Inventory Levels and Supply Chain Performance of Petroleum Depots in Rivers State

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Abstract: The purpose of this study was to investigate the impact of inventory levels on customer service, innovativeness and demand flexibility of petroleum depots in Rivers State. This study was anchored on two supply chain management theories. Data were collected through well-structured questionnaire from eighty (80) managers drawn from sixteen (16) petroleum depots in Rivers State. The data collected were analysed using multiple regression to measure the relationships between (inventory management) and the measures of (supply chain performance) which include customer service, innovativeness and demand flexibility with the aid of the statistical package for social science (SPSS) version 25.0. Hence, the analysis revealed that there is very strong, strong, positive and significant relationship between the variables. Based on the above findings, we therefore conclude that inventory management has great effects on supply chain performance of petroleum depots in Rivers State. Inventory management enhances customer service, innovativeness and demand flexibility. As a result, recommends that, management of petroleum depots should try as much as required to maintain optimal inventory level (not holding excess stock and not holding too few inventory) so as to reduce their frequent irregular supply of petroleum products and always stock out, as a result increasing their level of supply chain performance. Also, the study recommends that petroleum depots should strengthen processes, and automated systems (innovativeness) that will shorten their lead time and as well as improving customer satisfaction and loyalty by ensuring timely delivery of petroleum products, always availability of products in order to avoid stock outs and its disadvantages which most times causes the customers look elsewhere.

Keywords: Inventory Levels, Customer Service, Innovativeness and Demand Flexibility

INTRODUCTION

Every management problem is a decision problem. Decision is an important task that all organizations has to take. The allocation of resource is a common issue to all organizations. Organizations have to acquire, allocate and control the factors of

production which are necessary for the achievement of the business's objectives. Inventory management as one of the key activities of business logistics, has always been a major pre-occupation for the company's survival and growth. Inventory is a necessity in any organization engaging in production, sales or trading. Inventory is held in various forms including Raw Materials, Semi Finished Goods, Finished Goods, Accessories and Spares. Every unit of inventory has an economic value and is considered an asset of the organization irrespective of where the inventory is located or in which form it is available. Even scrap has residual economic value attached to it.Depending upon the nature of business, the inventory holding patterns may vary. While in some cases the inventory may be very high in value, in some other cases inventory may be very high in volumes and number. Inventory may be help physically at the manufacturing locations or in a third-party warehouse location (Pienaar & Vogt, 2016).

The aim of inventory management is to hold inventories at the lowest possible cost, given the objectives to ensure uninterrupted supplies for ongoing operations. When making decision on inventory, management has to find a compromise between the different cost components, such as the costs of supplying inventory, inventory-holding costs and costs resulting from insufficient inventories (Hugo, Badenhorst-Weiss & Van Rooyen, 2016).

According to Wild (2017), inventory management is the activity which organizes the availability of items to the customers. It coordinates the purchasing, manufacturing and distribution functions to meet the marketing needs. This role includes the supply of current sales items, new products, consumables; spare parts, obsolescent items and all other supplies. Inventory enables a company to support the customer service, logistic or manufacturing activities in situations where purchasing or manufacturing of the items is not able to satisfy the demand. Lack of satisfaction could arise either because of the speed of purchasing or manufacturing is too protracted, or because quantities cannot be provided without stocks. Inventory Management is an extremely important function within most business. The reason of inventory management is to develop policies that will achieve an optimal inventory investment. A company can maximize its rate of return and minimizes its liquidity and business risk by optimally managing inventory.

THEORICAL FOUNDATION OF THE STUDY

Transaction Cost Theory

Transaction Cost Economists maintained that transactions lie at the heart of marketing activity and have long been invoked as a foundational element of

marketing thought. A generic concept of marketing, Kotler (2014) suggests that "marketing's core idea is market transactions. In essence, this theory suggests that conducting transactions is a costly endeavor (e.g., negotiating contracts, monitoring performance and resolving disputes) and different modes of organizing transactions (e.g., within a market or a firm) entail different costs (Coase 1937). Hence, according to this theory, a comparative examination of the relative transaction costs (or their indicants) of these alternative modes reveals how a particular transaction should be conducted (Williamson, 1985). Although the essence of this theory may seem rather intuitive, its impact has been immense.To date, three different transaction cost scholars (e.g., Ron Coase, Douglas North, and Oliver Williamson) have won the Nobel Prize in Economics, and this theory has received hundreds of thousands of citations across a diverse array of scholarly domains, including economics, public policy, international business, operations, management and marketing, among others (Macher& Richman 2008).

