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RESEARCH PAPER

Information management role in logistics operations: optimization of distribution process in medical supply stores in Lagos State

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ABSTRACT

Goal: Information management frameworks, models, and software's have the capacity to enhance the competitiveness of logistics operations by maximizing information management. The study objectively examined information management role in logistics operations in medical supply stores.

Methodology: The methodology utilized in this review includes; quantitative philosophy such as smart partial least square(PLS).An aggregate of five hundred and twenty-eight (528) questionnaires were duly completed of the six hundred and fifty-nine (659) administered to various participants.

Results: The Findings based on the statistical outcome shows that maximal product tracking, optimal information transfer, expanded echelons, prompt distribution, and delivery are the indicating roles of information management in logistics operations. It is suggested that medical supply stores utilize information management models, frameworks, and software to aid effective distribution and flow in logistics operations echelons.

Limitations: The limitations to this study is the coverage of post-utilization stage by comparing the expected outcome to the actual outcome after enhancing the information management procedures.

Originality: The study demonstrates its novelty and pertinency by introducing a framework fixated on a comprehensive methodology, as it gives a viewpoint of information management in logistics operations. Thus, information management frameworks in logistics operations are optimized and analysed from the source to the destination. Finally, the development of medical supply stores and their capacity to survive depends on the proficiency of information management.

Keywords: Logistics operations; Information management; Frameworks; Models; Distribution.

1. INTRODUCTION

The dynamics of today's business require organizations to foster a production network process that allows them to align logistics operations by considering the progression of goods, data, and funds between providers, producers, merchants, transporters, and clients. Given this, logistics operations should take cognizance of optimal delivery of client orders, method of distribution, framework, and information flow. This invariably meet client needs at a minimal cost. Hence, the preparation, performance, and the utilization of a distributive model, which incorporates information flow, services, items, and funds, are fundamental to fulfil the prerequisites of clients at a minimal risk (Lifang, Jun, Qingpeng and Jiaqi, 2021).

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In this perspective, the process of distribution typifies logistics operations that mitigates the distinction between request and supply, affirming the accessibility of resources among the variables in a production network (Cano, Gómez and Cortés, 2021). This interaction is connected with the paradigm of logistics, that considers conveyances like roads, versatility, and congestions, among others. The paradigm also require appropriate operational, transportation frameworks, inventory methodologies, and distributive models(Rzepka, Berger and Hess, 2021).

With the rapid development of Lagos State due to the number of clients, the interest in metropolitan transport has persistently increased. Also, logistics operations is being obstructed due to congestion and uncoordinated vehicular movement. Thus, an appropriate management of transportation issues addresses an essential component for sustainable development. It requires the conveyance and transportation framework to adopt information management models to eliminate functional errors, optimize vehicular movement and distribution routes (Kazuhiro, Yusuke and Yoichi, 2022). This condition favours the utilization of external logistics providers as accomplices in logistics operations, seeking a more productive service to the end client at a lower cost utilizing an information management framework(Fadhil, Mahmod and Ahmed, 2021). The echelon of information management is expanding, zeroing in on digital platforms such as social handles, intranet/internet, adding more pressures on logistics operations performance.

Information management includes client connections, production, transportation, inventory, information streams, and mitigating bottlenecks connected with material distribution, protection, and discernibility(Ajibade, 2017). Thus, information management framework is a fundamental variable in logistics operations that improves transportation and back logistics through telematics models that permit real-time tracking. Similarly, the optimality of information management in the distribution and client process is fundamental in enhancing logistics operations allowing traceability and allocations (Alzahrani and Seth, 2021). This guarantees conveyance, and quality at a desired time.Therefore, information management is fundamental in the preparation, performance, and control of distribution.Consquently, senior management will have access to accurate information, including the traceability of goods, procedures, and resources in the production chain(Adedugba, Ogunniake, Adeyemo & Kehinde, 2021). Investment in information management can optimize efficiency, allowing the production network to maximize the flow of materials between the warehouse and other echelons in the production chain. Furthermore, an effective implementation of information management models, framework and software's in logistics operations requires a proper selection, and adoption of a robust tool such as information technology(Wu, Zuopeng and Wenzhuo, 2021).

