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Order Processing and Just in Time Procurement in Public Institutions in Rivers State, Nigeria

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Abstract- Just in time procurement in today's public institutions required the use of a structural approach to ensure that procurement processes are designed to achieve basic goals. The underlying concept of the Just in Time philosophy is the efficient handling of materials, such as providing the right materials in the correct quantity and quality and eliminating or reducing waste. The study examined the factors influencing the implementation of just in time procurement of public institutions in Rivers State, Nigeria. The investigation was carried out with a sample size of 7 public institutions in River State. The questionnaire was used as a research instrument that was administered and analyzed using the statistical tool of spearman's rank correlation coefficient at a 0.05 significant level and the z-test was used to test the formulated hypotheses. The finding showed that in as much as top management decisions influence just in time procurement; lead time as well as the procurement process has a significant influence on just in time procurement.

Keywords: *lead time, just in time, procurement processes, and public institutions.*

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ORDERPROCESSINGANDJUSTINTIMEPROCUREMENTINPUBLICINSTITUTIONSINRIVERSSTATENIGERIA

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Order Processing and Just in Time Procurement in Public Institutions in Rivers State, Nigeria

Karibo B. Bagshaw [α] & George T. Peters [σ]

Abstract- Just in time procurement in today's public institutions required the use of a structural approach to ensure that procurement processes are designed to achieve basic goals. The underlying concept of the Just in Time philosophy is the efficient handling of materials, such as providing the right materials in the correct quantity and quality and eliminating or reducing waste. The study examined the factors influencing the implementation of just in time procurement of public institutions in Rivers State, Nigeria. The investigation was carried out with a sample size of 7 public institutions in River State. The questionnaire was used as a research instrument that was administered and analyzed using the statistical tool of spearman's rank correlation coefficient at a 0.05 significant level and the z-test was used to test the formulated hypotheses. The finding showed that in as much as top management decisions influence just in time procurement; lead time as well as the procurement process has a significant influence on just in time procurement. It therefore recommends: top management in public institutions should ensure that goods and services are procured exactly when they are needed; and efforts should be made to ensure that suppliers are aware of the organization's needs on time to process purchase orders and delivery dates in that lead-time schedules are requisitioned in good time to avoid unnecessary delays and work stoppages.

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I. Introduction

In today's contemporary world, public institutions have played a central role in the development of many societies and have been frequently studied by scholars, but what defines public institutions is how they work, and how they procure and implement Just-in-time (JIT) as distinct from other organizational forms (Musa, Success and Nwaorgu (2014). However, Pillary (2004) argued that in procurement, senior officials and political leaders use public office for private gain and this has weakened the motivation to remain honest. This ultimately interferes with the procurement process and constrains compliance thereby limiting just in time procurement. Bandyopadhyay (2014) however, argued that while implementing just in time, it could be accomplished by the adoption of a wide range of closely connected improvement initiatives that can be thought of as forming the components of the JIT system.

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The principles of public procurement according to Gyawali Dahal and Maharjan (2018) are transparency, integrity, economy, openness, fairness, competition, and accountability, however, the lack of proper implementation of the public procurement process hampers the smooth process of development. Organization for Economic Cooperation and Development OECD (2007) noted the irregular procurement activities in public institutions and how it provides a loophole through which public resources are misappropriated. Despite the significance of public procurement as an economic activity, and its importance for delivering effective public services, OECD countries still find it challenging to measure the performance of their procurement systems in public institutions. First steps on the journey towards a sophisticated monitoring regime are typically focused on the development of indicators for measuring centralized activity, whereas the measurement of decentralized activity may require a structured, bottom-up approach (OECD, 2019).

II. Literature

JIT has often been expressed as a holistic management system aimed at reducing waste, maximizing cost efficiency, and securing a competitive advantage Inman (2015). Arguably the most significant part of the lean philosophy is its focus on elimination of all forms of waste. Waste can be defined as any activity which does not add value. Supply chain partners have worked together and individually to eliminate wasteful processes and excess inventory across the chain. In JIT waste and unnecessary costs must be minimized (Folinas, Fotiadis & Coudounaris, 2017). Lean was always associated with reduction of cost, eliminating waste, just-in-time (JIT) delivery. Two simple devices are commonly used in lean improvements. One is concerned with identifying waste as the first step towards eliminating it. There are seven forms of waste that need to be eliminated as suggested by Franco and Rubha (2017). These wastes are waste of overproduction, transportation waste, waste of appropriate processing, and waste of waiting time, inventory waste, unnecessary motions and waste of making defective products. Without lean procurement or just in time procurement buyers spend the majority of their time on non-strategic processes like tracking down their order status, purchase order entry and maintaining

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'private' spreadsheets for analysis. As a result, they miss the opportunities for mutually beneficial supplier negotiation and process efficiencies. Just in time procurement methods eliminates discrete purchase orders, adopt a more efficient pay on consumption business process that achieve substantially lower level of inventory improving the process of procuring materials.

a) Concept of Just-in-time Procurement

The concept of just in time procurement according to Stevsenson (2005) is an operating system in which materials are moved through the system, and services are delivered with précised timing so that are delivered at each step of process just as they are needed. Again, Stevenson (2005) opined that JIT operates on a pull or demand basis whereby work is pulled from each step in the process to the next step when the next step has a demand for it rather than pushed on the next step when work is not completed at the current step. Adagala (2014) opined that just in time is concerned with adding value and eliminating waste by ensuring that just the right resources are available or suppliers in relatively small quantities just in time for use. The Just-in-Time philosophy leads to producing the required items, at the required quality and in the right quantities at the precise time (Franco & Rubha, 2017).