Resource-based View Theory

This is another organizational theory that is similar to transaction cost theory, and is mostly concerned with the economic aspect of operations in organizations. However, it provides more insight into understanding of value systems in the organization as it emphasizes the importance of knowledge as a production factor in organizations.

Lavassani *et al.* (2010) identified two main schools of thought in the development of resource-based view, namely, classical and modern schools of thought. The classical school of thought describes that for achieving higher competitive advantage organizations pursue the acquisition of better economic resources. Resource based view (RBV) theory here refers to the outsourcing decision which is based on the client company's abilities to invest in internal capabilities and thus sustain competitive advantage. Resource based view (RBV) theory deliberate on the resources that are possessed by a firm as the primary determinants of its performance, and may contribute to a sustainable competitive advantage of the firm. In the early stage of the Resource based view theory, the main concern was to identify the characteristics of resources that are not subject to imitation by competitors but argues that even if the resources possessed by a firm can easily be replicated by competitors and even though the resources are the source of competitive advantage of the firm, then the advantage will not last long. Productive activity requires the cooperation and coordination of teams of resources. The theory explains that the firm capability is the capacity for a team of resources to perform some task or activity and conclude

that the firm's resources are the source of a firm's capabilities which are the main sources of its competitive advantage.

LITERATURE REVIEW

Inventory Levels

According to Thogori&Gathenya(2014), Inventory levels refers to the amount of inventory available throughout an entire distribution network. By keeping track of inventory levels, an organization can consistently meet demand while only storing the inventory the firm needs at a given period. As a result, high levels of inventory increase the probability that the customers are likely to get what they want, increases sales and service levels (Thogori & Gathenya, 2014). High inventory levels however lead to both stock holding costs and in-store logistics errors. This is because it becomes difficult for the employees to perform shelving and replenishment which makes goods physically available in the store but the employees cannot trace those phantom products (Ton & Raman, 2005).

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Ravinder & Misra (2014), identified the following levels or categorization of inventory levels to include minimum level, maximum level, re-order level, re-order quantity and economic order quantity.

Minimum Level: This represents the quantity which must be maintained in hand at all times. If stocks are less than the minimum level, then there will be interruption or obstruction of the ongoing operations and processes due to shortage of materials. It is the minimum level of stocks that should be maintained by firms to avoid customers dissatisfaction. If the stock in an organization's custody is less than the minimum level then the firm should immediately place order. When the stock goes below the minimum level, then it is called under-stocking which is not healthy for an organization.

Maximum Level: The upper limit beyond which the quantity of any item is not normally allowed to rise is known as the "Maximum Level". It is the sum total of the minimum quantity, and Economic Order Quantity. The fixation of the maximum level depends upon a number of factors, such as, the storage space available, the nature of the material i.e. chances of deterioration and obsolescence, capital outlay, the time necessary to obtain fresh supplies, the Economic Order Quantity, the cost of storage and government restriction.

Re-Order Level: Also known as the 'ordering level, the reorder level is that level of stock at which a purchase requisition is initiated by the storekeeper for replenishing the stock. This level is set between the maximum and the minimum level in such a way that before the material ordered for are received into the stores, there is sufficient quantity on hand to cover both normal and abnormal circumstances. The fixation of ordering level depends upon two important factors viz, the maximum delivery period and the maximum rate of consumption.

Re-Order Quantity: The quantity, which is ordered when the stock of an item falls to the reorder level, is known as the reorder quantity or the Economic Order Quantity or the economic lot size. Although it is not a stock level as such, the reorder quantity has a direct bearing upon the stock level in as much as it is necessary to consider the maximum and minimum stock level in determining the quantity to be ordered. The re-order quantity should be such that, when it is added to the minimum quantity, the maximum level is not exceeded. the re-order quantity depends upon two important factors viz, order costs and inventory carrying costs.