Subsquently, a multi-echelon store network framework was considered by Sbai, Benabbou, and Berrado (2022) through a unified methodology that considers stock optimization through an information network. For the whole production network organization, multi-echelon frameworks have an ideal information nodes and produces better outcome to individual hubs. The reception of a dependable information structure optimizes the progression of important information within any production firm. Given this, information structure and models enhance the client's flexibility. Studies such as (Xu, Yan, Hu and Pu, 2022 ; Humayun, Jhanjhi, Niazi, Amsaad, & Masood, 2022) have examined information management's role in logistics operations in the context of medical supplies. Albeit other studies explored this area and proposed several frameworks for tackling information management-related bottlenecks. Nonetheless, numerous medical supply stores are confronted with the issue of selecting an optimal distributive model through an information management echelon that corresponds to their logistics operations framework and meets their needs in terms of drug accessibility.

Thus, it is essential to address the decision of information frameworks for a given logistics operational model. Definitely, deciding an optimal information management framework with regards to logistics operations for distribution frameworks among various options has not been considered. Consequently, the point of this study is to examine the information management role in logistics operations and the optimization of distribution process that satisfies the necessities and inclinations of clients.

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2. LITERATURE REVIEW

2.1 Information Management

Information management is a fundamental structure involving information that is useful for any production firm to analyse its advantages and objectives(Adedugba, Ogunniake, Adeyemo, Kehinde and Oke, 2022). This is implemented across levels (junior representatives, mid-level representatives, and senior representatives) and divisions. The major objective of information optimality is to enhance and give the administrators a perspective into departmental results and the progression of data to achieve organizational targets. Assuming the information shows any diversion from the goals, the administrator can rapidly make changes. The information structure of any production firm tends to the mix of man and material means responsible for keeping the

business information that has a significant influence and is the justification behind business advantage(Almazan, Tovar, and Quintero, 2017). It uses information technology equipments, informational indexes, processes, frameworks, examination paradigm, and dynamic administrative cycles. Generally, information structure are designed within the echelon of logistics to help boost efficiency and functional sufficiency. Information framework can also be portrayed as a system that gives information moving to the elements of choices in a firm (Ebikebina and Biragbara, 2020). It is also portrayed as a consolidated course of action of employees and machines that give information to improve tasks, and administration. Likewise, the system is subject to an information collection of any business created to give data. The study by Bordi, Okkonen, Mäkiniemi and Tammi (2018) explored the ways digital information flow is related to an employee's well-being at work. A particular attribute of information flow framework was that most exercises occurred in computerized structure, for example, through email, fax, and other advanced means.

2.2. Logistics Operations

Logistics operations is the progression of products between the production point and the point of utilisation to meet the needed prerequisites, for instance, clients or corporations(Li, 2014). Resources in logistics operations can incorporate actual items, like food, materials, machines, and fluids, just as conceptual items, like time, and data. The logistics of goods typically include a mix of data flow, material handling, bundling, stock, transportation, and warehousing. The intricacy of logistics operations can be demonstrated, broken down, imagined, and optimized via simulation. Logistics is turning out to be significant in the production network because of the quick advancement of manufacturing consequently, the overall worth of logistics globally arrived at 6.6 trillion USD with a development pace of 9.1% in 2019 (Feng and Qiwen, 2021). With this present circumstance, the framework of "logistics operations" works with the capacity and productivity of logistics administration. Logistics operations is focused on dispatching materials external to the plant and getting materials within the plant at an optimal cost. Subsequently the gridlock of vehicles coming into production plants will be minimized(Soni and Gupta, 2020). The achievement or disappointment of a logistics network relies on the flexibility of the framework.

2.3. Information Management in Logistics Operations

The study by Adeitan, Aigbavboa, and Bamisaye (2021) investigated a new information stream on logistics operations in industry 4.0. From the discoveries, data flow empowers organizations to opt for better decisions during operations, for example, negotiating better agreements, better product follow-up, planned operations, optimized information transfer between purchasers / merchants, convenient conveyance, supply and production chain costs reduction, and better responsiveness to clients. According to Heydarabadi, Doniavi, Babazadeh, and Shahmohammadi (2020) an optimal production-circulation plan forestalls wastage, diminishes costs, and provides a platform to fulfil client needs. In this study, a mixed-integer model was formulated to decide an optimal conveyance plan in electromotor firms. The proposed model is a multi-item and periodic variable in which an optimal measure of inventory and distribution is decided within a time frame. The obtained output affirms the proficiency of the model to be utilized in deciding the optimum distribution plans in electromotor firms.

