (2020), and these aspects defined its philosophy in a practical dimension (Shah & Ward, 2007). Therefore, defining lean in a clear manner could be considered. Prior studies harmonize lean and argued that lean could present just in time production, through the utilization of resource efficiency that is based on strategies on continuous improvement and standardization of scientific management operation techniques (Gupta & Sharma, 2016; Pettersen, 2009). Lean approaches is a versatile process and component that entails an extensive scope of management practices such as technology manufacturing management, quality process and just in time process. The elemental principle of lean approaches is that the process could be commission in synergy to advance an efficient quality process and system that present a completed product at the momentum of consumer request while keeping to time/ non is wasted. Structurally, lean production manufacturing can be grouped to achieve a target of waste elimination, cost reduction, quality conformance and management demand. However, Shah & Ward (2007), delineate lean practices as a component of lean manufacturing with a standard operating procedure that entails a mixed production model for continuous improvement and total productive maintenance. According to Shah & Ward (2007), lean production practices could be implemented based on total production maintenance, human resource management, continuous process of reducing error in process manufacturing, total quality process management, and process just in time implementation.

Furthermore, few lean production practices could bring fitness to the manufacturing company based on the resilience and capacity to handle change. Lean production approaches are the basic for underpinning the acceptance of lean practice technicality, thus earmark a specific category of execution in pull production process (Netland, 2016). According to Netland (2016), human resources management practices and total production maintenance put forward that classify lean practices could be executed or carry through to build a broad structure for the acceptance of total quality management and just-in-time collections to attain performance (Shah & Ward, 2007). Bortolotti et al (2015), further argued that all lean production tools are not necessary to achieve improvement. Hence, the application of lean production within some operating limitations could present some dramatic outcomes about its operational performance.

### **Lean Production Impact on Performance Improvement in Manufacturing Companies.**

The adoption of lean practices and approaches in the manufacturing industries is not easy to align due to its discrete nature with the distinctive process in the manufacturing industries (Panwar, Jain & Rathore, 2015). The dissemination of lean could be conservatively examined in clear industrial establishment; on a push-pull manufacturing strategy (Lyonnet & Toscano, 2014). Nevertheless, production is not in a separate unit in the process industry and the applicability of lean practices can be challenging and not producing helpful results most especially in the cellular manufacturing process, in the pull system and the Kanban system (Singh & Singh, 2020; Noto & Cosenz, 2020; Jiménez et al., 2012). Furthermore, the initiation of new manufacturing process can also depend on the country national and international cultural affiliation (Erthal & Marques, 2018). However, some studies further argued that performance effectiveness vis-à-vis acceptance of lean approaches could be determined or control by testing national culture (Bortolotti et al., 2015; Kull et al., 2014). Nigeria cultural affiliation is based high *power distance* and employees usually are unquestioning when instructions are presented by high level personnel. Subsequently, there exists a level of shared information that is expected, highly regarded and considered. Nigerians advocate and wish for procedures that are updated with standardize quality to reduce manufacturing risk and meet consumer wants, thus this can be considered as a collectivist approach which means Nigerians prefers to work together as a classification of grouping commonalities to achieve a specific goal. Nigerian cultural affiliation and the society are forward looking and stable, thus individuals (i.e., the people) frequently wish for secure and reliable lifestyle/future that is based on sustainable purposes (Ogiemwonyi et al., 2020). Nevertheless, even if these characteristics impact the lean production acceptance; the influence of its performance in manufacturing companies in Nigeria hasn't been effectively studied. This conceptual review further verifies the important facts in these aspects of lean production on performance in Nigeria manufacturing companies.

Lean production has provided its applications in many manufacturing sectors such as in the automobile and discrete manufacturing (Chahal & Narwal, 2017; Yang et al., 2015). For example, lean service manufacturing environment (Piercy & Rich, 2009), lean services in industry 4.0 environment (Sanders et al., 2016), lean services in the process industry (Panwar et al., 2015), lean services in health care environment (Costa & Filho, 2016), lean services in traditional shipbuilding industry (Praharsi et al., 2019), lean services in transportation operations (Villarreal et al., 2016) and lean services in operation performance (Panwar et al., 2018). Significantly, the importance of lean on production improvement in manufacturing companies can be transferable within or in different types of industries (Manfredsson, 2016).