Economy Order Quantity: The Economic Order Quantity refers to the order size that will result in the lowest total of order and carrying costs for an item of
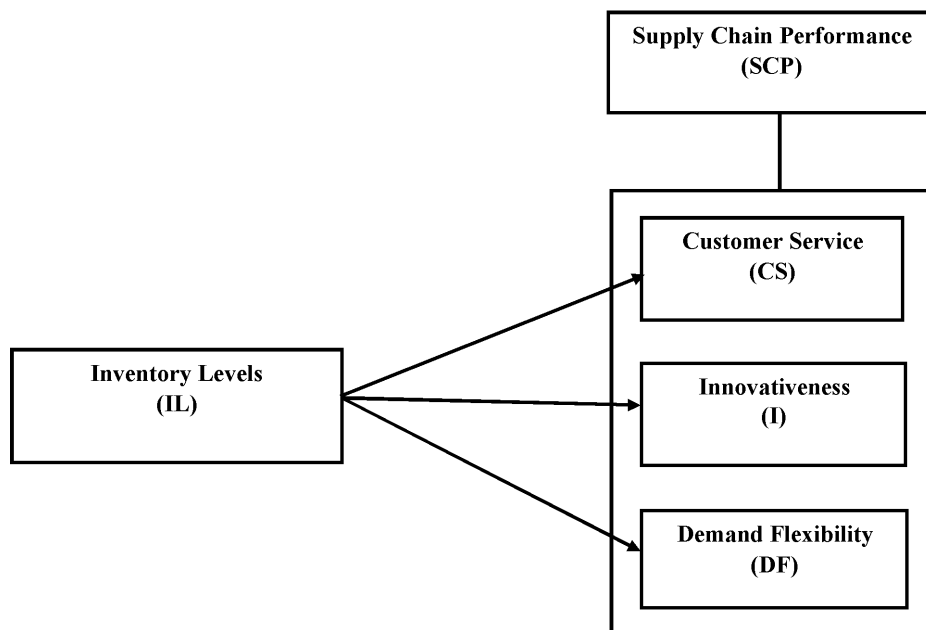

Figure 1: Conceptual Framework of the Inventory Levels and Supply chain Performance of Petroleum Depots in Rivers State.

Source: Researchers' Conceptualization from Review of Literature (2022)

203 inventory. If a firm place unnecessary orders it will incur unneeded order costs. If a firm place too few orders, it must maintain large stocks of goods and will have excessive carrying cost. By calculating an economic order quantity, the firm identifies the number of units to order that result in the lowest total of these two costs. Hence, the study is conceptualized thus.

Customer Service

According to Machando&Diggines (2013), customer service is the totality of what an organization does to add value to its products and services from the perspective of customers.

Customer service is considered to be a vital concept with the potential to bridge the gap between the ever-expanding customer demands for flexibility (faster, more customized, more reliable, more choice) and, at the same time, the need to reduce production and distribution costs. By bridging this gap, a sustainable competitive advantage can be achieved. This suggests that customer service is viewed upon as a competitive strategy instrument.e effectiveness is seen as the relationship between customer service performance and market response. As far as the impact of customer service is concerned the focus has been on measuring its importance as a purchasing criterion and its performance on specific elements (e.g. delivery time). Businesses have wide-ranging ideas of what they expect from customer interactions with service providers and therefore service providers must get to know its customers and strive for customer service excellence. As the ultimate goal of any business is customer satisfaction and loyalty, it is essential for a business to live up to its customers' perceptions and expectations of customer service (Machando&Diggines, 2013).

Jeske, Chimusoro&Karodia (2015) described customer service as the ability of knowledgeable, capable and enthusiastic employees to deliver products and services to their internal and external customers in such a way that it satisfies identified and unidentified needs of customers, and, ultimately, results in positive word of mouth advertising and repeat business. It must be kept in mind that it is not the actual service that is of importance, but rather the perception that a customer has of the service. The role of customer service is to provide 'time and place utility' in the transfer of goods and services between buyer and seller. It follows that making the product or service 'available' is what, in essence, a company's distribution function business entails. 'Availability' is, in itself, a complex concept impacted upon by a galaxy of factors, which together constitutes customer service (Jeske, Chimusoro&Karodia, 2015).