JIT as a set of principles, tools, and technique allows a company to produce and deliver products in small quantities with short lead times to meet specific customer needs. JIT effectively reduces waste and ensures high quality of purchased items, administrative efficiency, and simplified communication and receives activities. JIT is designed to virtually eliminate the need to hold items in inventory, to produce and deliver finished goods just in time to be sold, subassemblies just in time to be assembled into goods, and purchase materials just in time to be transformed into fabricated parts. The process of just-in-time procurement involves ordering and receiving inventory for production and customer sales only as it is needed to produce goods, and not before. This type of inventory management provides many benefits, but is not without its downsides, and relies heavily on factors such as a strong, fast and efficient network of suppliers (Peavler, 2019).

The most important aspects of the JIT concept focus on new ways of dealing with suppliers and a clear-cut recognition of the appropriate purchasing role in the development of corporate strategy. This is because the JIT aims at eliminating inefficiencies in the manufacturing cycle by reducing wastes such as inventory cost, which optimizes movement in working place (Phan, Nguyen & Matsui, 2019). One of the essential aspects of the lean concept is to attain the highest possible satisfaction among internal and external customers (Njenga & Moronge, 2018). Njenga and Moronge (2018) also asserted that lean procurement is becoming a strategy method for gaining competitive advantage and even for survival for manufacturers and wholesalers since adding value and removing waste is no longer an option for companies. Arguably the most significant part of the lean philosophy is its focus on elimination of all forms of waste. Waste can be defined as any activity which does not add value. Supply chain partners have worked together and individually to eliminate wasteful processes and excess inventory across the chain.

The commitment to just in time procurement and lean thinking must start at the top management level and should be cascaded down to various levels across the organization to improve the flow and efficiency of processes. Womack and Jones (1996) in their seminal work lean thinking provided the following guidelines for implementing a lean supply chain: value must be defined jointly; all organizations along the value stream must make an adequate return on their investments related to the value stream; the organization must work together to identify and eliminate waste to the point where the overall target cost and return on investments targets of each firm are met; and when cost targets are met, the firms along the stream will immediately conduct new analysis to identify remaining waste and set new targets. Just in time procurement is about creating more value for the customers by eliminating what is considered to be wasteful in the organization activities. The next stage is reaching a continuous flow with the customers' pull of orders. The most important in the final goal - striving for excellence is the transparency throughout the value chain, where all the participants in the implementation can learn and improve their skills in creating value.

i. *Elements of Just in time Procurement*

Akbar, Babu, and Talari (2013) noted that Just in Time consists of several components or elements which must be integrated to function in harmony to achieve the JIT goals. These elements essentially include the human resources and the production, procurement, manufacturing, planning, and organizing functions of an institution. In short, these elements can be grouped into the Toyota production system of people, plants and systems. But for the benefit of this study people and the stakeholder system will be discussed in detail.

People's Involvement

Obtaining support and agreement from all individuals involved in the achievement of organizational goals is fundamental sine qua non for JIT success. Obtaining support and agreement will require involving, and informing, all groups who have an interest in the progress of the institution, and the public at large. This can greatly reduce the amount of time and effort involved in implementing JIT and can minimize the likelihood of creating implementation problems. Support

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and agreement should be obtained from the following groups.

Organization theory suggests the hypothesis that people will be more compelled to work toward goals when they are included in the development of the goals. Onto this hypothesis, JIT builds the idea of involving employees at different levels in the organization. The introduction of quality circles and the concept of total people involvement are important to maximize people's involvement through the use of JIT. The introduction of changes in an organization has the potential to elicit reactive behaviours from the individuals who may be subjects to these modifications. JIT represents one of these changes and cause substantial organization in very positive ways, reactive behaviours such as resisting the change by working against organizational goals may develop. Involving people becomes increasingly important at this point. Communication, training and increasing the values of the worker's jobs can help alleviate reactive behaviours.

Labour Organization

All employees and labour unions should be informed about the goals of JIT and made aware of how the new system will affect working practices. This is important in winning the union and worker's support to assist with the implementation and to remove potentia1problerns and difficulties. Failure to involve labour organizations will result in lack of understanding of management motives and causing fears of job loss on the part of the labour. This can lead to impediments such as non-cooperation and resistance to change. Recent research indicates that one possible weakness of JIT is that it may increase the stress placed on workers; this makes the existence of good labour relations essential.

Akabar et al (2013) stated that despite the claim that JIT cannot be effective outside Japan due to the differences which exist between Japanese and other cultures have led to the belief that JIT cannot work effectively in organizations elsewhere in the world due to the cultural differences which contribute most to this belief include the Japan" work ethic and the role of unions within many Western work environments. Unions typically play a large role in manufacturing or 'blue-collar' organizations which would be more apt to adopt a JIT approach to manufacturing. In addition, unions tend to exert influence upon management in developing policies that are more favorable to labour. Therefore, issues such as increased leisure time for labour would be contradictory to the Japanese work ethics.