This justification is not congruent to the finding of Susilawati et al (2015), who claim that the implementation and administration of lean production in the different aspect and processes is difficult. For instance, Mackelprang & Nair (2010), used a meta-analysis correlations approach that is based on in-depth analysis investigation spanning from 1992 to 2008 on exploring the influence/impact of just-in-time manufacturing practices and aggressive performance on cost reduction. In the United States, some studies argued that stronger just-in-time practices are used to gain higher profitability performance in manufacturing companies (Fullerton & Fawson, 2003). Using a similar model, research from Shah & Ward (2007) examines 23 per cent variance in mapping operation performance in a manufacturing company. According to Abdallah & Matsui (2007), study among 136 companies located in Germany, Japan, Korea and the United States, the implementation of just-in-time was accountable for approximately 21.4 per cent differences in manufacturing operation, and the incorporation of total production maintenance assessment impact 8 per cent variance in manufacturing operation performance. A survey made among manufacturing companies in the United State found that performance improvement could be of higher benefit to the internal and external process of lean production practices if implemented simultaneously (Hofer et al., 2012). Similarly, some studies had argued that lean internal structure would have a remarkable effect/consequence on flexibility process, manufacturing cost, quality and delivery (Chavez et al., 2013). However, suppliers on lean production practices have also impacted process quality. While lean production and performance approaches could lead to inventory denigration, delivery and cost reduction in manufacturing sector.

In Nigeria, Okocha & Daud (2020) argued that the application of lean in manufacturing sector could help to reduce cost and eliminate waste. Surprisingly, lean production was found to impact flexible manufacturing by showing a decisive influence on performance in the manufacturing firm. However, the authors examine the impact and implementation of financial performance on two operational dimensions in the Nigerian manufacturing sector. Subsequently, scholars have also examined the financial benefits with regards to assets on the performance of lean approaches, production and practices. For example, Laureani & Antony (2010) study established the assessment of value place on human resource management vis-à-vis the application of lean production practices of \$1.3million in a cooperate service establishment. Another study also established a cost-saving of over £362.960 yearly through the application of lean production practices (Carrizo-Moreira & Campos-Silva-Pais, 2011). However, some literature analysis gives differing findings on the improvement aspect of performance for assumption of lean production approach. More so, the study of Shah & Ward (2007), argued that the application of just-in-time with lean production approach are rare in the process industry compared to total production maintenance. They further argued that the process industry pursues higher utilization that prompts them to adopt total production maintenance practices. In summary, the impact of lean approaches on improvement of performance suggest that lean practices positively or significantly impact performance in manufacturing companies.

### **Lean Production in the Context of Pure Service**

Pure service are procedures in part of manufacturing companies' transformations that presents reports on services and performance in the aspect of consumer demand. However, lean approaches are becoming validated in several manufacturing and service sector aspects. Specifically, lean production utilization for office or business policies in the aspect of transformational agenda among manufacturing company increases with market/business