Innovativeness

Innovativeness in supply chain management is a widely examined concept in many studies, as Crossan and Paydin (2016) comprehensive literature review points out that innovation is conceived as a means of changing an organization, either as a response to changes in the external environment or as a pre-emptive action to influence the environment. Hence, innovation is here broadly defined to encompass a range of types, including new product or service, new process technology, new organization structure or administrative systems, or new plans or program pertaining to organization members. Baregheh, et al (2012) complemented this definition to consider business and company success as a main driver of innovations by arguing that 'innovation is the multi-stage process whereby organizations transform ideas into new and improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace.

Innovation in a company refers to an outcome from an intellectual process, whereas *innovativeness* refers to a company's collective openness to new ideas embedded in the corporate culture (Hurley &Hult, 2017).

A company's ability to produce or adapt to new innovations, with the aim of influencing the markets in which it operate,reflect its level of corporate innovativeness).

According to Crossan and Paydin (2016), a firm's innovativeness can be measured by the frequency of activities through which the company tries out new ideas, seeks novel operating procedures, develops its operations creatively and succeeds in being the first to market new products and services. Innovativeness as a company's intra-organizational capability has been found to be one of the key antecedents of business performance and competitive advantage. Hence, a company's ability to introduce innovations can determine its future success and survival. In line with the works of Hurley and Hult (2017), innovativeness in supply management can be defined as purchasing professionals' collective ability to innovate and their openness to new ideas with the aim of influencing supply markets, whereas innovation is a process in which new ideas and practices are created.

Supply Chain Flexibility

The global and dynamic markets demand better quality, more product variances and extended services including higher reliability and faster deliveries (Duclos et al., 2003). Each of those requirements can be a crucial differentiator that decide whether a company sustains on the market or not. Besides that, customized

products with short lead times characterize the current situation in various industries. Together, all these factors provoke an uncertain environment where forecast errors are considerably high. With customers wanting more diverging products, it becomes very difficult for the supply chain to transfer the customer needs into a product design and to predict the level of demand. To respond and react to uncertainties, the increased strategic importance of flexibility in operations has been observed (Garavelli, 2003; Pujawan, 2004; Stevenson & Spring, 2007).

Lummus *et al.* (2003) recognized that flexibility of the entire supply chain is a result of the characteristics of the operations systems, the logistics processes, and the supply network at every point in the supply chain. They suppose that some of the operational characteristics result in a flexible supply chain but are heavily influenced by the organizational design and information systems of each supply chain partner. They further state that when customer needs are fully satisfied, even when the needs change over time, the supply chain has achieved market flexibility. By being flexible, the supply chain can meet specific customer requirements and enhance a long-term commitment of customers (Lummus et al., 2003).

Gunasekran *et al.* (2004) stated that in Supply Chain where material moves sequentially from one trading partner to the next, firms have recognized that to be responsive to end customer demand, all partners in the chain must be flexible in demand. Supply chain flexibility, embraces a process-based view and also includes the core processes procurement/sourcing and distribution/logistics. Thus, it is a much broader concept, considering flexibility from the perspective of the entire value chain (Bauer & Gobl, 2017). Hence, the following hypotheses are formulated:

Ho_1: There is no significant relationship between inventory levels and customer service

Ho_2: There is no significant relationship between inventory levels and innovativeness

Ho_3: There is no significant relationship between inventory levels and demand flexibility

METHODOLOGY

This study adopted an explanatory research design to investigate the impact of inventory management on supply chain performance of petroleum depots in Rivers

State. The population of the study consist of sixteen (16) petroleum depots in Rivers State and the respondents include the depot managers, assistant depot controllers, accountants, stock managers and sales managers. The study adopted a census sampling procedure and primary method of data collection was used via a well-structured questionnaire to gather feedback from the respondents. A pilot study was conducted to determine the reliability of the research instrument in which data from the respondents were subjected to Cronbach's Alpha reliability test with the help of the Statistical Package for Social Sciences (SPSS 25.0) with the threshold of 0.70