Management Support

This involves the support of management from all levels. It also requires that top management should be prepared to set examples for the workers and initiate the process to change attitudes. Striving for continuous improvement is not only required of the employees on the shop floor, but must also be inherent in management's attitudes.

Adequate Government Support

Government should give full and adequate support to public institutions wishing to implement JIT by adequate and just in time financial incentives and other incentives to enable them to carry out projects for the betterment of the citizens. This can motivate institutions to become innovative as it bears some of the financial burden associated with the costs of implementing JIT.

ii. *JIT Procurement Implementation Strategy*

According to Torkabadi and Mayorga, (2017) the most important elements for successful implementation of the JIT strategy are:

i. Top management commitment
ii. Development of a JIT policy manual
iii. Development of a JIT procedure manual,
iv. Develop and implement a continuous JIT training program for employees at all level
v. Develop and maintain a JIT circle involving key employee group representatives
vi. Redesign the organization to make it flexible and dynamic for allowing JIT permeate through system
vii. Develop and maintain an effective communication and control system to provide feedback and control at all levels of the organization and all through the procurement - production - distribution environment.

Van Wayk and Naidoo (2019) presented major problems in procurement that include lack of support from suppliers, lack of top management support, low product quality, lack of employee readiness and support, lack of support from carrier companies, lack of engineering support, and lack of communication. Of these, poor supplier support, closely followed by inadequate understanding and support by top management, are the most severe problems encountered in implementing JIT purchasing.

The use of jointly determined objective standards in examining the work done within both the buyer's plant and the supplier's plant generally results in significant long-term improvement in quality, cost, and delivery performance. Manoochehri (2000) presented the relationship between suppliers and the JIT concept. He estimated the number of suppliers, the relationship with suppliers, sharing information with suppliers, and geographical dispersion. Parveen, Mia, Rahman and Muk Cho (2019) proved that the JIT purchasing can improve the quality JIT procurement implementation. Onyiego and Oloko (2016) asserted also that several changes must take place in an organization for an effective implementation of JIT strategies, they include: changes in employee's attitude, and continuous support and commitment of top management for JIT implementation.

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According to Malik (2012), the implementation of the JIT will depend on many factors such as:

i. Top management must accept the idea of the JIT
ii. Employees should understand the significance of the JIT concept
iii. The third step is set up of the ERP (Enterprise Resource Planning). ERP is a system, which integrates all data and processes of an organization into a single unified system.
iv. The next step is to test the system after implementing JIT
v. The last step is testing and control for successful existence and developing of the JIT system there must be continuous control. Without control, things can away from the right direction.
vi. The feedback loops also exist and they are very important for the whole process.

In the implementation of the practice of just in time according to Inman (2015), JIT has often been expressed as a holistic management system aimed at reducing waste, maximizing cost efficiency, and securing a competitive advantage. The implementation needs to be done in interaction with all departments in the organization.

b) Lead Time

Lead time is the time that elapses between the receipt of a requisition and the receipt of goods required (Bagshaw, 2014). Senapati, Mishra, Routral, and Biswas (2012) argued that lead time is the amount of time that elapses between when a process starts and when it is completed. It represents the time it takes in days (including non-working days) from when you recognize the need to purchase a product, to when it is available in your stores for use. It involves both value add time (time spent adding value to the product) and non-value add (time waiting between process steps). Furthermore, lead time includes the time to understand the need, time to obtain quotations, time to place order, time for vendor to manufacture, time for transportation from vendor and time for inspection to approve the item (Ihunda, 2014). The procurement lead time, material supply from supply chain, waiting time between procurement steps, procuring and processing time, final quality inspection and transit time inspection. Senapati et al (2012) stated the Japanese experience of using Just-In-Time (JIT) showing that there are advantages and benefits associated with their ability to control lead time and consequently that reducing lead times increases productivity and improve the competitive position of an organization or an institution and therefore cumulative cycle times of the processes in the value stream are the theoretical limit to how much lead time can be reduced.

According to Ihunda (2014), lead time should be reduced asserting that if the power of delegation has not been increased to cope with high inflation, then approval of higher authorities may be necessary to trigger off purchase orders, thereby increasing lead time. In capturing lead time, the value stream map is considered as well as using a lead time ladder diagram to review lead time and value adds analysis. Musa, Success, and Nwaorgu (2014) posits that long lead times affect the performance of public institutions entities and compromise the quality of service delivered and therefore, there is a need for lead time reduction. Lysons and Farrington (2006) asserted that lead time can be reduced through close cooperation with suppliers and possibly by inducing or having supplier's location close. The importance of lead time reduction is highlighted by the fact that it is one of the few strategies that sales and production departments can agree on (Srinivasan & Shrehari, 2017).