analysis or reports presented from lean production process and approach in the customer service that is required in policy acceptance (Piercy & Rich, 2009). Research has distinguished the augmentation of lean production as a component of administrative process on several aspect of business in manufacturing companies. These notable examinations have included office system that includes quotations, receipt, human resource, repeatable sales on accounting process, which are possible to refine and ameliorate the utilization of lean practices as a basic tool in the industrial sector (Bonaccorsi et al., 2011; Gupta & Sharma, 2016). Subsequently, businesses making progress with lean production (i.e., in their operations), thus conveying the same approach to different organizational sector are moving towards the realization of the impact of lean. For example, some engineering firm has successfully maps the application of lean approaches to reduce sales deficiency and order process inventory time and process quotation review (Vinas, 2004). The study of Chaneski (2005) examines contract appliance of manufacturing company while using a lean tool to simultaneously examines order in the account procedures to verify orders and maintain quality. A report on lean production approach on Boeing/airlines component, office administrative process and service quality advancement further shows the administration of lean production in the aspect of pure service (Chaneski, 2005). In anticipation on the manufacturing companies on consumer demand on commercial dealings, some study describes a consumer consumption as an interconnection with the product and services within the manufacturing space that involves consumer wants to get service processed by lean approaches that is best in identifying performance advancement and good time in pure service (Womack, 2005). Some trade report has also foregrounded the aspect of lean approach in differentiated services, thus report on application of lean to the administrative activities has engaged an implementation approach to ameliorate and build on manufacturing production (Tischler, 2006). Several authors also report the use of problem-solving and process mapping to design the refinement of consumer orders for phone services (Jones et al., 1999). Process mapping utilization in the manufacturing and service sector has been proposed excluding lean production. Preliminary research from Shostack (1984, 1987), put forward some (blueprinting) – from the beginning to conclusion of services that represent a piece of activities as a pack in a guide that is linked or associated for customer's experience. These approaches are established and applied visually to constitute production in differentiated service as a fundamental structure to know sloppiness begin start development process (Bitner et al., 2006; Piercy & Rich, 2009).

Furthermore, the initial process of service on the relevance on lean production instrument for refinement are rightly observed or examined in a suitable approach in pure service. For instance, a systematic review of sixty differentiated structure was conducted examining an overlap in significant process manufacturing systems and service business. The analysis further examines structural analogy on similar difficulty and complication that are made feasible to transmit several lean production misspend on service that includes; delay time waiting in queue/information, review inspection of work for error/omission, mistakes error/omission, activity duplication to performance advancement, transportation variation on information flow/ redundant workforce, rectifying inefficient use of resource in executing a special task/regenerating continual potential process, and the inefficiency on resources management employees, and wasteful substances (Maleyeff, 2006). Nevertheless, despite the conceptual administration of lean production in differentiated service, evidence base aspect of such service in (blueprint/waste reduction), and in pedagogical aspect of lean in differentiated services is scarce. Research in these areas is still emerging. For instance, Buzby

et al (2002) study to show the entreaty of lean idea on the managerial function on selection process to reduce cycle time by focusing on fierce prices of consumer demand in the aspect of service quality. However, lean idea and its application are still emerging with a focus on the specific aspect with a different interpretation of lean. Therefore, more research studies need to lay emphasis to verify lean in a pure/differentiated service and its operational environment.

### **Performance Measurement on Lean in Manufacturing Companies**

Performance measurement is a system that has been in existence over the past twenty years in management metrics literature (Koufteros et al., 2014). A review of operations in manufacturing companies suggests that there is no limitation regarding the metrics of the performance measurement system (Koufteros et al., 2014; Garengo & Sharma, 2014), neither the scarcity for measuring financial process, strategy and operational performance of manufacturing companies at the process level (Estampe et al., 2013). This means the assumption made is however showing that performance measurement is by nature productive towards better performance in manufacturing companies because they can be used to benchmark companies' operations in preparation for target and resources to increase companies' performance in future. Performance measurements are seen as companies' critical element in interpreting companies mission, alignment and strategy into reality, and for formulating or coordinating companies' positive values (Koufteros et al., 2014). Several literature studies in the past have assessed performance measurement effectiveness with companies' performance (Melnyk et al., 2014; Crabtree & DeBusk, 2008; Ha et al., 2016; Ogiemwonyi et al., 2020), by that mean assuming a relationship on performance measurement and the element of performance. In this regard, Stede et al., (2006) made a study and found that organisations strategies are more effective to performance measurement or management most important among these that are inclusive of subjective non-financial measurements having a better performance. However, these findings were contradicting the studies of (Bourne et al., 2013; De Leeuw & Van Den Berg, 2011). Subsequently, with regards to cooperate level, researchers like Henri (2006a, 2006b) recommend a considerable role with the perception of engendering performance measurement on manufacturing companies competence and proficiency that could assist to resolves emanating issues. Significantly, measurement in the aspect of performance seek to provides policymakers with knowledge/facts that will ameliorate lean tools with processing strategies in the manufacturing industry for quality performance.