Table 1: Result of Reliability Analysis on All Variables

S/N	Variables	Number of Items	Cronbach's Alpha Coefficients
1	Inventory Levels	5	0.733
2	Customer Service	5	0.891
3	Innovativeness	5	0.814
4	Flexibility	5	0.880

Table 2: Names Petroleum Depots and Number ofSample Element

No	Name of Depots	No of Respondents
1	Oando Plc	5
2	Coinoil Plc	5
3	Forte Oil Plc	5
4	Avidor Oil and Gas Limited	5
5	Cita Bulk Storage Facilities Limited	5
6	Delmar Petroleum Company Limited	5
7	Dozzy Oil and Gas Limited	5
8	Master Energy Oil and Gas Limited	5
9	Petroleum Warehousing and Supplies Limited	5
10	Petrolog Nigeria Limited	5
11	Petrostar Nig. Ltd	5
12	Sahara Energy Resources Limited	5
13	Sea Petroleum and Gas Company Limited	5
14	Shorelink Oil and Gas Services Limited	5
15	Tonimas Nigeria Limited	5
16	Limited (Terminal II)	5
	Total	80

Table 3: Descriptive Statistics on Extent of Inventory Levels (n=71)

S/n	Questionnaire items	Total Score	Mean	Std. Deviation	Remark
1	Inventory management is responsible for planning and controlling inventory from the raw material stage to the customer.	197	2.77	1.017	Disagree
2	High inventory levels lead to both stock-holding costs and in-store logistics errors in an organization.	214	3.01	.936	Agree
3	Maintaining optimum inventory levels is important in the company as holding excessive inventory might result in increased stock-holdingcosts for the firm.	213	3.00	1.170	Agree
4	Organizational cash flow can only be improved through the reduction of excessive inventory and the optimization of inventory levels.	238	3.35	.657	Agree
5	A low inventory level affects your company's level of profitability.	183	2.58	1.091	Disagree
	Grand mean		2.94	0.689	Disagree

Table 3 aboveshows the responses to the research instrument concerning inventory levels. Questionnaire item 1 which sought to ascertain if inventory management was responsible for planning and controlling inventory from the raw material stage to the customer was disagreed (mean score of 2.77 < 3.0). Questionnaire item 2 sought to know if high inventory levels lead to both stock holding costs and in-store logistics errors in an organization (mean score of 3.01 > 3.0) and questionnaire item 3 required to know if maintaining optimum inventory levels is important in the company as holding excess inventory results in increased stock holding costs of the firm (mean score of 3.0 ≥ 3.0). the mean scores indicate that the respondents agreed on the items. The low value of the standard deviation (0.698) indicates that the responses were very close. The grand mean of 2.94 < 3.0 indicates low inventory levels in the studied firms.

Table 4: Correlation Analysis showing the Magnitude, Significance and Direction of Relationship between Inventory Levels and Customer Service

S/N	Relationship	Correlation Coefficient	Magnitude	Extent of Relationship	PV	Conclusion
HO$_1$	Relationship between Inventory levels and customer service.	0.177	Very weak relationship	Very low extent	0.141	Not significant

Table 4: The relationship between inventory levels and customer service indicates that the Spearman's Rank correlation coefficient (r) = 0.177, this value is very low implying that a very weak relationship exists between inventory levels and customer service. Knowing that the sign of the correlation coefficient indicates the direction of the relationship, the positive sign of the correlation coefficient is an indication that a direct relationship exists between them. That is to say that as inventory levels increases, customer service also improves in the studiedfirms.

Table 5: Correlation Analysis showing the Magnitude, Significance and Direction of Relationship between Inventory Levels and Innovativeness

S/N	Relationship	Correlation Coefficient	Magnitude	Extent of Relationship	PV	Conclusion
Ho$_1$	Relationship between Inventory levels and innovativeness.	0.179	Very weak relationship	Very low extent	0.135	Not significant

The information contained in Table 5 aboveon the relationship between inventory levels and innovativeness showed a Spearman's Rank correlation coefficient (r) = 0.179, which implied that a very weak relationship exists between inventory levels and innovativeness. The positive sign of the correlation coefficient shows that a positive relationship exists between this pair of variables. That means that as inventory levels increases, innovativeness also increases in the studiedfirms.