For JIT to be successful, lead time must be zero or reduced to the barely minimum. Reducing lead-time can improve competitive advantage. Margan (2008) asserted that one of the strategies to implement in reducing lead time is to apply the lean principles. In assessing the business process the role of lean is to systematically strip away the non-value add aspects of the process and find more efficient ways of doing the value add tasks. An institution that can offer significantly shorter and more reliable service delivery times than the others will often be able to increase its corporate image in the face of partners and stakeholders. Reducing lead times doesn't involve speeding up equipment to cut the cycle times or getting work faster. Senapati et al (2014) indicated that reducing lead time brings benefits by improving customer satisfaction through better availability of products and helps in attacking cost. Ivana (2012) identified planning and scheduling while Senapati et al (2012) identified factors such as demand, order quantity, quality of product, reorder point, safety stock, and price discount value of money in lead time involving just in time procurement.

c) Procurement Process

According to Agaba and Shipman (2017), procurement planning is the procedure utilized by organizations or public establishments to design acquiring action for a particular timeframe. This is normally finished amid the planning procedure. According to Hasim, Fauzi, Yusof, Endut and Ridzuan (2018), procurement represents the process of obtaining goods and services from preparation and processing of a requisition through to receipt and approval of the invoice for payment and is highly bound to supply chain management. Purchasing is responsible for acquiring all the materials needed by an organization. Purchasing is the function responsible for issuing purchase orders and initiating the flow of materials.

The complexities of public procurement performance require more than just a mere policy framework in every nation. There is a need to have direct interventions that would undo the complexities that

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bedevil the efforts of the government and international organization for supporting the public procurement performance initiatives. In this era of quickly changing corporate environment, purchasing managers are encouraged to be proactive (Muange & Chirchir, 2016). Purchasing managers need to develop a more proactive strategic approach and encouraged a proactive approach to purchasing planning.

According to Kibinu, Kinuthi, and Nyagah (2018), induced emergency procurement is a key manifestation of corruption, which affects all organizations, including public institutions. Price differentials between induced emergency procurement and planned procurement can be as high as tenfold. In situations of induced emergency procurement, contracts are often awarded to most successful bribers, friends or relatives; and not necessarily to bidders who offer best price-quality combinations. Under such situations, procuring entities are highly likely to receive goods and services of poor quality, which logically, denies them the best value for money. Corruption in induced emergency procurement can also lead to biased allocation of resources, as corrupt accounting officers exaggerate allocations for procurement projects that provide an easy way for personal benefit, at the expense of other more important institutional needs. In view of this, limiting the frequency of emergency procurement is an important step towards effective management of procurement expenditure in public secondary schools, which shall be achieved through comprehensive procurement plans and budgets (Kibinu, Kinuthi and Nyagah, 2018).

Rossi (2010) asserts that ethical code is not only a deterrent of incorrect behaviour but also an enabler for all members of the organization to safeguard the ethical legacy of the firm. This position is further confirmed by Basheka and Mugabira (2008) who stated that the level of professionalism in public institutions in Nigeria is low or non - existent. De-Boer and Telgen (1998) also attributed non-compliance in public procurement to lack of purchasing professionalism in the public sector. According to Pillary (2004) cited in Raymond (2008), there are approximately 100 percent of professional purchasing people in a business environment but only 10 percent of these have been members of a professional body and the rest are not even aware that there are ethical and legal standards involved in procurement. Raymond (2008) also linked the lack of a high degree of professionalism in public procurement to corruption, which ultimately impedes compliance. The procurement officers must be trained and aware of all regulations in relation to procurement and related procedures (Hui et al., 2011).

The results by Bamidele, Mosaku and Fagbenle (2019) revealed that non-compliance with the Public Procurement Act in Nigeria was due to inadequate knowledge of the Act, non-employment of qualified and experienced Procurement Officers, insufficient publicity of the Act, and non-existence of corporate governance leading to poor management of procurement record and non-provision of incentive. An important and effective way to maintain professionalism in public institutions is by initiating ethical awareness by agencies to provide training for employees (Amos and Weathington, 2008). Ethics training and seminars can be provided, along with training in more specific areas, such as procurement procedures, record keeping, records management, and accountability and administrative law. Regular reviews or audits of procurement processes can be done to ensure probity is being considered and achieved (Amos and Washington, 2008). Thus, purchasing professionalism increases public institutions' compliance.

d) Lead Time and Just in Time Procurement

It is necessary to understand the lead time and expected quantity to be delivered of a product based on the actual need date and any accepted quote should meet the required date. Additionally, just in time is viewed as a long-term strategy that can promote excellence and eliminate waste throughout the entire organization (Phan et al., 2019). Just-in-time is a movement and idea that has gained wide acceptance in the business community over the past decade. The JIT procurement concept by Van Wyk and Naidoo (2016) attempts to reduce replenishment lead time by utilizing suppliers located close to the using plant and by ordering small quantities, which in turn reduces a supplier workload per period.

The most important aspects of the JIT procurement concept focus on new ways of dealing with suppliers and a clear-cut recognition of the appropriate purchasing role in the development of corporate strategy. The major actions focus on attempts to reduce the ordering cost and replenishment lead time values. The idea behind JIT, or lean manufacturing, is to have the supplies a firm needs at the exact moment that they are needed. To accomplish this goal a firm must constantly be seeking ways to reduce waste and enhance value.