Performance measurement in manufacturing companies in the subpoena of evaluating manufacturing output or activities executed for related job function in the process and manufacturing industry (Muchiri & Pintelon, 2008; Neely et al., 2005). Performance measurement influence companies' proficiency and consequently assist manufacturing companies to meet their target (Lucianetti et al., 2019; Koufteros et al., 2014). Performance measurement has anticipated for a system support for improved executive and organizational practices in manufacturing companies (Lucianetti et al., 2019). According to de Waal & Kourtit (2013), performance measurement could be described as a measure of profit, cost and revenue – in terms of quantitative measurement, and a measure of performance in terms of qualitative measurement. Manufacturing company overall performance could have numerous contributory dimensions such as financial, environmental and operational. In operational performance, lean tools are considered intense effect compared to the previous (Shah & Ward, 2007). Subsequently, operational performance could be classified into six dimensions such as on-time delivery, lead time, rework cost, and productivity (Shah & Ward



(2007). In this process, inventory requirements are usually enhancing because of the effort on implementation of operational performance. However, due to the utilization of lean production tools, the approaches from management demand could enhance in the manufacturing industry.

### **Academic Implications**

The study had a focus on the volume of a study conducted in the aspect of lean production practices in developed and developing nations despite Nigeria being used as the main context of the study. The finding reveals utilization and acceptance of lean production approaches in multiple industrial sector to enhance a company's performance based on the technological and economic viability of these nations. Several studies from Nigeria express this antecedent in these aspects. However, Nigeria as a developing nation has shown firmly that the private and public sectors are capable to utilize lean, and the improvement of emerging industrial operations and management could be able to conduct businesses as a developing nation using lean several practices and tools. To other developed nations that also engaged on sophisticated manufacturing forming a base or fundamental for lean production tools, it is possible to also conduct and revise research in line with their theme on lean practices. Several lean practices were highlighted involving just-in-time approaches which accounted for the highest used rate for both analyses in examining the degree of implications in the ratio of lean production to industry performance. However, the evaluation was anticipated such that manufacturing companies can continuously flow and deliver their service to the customer through the use of lean practices. Lean practices and evaluations like Kaizen, human resource management and total productive maintenance are usually among factors that professionals had explained lean production factors in the manufacturing sector as indicated in the review. Further examinations provide that literature analysis verify that lean production adoption is fragmented in several industries that adopt lean manufacturing systems. Therefore, the understanding of lean production should be completely supported with the determination to improve organizational and operational performance in research and management perspectives should be acknowledged. The review analysis also shows that managerial supports are important for the key enactment of lean approach that could be obtained through a rapid implementation process. These strategies could further generate some outcomes in medium or long duration for the acquisition of improved systems for manufacturing companies.

### **Managerial Implications**

From the management implications, this study will help to quantify the changes in up and running functional performance through the acceptance of lean production in manufacturing companies. Furthermore, the reviews are important for policymakers in the manufacturing aspect because its present some evolution and significance of lean production practices in the manufacturing sector most importantly in the practical use especially in the area of execution in line with the complexity level. The prioritization on lean production should be adopted and rapidly practiced by managers in the manufacturing sector for long term purposes. Managers should visualize lean practices available in the industry for best practices. The conceptual analysis review has shown to managers that lean production can be utilised in financial, operational and environmental performance for a company irrespective of customer cultural background. Managers can enjoy the adoption of lean production and search for the relationship to sustain their project implementation via a longitudinal approach while still

considering the flow of value, cost reduction and waste elimination. Furthermore, the review argued the recognition of performance measurement in the financial and operational field, thus this shows the performance indicators are necessary once they are proven significant to improve the performance or adoption coming from lean production practices in manufacturing companies. Thus, once these performances are improved, the overall performance coming from the manufacturing industry will adequately improve, and the company's mission statement and goal will be resourceful. Managers can also select the indicator to focused on and follow to which lean production will be acting towards or substituting in the aspect of organizational performance to attained quality through the application on the implementation of lean tools. Furthermore, the implementation of lean production does not materialize nor the acceptance of these approaches but the behaviour of customers who take part in these processes should be subsequently positively driven before the adoption to these practices to consolidate with the moment on the impact of lean production system and drives values for customers. Therefore, the stronger the acceptance of lean production approach the more desirable/finer manufacturing companies have direct influence above waste depreciation, productivity, prompt delivery of quality services to its customers and cost reduction. The managerial implications showed that lean production provides better control and quality that are important for improved performance in the service sector.