Table 6: Correlation Analysis showing the Magnitude, Significance and Direction of Relationship between Inventory Levels and Demand Flexibility

S/N	Relationship	Correlation Coefficient	Magnitude	Extent of Relationship	PV	Conclusion
HO	Relationship between Inventory levels and demand flexibility.	0.278*	Very weak relationship	Very low extent	0.019	Not significant

Table 6: The relationship between inventory levels and demand flexibility showed a Spearman's Rank correlation coefficient (r) = 0.278, since this correlation coefficient is positive. It implied that a weak and positive relationship exists between inventory levels and demand flexibility in petroleum depots in Rivers State.

DISCUSSION AND RECOMMENDATIONS

Based on the findings in the preceding section, the study hereby concludes that inventory levelsenhance customer service, innovativeness and demand flexibility

of petroleum depot in Rivers State. The study therefore recommends as follows: That management of petroleum depots should try as much as required to maintain optimal inventory level (not holding excess stock and not holding too few inventory) so as to reduce their frequent irregular supply of petroleum products and regular stock out, as a result increasing their level of supply chain performance. As keeping or holding too many inventories amount to tying down company's fund, while keeping too few inventories will also result in frequent stock out which is not usually healthy for the company.

Secondly, this study also recommends that top managers of petroleum depots operating in Rivers State should ensure that organization holds only necessary and needed inventory at all times, in order not to incur unnecessary inventory costs arising from inventory carrying costs such as insurance cost, maintenance cost, machine idle cost, etc.

Thirdly, petroleum depots should strengthen processes, and automated systems (innovativeness) that will shorten their lead time and as well as improving customer satisfaction and loyalty by ensuring timely delivery of petroleum products, always availability of products in order to avoid stock outs and its disadvantages which most times may in turn cause the customers look elsewhere.

Reference

Arnold, J. R. T., Chapman S. N. & Clive, L. M. (2014). *Introduction to Materials Management, 7th edition:* New Jersey: Pearson Prentice Hall.

Baregheh, A., Rowley, J. & Sambrook, S. (2012). Towards a multidisciplinary definition of innovation. *Management Decision, 47* (8) (2009), 1323-1339.

Bartmann, D. & Beckmann, M. J. (2012). Inventory Control – Models and Methods. *Berlin: Springer-Verlag. 3, 540-558*.

Bauer, D. &Gobl, M. (2017). Flexibility measurement issues in supply chain management. *Journal of Applied Leadership and Management, 5,* 1-14.

Beamon, B.M. (2001). Measuring supply chain performance. *International Journal of Operations and Production Management 19 (3), 275-292.*

Cronbach, L. J. (1951). Coefficient alpha and internal structure of test. *Pschometrika, 16* (3), 297-334.

Crossan, M. M. &Paydin, M. (2016)**.** A multi-dimensional framework of organizational innovation: a systematic review of the literature. *Journal of Management Studies, 47* (6), 154 -1191.

Filippini, R., & Forza, C. (2016). The impact of the just-in-time approach on production system performance: a survey of Italian industry. *A review and outlook. In A Journey through*

Manufacturing and Supply Chain Strategy Research. Springer, Cham for manufacturing. *Management and Production Engineering Review. 9* (4), 117-128.

Garavelli, C. A. (2012). Flexibility Configurations for the Supply Chain Management. *International Journal of Production Economics, 85* (2), 141-153.

Glyba, H., Mulugetta, Y. &Azapagic, A. (2013).Passenger transport in Nigeria: Environmental and economic analysis with policy recommendation. *EnergyPolicy, 55*(1), 353-361. Retrieved from www.elsevier.com/locatelenpol.

Gokhale, P. P., & Kaloji, M. B. (2018). A Study on Inventory Management and Its Impact on Profitability in Foundry Industry at Belagavi, Karnataka. *International Journal of Latest Technology in Engineering, Management & Applied Science, 7* (9), 29-3.