There are several activities that an institution must monitor as targets for reducing waste. Among these are excessive waste, excessive lead time, unneeded people or material movement, unnecessary processing steps, numerous variabilities throughout a firm's activities and any other non-value adding activity (David, Jennifer, James, & Michelle, 2005). Furthermore, David, et al (2005) opined that just in time has a great effect on lead time where lead time or quick response among wastes, kanban, and inventory are known as the views of just in time.

Bagshaw (2017) noted that material resource planning (MRP) plays an important role in planning production component (materials). Furthermore, efficient

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MRP applications helps the organization to obtain time-phased requirements and to determine when to begin manufacturing processes in a given production life cycle in bringing about product output to meet demand orders within the applicable lead time (Bagshaw, 2017). Organizations that make use of just in time procurement maintain their manufacturing processes through the use of small lot size which reduces lead time. A decline in lead-time, in turn, cuts total processing time at each workstation which is greater for large lots than for small lots. The function of just in time procurement is to provide a firm with parts, raw materials at a reasonable price and must ensure that high-quality products are provided on time thereby reducing the lead time.

e) Procurement Process and Just in Time Procurement

Procurement is acquiring resources from outside suppliers. In this sense, procurement activities are very critical to all organizational units from households to firms, organizations, and the government. From the functional viewpoint, procurement is an indispensable activity and its achievement is essential to any organization. In the private sector, procurement is considered as a profit center to maximize the firm's profit in saving material cost (Mutangili, 2019). A lean procurement process for a public institution according to Linda (2011) is a modification of the traditional system of acquiring the needs of the institution. The objective of the modification is to improve the system of procurement regarding issues about:

i. Long lead time before a material is received, in as much as long lead times equate to non-value-added costs before a particular transaction or manufacturing activity can be performed.
ii. Maintaining an optimized level to ensure that all materials stored or kept on hand are those that meet the immediate needs of the organization. That way, all purchases are converted into finished goods or items that are ready for customers.

According to Ansari and Modarress (2002), the definition for Just-in-Time procurement is reflected in its name. Thus, in implementing the JIT concept, materials are purchased or parts are produced in an exact quantity and just as they are needed. Just in time, the procurement process is a system of buying which improves effectiveness and efficiency. A variety of techniques are involved in the JIT procurement process and Njenga and Moronge (2018) asserted that some of the tasks involved in procurement include developing standards of quality, financing purchases, negotiating price, buying goods, inventory control and disposal of waste products like packaging. One key element in JIT and procurement process is reducing the number of suppliers.

Alejandro (1998) argued that the traditional relationship between the supplier and the customer has changed completely in JIT; that it is common to see an adversary attitude among suppliers and customers under complex contract clauses that slow down the procurement process. A sort of partnership has to be established among suppliers and customers to involve the latter into the efficient process of JIT. This was supported by Nguyen et al. (2019) whose result showed that suppliers' relationship with customers ensure firms' performance. They argued that the integrated effect of this relationship is significant for improving a firm's competitive performance including quality, delivery and flexibility.

JIT procurement and the items that are procured should be the goal of all the individuals in a public institution. Bindu & Ahuja (2005) opined that items having a low degree of turbulence are generally suitable for JIT procurement while items having a high degree of turbulence should be purchased by conventional purchase method. Again, Bindu & Ahuja (2005) asserted that certain situations are not suitable for JIT but conventional purchasing is more economical and operationally advantageous in these cases. Furthermore, the characteristics of JIT systems are consistently high quality, small lot sizes, frequent delivery, short lead time, and close supplier ties. Jattit et al (2010) stated that in JIT procurement, procurement is carried out in small lots with frequent deliveries in small standard to hold the exact quantities of required specifications from a nearby local supplier with a long-term contract.

III. Methodology

This study adopted the cross-sectional survey design in its investigation. The population of the study is 7 public institutions in higher education in Rivers State, Nigeria. Since the population is relatively small, the study adopted a census approach in the investigation, hence all members of the population frame were included in the investigation. The primary instrument utilized in the study was the structured questionnaire which by purposive selection was distributed to ten (10) (9) staff in strategic departments and units of each of the public institutions bringing the number of respondents' questionnaire to 70.

IV. Data Analysis

All the 70 (seventy) copies of the distributed questionnaire were retrieved; however, 4 copies of the retrieved copies were discarded as not useable because they were not properly filled. Therefore, 66 (sixty-six) of the retrieved questionnaire were used in the presentation and analysis of data. The responses obtained from the respondents were analyzed within a significance level of 0.05.

a) Research Question 1

To what extent does lead time influence just in time procurement in public institutions in Rivers State?

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Table 1: Summary on Research Question 1

Item	Variables	Strongly agree/Agree		Indifference		Strongly Disagree/Disagree	
		No.	%	No.	%	No.	%
1	Closeness to suppliers influences supplier's transit time of delivery and as such enhances just in time procurement in my organization.	52	78.8	10	15.2	4	6.06
2	Lead time reduction eliminates waste and this enhances just in time procurement.	39	63.6	7	10.6	20	30.3
3	Adhering strictly to lead time process enhances just in time procurement.	44	66.7	9	13.6	13	19.7

Source: Research Data, 2019

From Table 1, it was shown that 78.8% of respondent agreed that closeness to supplier's influences supplier's transit time of delivery and as such enhancing just in time procurement in public institutions in Rivers State, while 66.7% of respondents agreed that adhering strictly to lead time process enhances just in time procurement. Furthermore, 63.6% of respondents agreed that lead time reduction eliminates waste and thus enhances just in time procurement.