### **Conclusion**

The study main objective is to highlights and examines some conceptual issues of lean production practices on performance in manufacturing companies in the Nigerian context and other emerged economies where lean practices and adoption are applicable in the industry sector. The examination presents various literature analyses and discussions of lean tools, practices and adoption. The analysis first discussed: lean production practices in the manufacturing sector and those were related to some degree in which lean tools/approaches are utilised in the manufacturing sector on a full-scale performance. Secondly, the analysis also examines – the influence of lean tools on performance improvement in the aspect of manufacturing companies. According to these parameters, the industry types, samples and population were highlighted along with lean production practices and some statistical facts and techniques were presented to further demonstrate the adoption of lean tools and practices in respective industries. These examinations were rated according to the context where the study was focused to show the performance indicator of lean practices as it influences performance improvement and manufacturing companies. These examinations were guided by the discussion of previous literature contributing to lean production tools and practices. Furthermore, the review of lean production in a pure service context was discussed to determine customer values in pure service and the use of lean in manufacturing company transformation to increase trade reports, human resource development and administrative duties.

Lastly, the application of lean tools to measure performance measurement in the manufacturing environment was debated. Significantly, the examinations of all these processes provide some insight into which lean practices impact the manufacturing industry and their operations to aid performance or how performance can increase a company's resources. One of the major benefits of lean adoption and practices is the concern to reduce the need to work on cost reduction. A long term goal that manufacturing companies need to adopt in their operations and daily activities. The conceptual review examines the

advancement of lean approaches in services management to understand lean adoption and practices. However, the lean principle remains unchanged from manufacturing to the services sector, thus lean tools and practices need to be further studied and modify for the service sector. The study by Gupta & Sharma (2016) have enumerated the same point but still, adaptation is needed for further examinations. It has also been validated that the service sector has been slow to implement lean not until recently after which; there has been an outpouring of research published under lean production and service justifying recent interest in the research area. However, this study has validated that lean production or practices have shown a continuous allegiance to development of utilizing lean tools for business/operational refinement in manufacturing companies. One of the challenges of lean was the service to control the impalpable waste emerging from the strain to link/recognize it and the emergence of the individual as well as participant has analysed in the literature analysis. This review further suggests that using lean practices tools will help to standardize management practices in the service sector and such tools will also help to pick out, end and abolish the cause leading to improve quality service for an individual expeditiously. The study also suggests that the acceptance/utilization of lean practices could be well accomplished vis-à-vis changes in society or cultural differences to certify/secure lean adoption sustainable purpose. Hence, a disposition and desire for society or cultural exchange will help companies to espouse up to date method of executing businesses and exploit that are ineluctable for manufacturing companies. Thus, it is foremost to note that lean production practices are consolidated systems on differentiated management procedures and quality with discrete/ or non-identical tools, definitions and concepts. Therefore, the need to standardize lean production and develop a guideline for structural implementation in the manufacturing industry or sector can help to achieve more output with less input for customers in the service industry.

The study limits its development to a systematic literature review, however, future research could be investigated by conducting a quantitative approach to measure lean production adoption in the manufacturing sector which is unique for the particular unit analysis for an empirical study in the Nigerian manufacturing sector. On the other hand, findings have enhanced the understanding of lean concepts which contribute to the progress towards leanness in the manufacturing sector. Further work needs to establish whether the relationship between the dimensions and wastes are true by conducting using the lean approach to measure performance management. A conceptual model can also be modelled into an indicative model for lean measurement in future work in the context of pure service. Lean practitioners may benefit from this study as it will help to improve the general effectiveness of the strategic manufacturing performance in the Nigerian service sector.

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