Gunasekaran, A. &Kobu, B. (2007). Performance measures and metrics in logistics and supply chain management: A review of recent literature (1995 - 2004) for research and applications. *International Journal of Production Research 45* (12), 2819-2840.

Gunasekaran, A. Patel, C. & McGaughey, R. E. (2006). A framework for supply chain performance measurement. *International Journal of Production Economics 87* (3), 333-347.

Gunasekaran, A. Patel, C. &Tirtiroglu, E. (2014). Performance measures and metrics in a supply chain environment. *International Journal of Operations & Production Management 21* (1/2), 71-87.

Hult, G.T.M, Hurley, R. & Knight, G. (2017). Innovativeness: its antecedents and impact on business performance. *Journal of Industrial Marketing Management, 33* (5), 429-438.

Isaksson, R., Johansson, P. & Fischer, K. (2010). Detecting supply chain innovation potential for sustainable development. *Journal ofBusiness Ethics, 97* (3), 425-442.

Jenson, J. E. & David, R. (2014). Study on performance measurement systems: Measures and Metrics, *International Journal of Scientific and Research Publications, 4,* (9), 1-9.

Jeske, H., Chimusoro, E. & Karodia, A. M. (2015). An evaluation of customer service and the impact of efficiency on Namibia's logistical sector: A study involving selected courier companies. *Singaporean Journal of Business Economics, and Management Studies. 3,* (6),1-4.

Kagashe, O. A. &Massawe, T. (2012). Medicine sock out and inventory management problems in Public Hospitals in Tanzania, *International Journal of Pharmacy, 2* (2), 252-259.

Kaswan, M. S., Rathi, R. & Singh, M. (2019). Just in time elements extraction and prioritization for health care unit using decision making approach. *International Journal of Quality & Reliability Management3,* (4), 6-10.

Kiarie, J. W. (2017). The Influence of supplier relationship management practices on operational performance of large manufacturing organizations in Kenya (Master Thesis) *Strathmore University. Nairobi, Kenya.*

Leończuk, D. (2021). Factors affecting the level of supply chain performance and its dimensions in the context of supply chain adaptability. *Log forum Scientific Journal of Logistics, 17* (2), 253–269.

Lysons, K. & Farrington, B. (2016). Impact of inventory management and procurement practices on organization's performance. *Singaporean Journal of Business, Economics and Management Studies 3* (2), 3-6.

Machando, R. &Diggines, C. (2013). *Customer Service. In: Customer Service.* Cape Town: Juta and Company Limited.

Melnyk, S. A., Stewart, D. M. & Swink, M. (2004). Metrics and performance measurement in operations management: dealing with the metrics maze. *Journal of Operations Management 22* (3), 209-218.

Mulandi, C. M. &Iamail, N. (2019). Effect of inventory management practices on performance of commercial state-owned corporations in Kenya. *International Academic Journal of Procurement and Supply Chain Management. 3, (1), 180 - 197.*

Shepherd, C. & Gunter, H. (2006). Measuring supply chain performance: current research and future directions. *International Journal of Productivity and Performance Management 55* (3/4), 242-258.

Simatupang, T. M. &Pardhanai, H. W. (2014). Improving inventory management and supply chain of diesel fuel inPertamina 5 Main Depots. *The Asian Journal of Technology Management (AJTM), 3* (1), 31-43·

Ślusarczyk, B.&Kot, S. (2012). Pprinciples of the supply chain performance measurement. *Journal of Advanced Logistics Systems, 6* (1), 17-24.

Tang, C. & Tomlin, B. (2008). The power of flexibility for mitigating supply chain risks. *International Journal of Production Economics, 116, 12-27.*

Upadhye, N. K., Deshmukh, S. G., Garg, S. & Sharma, D. (2015, March). Just-in-time implementation issues in Indian Corrugated Packaging Industries an empirical study in national capital region (NCR). *International Conference on Industrial Engineering and Operations Management.*

Wanke, P. F.& Zinn, W., (2018). Strategic Logistics Decision Making. *International Journal ofPhysical Distribution and Logistics Management. 34,* 64–66.

Wild, T. (2017). *Best Practice in Inventory Management. 2nd edition.* London, United Kingdom: Butterworth-Heinemann.