Furthermore, the correlation value of the relationship between lead time and just in time procurement was examined is shown below:

Table 2: Correlation Analysis showing the direction and magnitude of relationship between Lead time and Just in time procurement

Correlation

Variables 1	Statistics	Lead Time	Just in Time Procurement
Lead Time	Correlation Coefficient	1.000	.983*
	Sig. (2-tailed)	.	.012
	N	66	66
Just in Time Procurement	Correlation Coefficient	.983*	1.000
	Sig. (2-tailed)	.012	.
	N	66	66

*. Correlation is significant at the 0.05 level (2-tailed).

Table 2 showed the relationship between lead time and just in time procurement with correlation coefficient (r) = 0.983; indicating that a very strong positive relationship exists between lead time and just in time procurement. Also, the p-value = 0.012 less than 0.05 acceptable level of significance; which asserts that there is a significant positive relationship between lead time and just in time procurement in Public institutions in Rivers State, Nigeria.

Testing Hypothesis 1

Ho_1: There is no significant relationship between lead time and just in time procurement on the efficiency of just in time procurement in public institutions in Rivers State.

$$Z = r\sqrt{n-1}$$

$$Z = 0.9833\sqrt{66-1}$$

$$Z = 0.9833\sqrt{65}$$

$$Z = 0.9833x8.0623$$

$$Z = 7.928.$$

Decision: Since the calculated z value (7.928) is greater than the tabulated z value of (1.96) the null hypothesis will be rejected and the alternative accepted. Having accepted the alternative hypothesis, it implies that there is a significant relationship between lead time and just in time procurement.

b) Research Question 2

To what extent does procurement process influence just in time procurement in public institutions in Rivers State?

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In providing data for the research question, research question items were drawn from the information on item 4, 5 and 6 from the questionnaire.

Table 3: Summary on Research Question 2

Item	Variables	Strongly agree/Agree		Indifference		Strongly Disagree/Disagree	
		No.	%	No.	%	No.	%
4	Materials bought or stored are those that meet the immediate needs of the organization.	54	81.8	9	13.6	3	4.55
5	Procuring products from a particular supplier most a time reduced cost of purchase.	47	71.2	13	19.7	6	9.09
6	Procured materials are purchased at exact quantity and just as they are needed.	50	75.7	5	7.56	11	16.7

Source: Research Data, 2019

From Table 3, it was shown that 81.8% of respondents agreed that materials bought or stored are those that meet the immediate needs of the organization procurement process in my organization, while 75.7% agreed that procured materials are purchased at exact quantity and just as they are needed. And also 71.2% of respondents agreed that procuring products from one supplier most times reduced the cost of purchase. Furthermore, the correlation value of the relationship between procurement process and just in time procurement was examined is shown below:

Table 4: Correlation Analysis showing the direction and magnitude of relationship between Procurement Process and Just in time procurement

Correlations

Variables1	Statistics	Procurement Process	Just in Time Procure Ment
Procurement Process	Correlation Coefficient	1.000	.971**
	Sig. (2-tailed)	.	.000
	N	66	66
Just in Time Procurement	Correlation Coefficient	.971**	1.000
	Sig. (2-tailed)	.000	.
	N	66	66

**. Correlation is significant at the 0.05 level (2-tailed).

The relationship between the procurement process and just in time procurement process indicates that rs = 0.971. This indicates that a strong positive relationship exists between the procurement process and just in time procurement.

Testing Hypothesis 2

Ho_2: There is no significant relationship between procurement processes and just in time procurement in public institutions in Rivers State, Nigeria.

$$Z = r\sqrt{n-1}$$

$$Z = 0.971\sqrt{66-1}$$

$$Z = 0.971\sqrt{65}$$

$$Z = 0.971x8.0623$$

$$Z = 7.828.$$

Decision: Since the calculated z value (7.828) is greater than the tabulated z value of (1.96) the null hypothesis will be rejected and the alternative accepted. Having accepted the alternative hypothesis, it implies that there is a significant relationship between lead time and just in time procurement in public institutions in Rivers State, Nigeria.

V. Discussion

a) Lead Time and Just in Time Procurement

Lead time defines the period of time between the placing of an order and when the delivery of the order is made. Lead time is viewed via public institution as to be the item it takes in days (including non-working days) from when an institution recognizes the need to purchase an equipment or product, to when it is available in the stores for use. In reducing elongated lead time, activities such as excessive waste times, unneeded people or material movement, unnecessary

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processing steps, numerous variabilities throughout a firm's activities and any other non-value adding activity should be avoided (David, Jennifer, James & Michelle 2005). Also, Lysons and Farrington (2006) noted that just in time can be successful when lead time is reduced to zero or reduced to the barest minimum. This is done through close cooperation with suppliers and possibly by inducing or having supplier's location close.

The management of an organization should have a clear understanding on quality delivery of orders. Orders are adequately met by attempting on reducing lead time and by utilizing closely located suppliers as shown in Table 1 which indicates that 78.8% of respondents agreed that closeness to suppliers influences supplier's transit time of delivery and as such enhances just in time procurement in my organization and also 63.6% of respondent accepts that lead time reduction eliminates waste and thus enhances just in time procurement which agrees with the views of Lysons and Farrington (2006) which states that lead time can be reduced through close cooperation with suppliers and possibly by inducing or having supplier's location close and that just in time can only be successful when lead time is reduced to zero or to the bare minimum.

From Table, 2 the analysis between lead time just in time procurement the correlation coefficient (r) = 0.9833 indicate a very positive relationship exists between lead time and just in time procurement. For the rest of the performance indicators, the results show that lead time accounts for the variation in just in time procurement.

b) Procurement Process and Just in Time Procurement

Procurement refers to the acquisition of goods, services, and works by a procuring entity using public funds. Public bodies have always been big purchasers, dealing with huge budgets. Public procurement represents 18.42% of the world's GDP (Muange & Chirchir, 2016). In the private sector, procurement is considered as a profit center to maximize the firm's profit in saving material cost. However, there is a major distinction in public procurement as it draws its funds from tax revenue. Procurement comes to play when an institution has identified a need and decided on its procurement requirement. Therefore, it is paramount that public institutions should think in terms of the total cost of ownership of procured products which includes not only the purchase price, but also time and resources that are expended in the pursuit of ownership.

Ogbu and Asuquo (2018) consider that public procuring entities are normally expected to oversee all administrative responsibilities for the projects they manage, whether financed through local funds or with development assistance. However, they stated that the procurement process can be effective when their practices in this regard are circumscribed by the procurement laws. From the analysis in table 4.6.1, it is shown that 81.8%% of the respondents agreed materials bought or stored are those that meet the immediate needs of the organization, while 75.7% of the respondent agreed that procuring products from suppliers most a time reduced cost of purchase and this corresponds to the statement of Ansari and Modarress (2002) which states that materials are bought or stored in an exact quantity and just as they are needed. The analysis between the procurement process and just in time procurement in Table 4, the correlation coefficient (r) = 0.971 indicate that a very strong relationship exists between the procurement process and just in time procurement.

VI. Conclusion

The position of this paper on the features of just in time procurement as a consequence of factors such as lead time and procurement process, affirms to the imperatives of effective processes and the control of the procurement process. This justifies the need for order processing activities that are well aligned and mapped to suit the features of not only a changing and dynamic environment, but also a growing economy and sensitive market. From the study, it can be established that there exists a positive relationship between lead time and just in time procurement as well as a positive relationship between the procurement process and just-in-time. Hence, directors in public institutions must pay greater attention to accurate purchase and storage of materials, ability to communicate properly to subordinate.

Furthermore, the study also reveals that long lead time, lengthy procurement process, top management inability to incorporate employees in decision making and unskilled employees affects the performance outcome of just in time procurement significantly and together leads to the realization of a successful procurement. In view of the foregoing, this paper concludes that the adoption of lean time and procurement processes well adjusted to the features and functions of the organization, enhance the just-in-time procurement of organizations and in that manner, enhance the operations of the institutions. In this vein, these facets of the order processing are critical to the health and functionality of institutions.

References Références Referencias

1. Agaba, E., & Shipman, N. (2017). Public procurement reform in developing countries: The Ugandan experience. *Advancing Public Procurement: Practices, Innovation and Knowledge-Sharing*, 373-391.
2. Bagshaw, K. B. (2017). Material resource planning: output-demand equilibrium of finished products. *Journal of Management in Manufacturing & Services 4*(19), 11-18.

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3. Bamidele, E.O., Mosaku, T., & Fagbenle, O. (2019). A study of the causes of noncompliance with Public Procurement Act, 2007 among public higher education institutions in Southwest, Nigeria. *International Journal of Civil Engineering and Technology (IJCIET)*, *10*(3), 1107-1118,
4. Basheka, B; (2010). Public procurement reforms in Africa: A tool for effective governance of the public sector and poverty reduction, *International Handbook of Public Procurement,* Boca Raton, CRC Press.
5. Bhatt, G. D. (2001). Business process improvement through electronic data interchange (EDI) systems: An empirical study. *Supply Chain Management: An International Journal*, *6*, 60-73.
6. Brülhart, M. (2009). Public expenditure: International specialization and agglomeration. *European Economic Review, 48* (4), 851-881
7. Chikwere1, G.U., Dzandu, S.S.K., & Dza, M. (2019. The compliance issues with public procurement regulations in Ghana. *International Journal of Business and Management, 14*(5), 1-8
8. Christopher, M. (2005). *Logistics and supply chain management: Creating value-adding networks*, 3rd ed. London, Pearson's Education Ltd.
9. DEFRA. (2007). Securing the future: UK government sustainable procurement action plan incorporating the government response to the report of the sustainable procurement taskforce. London: DEFRA.
10. Edward, W. (2010). EOQ application. *International Journal of Operations & Production effective Procurement.* 27 (3) 46-48.
11. Folinas, D.K., Fotiadis, T.A., & Coudounaris, D.N. (2017). Just-in-time theory: the panacea to the business success? *Int. J. Value Chain Management.* 8(2): 171-190
12. Franco, C.E. & Rubha, S. (2017). An Overview about JIT (Just-In-Time) – Inventory Management System. *International Journal of Research, 5* (4), 14 -18
13. Frøystad, M., Heggstad, K. K. & Fjeldstad, O. H. (2010). Linking procurement and political economy. *UK Department for International Development and the World Bank Institute*.
14. Gyawali, B., Dahal, K.R., & Maharjan, R. (2018). Procurement process and its impact on development with special focus on Nepal. *Journal of Entrepreneurship & Organization Management, 7*(2), 1-7
15. Hasim, S., Fauzi, M.A., Yusof, Z., Endut, I.R., & Ridzuan, A.R.M. (2018). Material supply chain management in a construction project: a current scenario in the procurement process. AIP Conference Proceedings 2020.
16. Kaufman, D. (2004). The cost of corruption; Available at http//www.worldbank.Org/wbi/governance.index
17. Kibinu, K., Kinuthia1, P.A.O., & Nyagah, G (2018). Aspects of procurement reforms that influence expenditure management in public secondary schools in Kenya: A Focus on Emergency Procurement. *International Journal of Business and Management, 13*(6), 129-142
18. Lysons, K. & Farrington, B. (2006). *Purchasing and supply chain management*, 7th ed. London, Pearson Education Ltd.
19. Moses, P.N (2012). An assessment of the extent of compliance with public procurement and disposal act 2005 in level 5 hospitals in Kenya: A study of Kisii level 5 hospital. Unpublished MBA Report, Egerton University, Kenya
20. Muange, E. & Chirchir, M. (2016). Procurement legislation and performance of constituency development fund committees in Kenya. *International Journal of Supply Chain Management*. *1*(1): 19-33
21. Mutangili S. (2019): Role of procurement laws in facilitation of international trade in East Africa Community. *Journal of Procurement & Supply Chain, 3*(1) pp. 1-17.
22. OECD (2019). Productivity in public procurement a case study of Finland: measuring the efficiency and effectiveness of public procurement. http://www.oecd.org/sdd/productivity-stats/40605524.pdf (accessed on 20 August, 2019).
23. Ogbu, C.P. & Asuquo, C.F. (2018). 'A comparison of prevalence of unethical tendering practices at national and subnational levels in Nigeria', *Africa's Public Service Delivery and Performance Review 6*(1), pp 1-13
24. Onyiego, S.N. & Oloko, M, (2016). Factors affecting implementation of just in time inventory in public institutions in kenya: a case study of the ministry of transport and infrastructure. *International journal of management and commerce innovations. 3* (2): 675-687
25. Parveen, I., Mia, A., Rahman, M., & Muk Cho H. (2019). Implementation of JIT to increase productivity in sewing section of a garment industry. *Proceedings of the International Conference on Industrial Engineering and Operations Management Bangkok, Thailand, March 5-7,*
26. Peavler, R. (2019). Just–In-Time (JIT) Inventory management. https://www.thebalancesmb.com/just-in-time-jit-inventory-management-393301 (accessed on 27 August, 2019).
27. Phan, A.C., Nguyen, H.T., & Matsui Y. (2019). Effect of total quality management practices and JIT production practices on flexibility performance:

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Empirical Evidence from International Manufacturing Plants. *Sustainability, 11*, 3093.
28. Pillary, S. (2004). *Corruption, the challenge to good governance: A South-African perspective*, Melbourne, Australia.
29. Simpson, M. and Power, E. (2007). Procurement under uncertain lead times – a dual-sourcing technique could save costs, *Engineering Costs and Production Econ., 21*(1), 59-78
30. Sobczak, M. (2008). Quantitative model. *J. Bus. Logist, 22*,111-117.
31. Soreide, T. (2002). Corruption in public procurement: Causes, consequences and cures, Bergen, Norway: *Institute*, Available at http//www. Cmi.no
32. Srinivasan, K.A., & Shrehari J. (2017). Applied procedures for lead time reduction: A Review. *International Journal of Engineering Trends and Technology,* 43(3), 169-172.
33. Talluri, W. (2008). Benchmarking the performance of English Universities. *Benchmarking International Journal, 14*(1), 102-22.
34. Thomson, J. and Jackson, T. (2007). Sustainable procurement in practice: lessons from local government. *Journal of Environmental Planning and Management*, *50* (3), 421- 44.
35. Torkabadi, A.M., & Mayorga, R.V. (2017). Implementation of Just-In-Time policies in supply chain management. *International Journal of Economics and Management System.* 2 (1). 315-320
36. United Nations Commission on International Trade Law (UNCITRAL), (2014). *Model law on public procurement,* New York UN Publication.
37. Van Wyk, G. & Naidoo, V. (2016). Critical assessment of Just-in-Time (JIT) process within a South African company: the case of Sabertek. *Investment Management and Financial Innovations*, *13*(3-1), 237-247.
38. White, R. E. (1993). An empirical assessment of JIT in US manufacturers, *Production and Inventory Management Journal*, *34* (2), 38-42.
39. Womack, J.P. & Jones, D.T. (1996). *Lean thinking*. Simon & Schuster, New York. 350

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