The article by Starostka-Patyk (2021) introduced a current utilization of information technology frameworks supporting the administration of reverse logistics operations (managing streams of returned merchandise and items) in Polish organizations. In light of the results, the utilization of reverse logistics operations can enhance functional performance and increase market position. Secondly the utilization of information technology platforms to support logistics operations. Therefore, information flow ought to be considered as the most significant echelon within any inventory network. Hence, without productive and effective information exchange, logistics operations activities would perform poorly. The global coordination and combination of online and onsite channels have brought new difficulties to logistics (Feng and Ye, 2021; Adedugba, Asikhia, Inegbedion and Ogunnaike, 2023). Therefore, smart logistics have turned into a solution for handling expanding intricacy and logistics operations volumes. Advancements, like the internet of things, and artificial intelligence empower more effective capacities in logistics operations that have changed the operational mechanism. Information technology is a fundamental component in the improvement of logistics operations. This is because logistics operations contribute essential support to an organization. The results of the study by Kamariotou, Kitsios and Madas (2021) shows that the management of production firms should be enlightened with regards to the essential use of information flow plans in order to improve market stake. Furthermore, supervisors should likewise choose optimal information technology platforms to align business methodology to the business framework. Therefore the production firms should focus on logistics functionality

and understand the significance of information flow.

3. METHODOLOGY

The study utilized a purposive sampling procedure and a total enumeration technique to pick participants from the sample populace that consists of employees of logistics operations departments of the selected medical supply stores. The questions in the survey was utilized to comprehend the reaction of the organizations on the role of information management in logistics operations.This was selected based on the study by (Ying, Limin, Hua and Jing, 2021; Xu, Yan, Hu and Pu, 2022).An aggregate of five hundred and twenty-eight (528) questionnaires were duly completed of the six hundred and fifty-nine (659) administered to various participants. Participants were requested to specify the level of information management role in logistics operations dependent on a five Likert scale (very great extent = 5, great extent = 4, moderate extent, = 3, small extent= 2, not at all = 1). The rate of response to the administered surveys was 80.1%. The participant's demographics uncovered that most of the participants in this investigation have worked for a specific number years; less than 2 years (25.4 %), 2-5 years (25.8%), 6-9 years (36.0%) and ten years or more (21.7 %) in the medical supply business. The data was examined utilizing smart partial least square (PLS). The examined information was generated from the distributed surveys.

4. STUDY RESULTS

Table 1 - Descriptive Analysis Information Management

Information Management	Yes	No
Information channel frameworks	316	212
Electronic customer feedback	284	244
Information management software	277	251

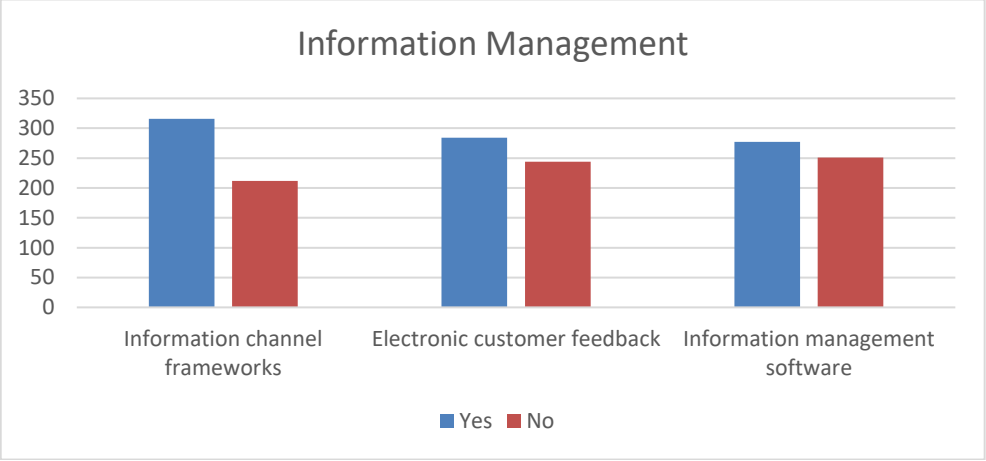

Figure 1 - Graphical Representaion

According to Table 3.1 and Figure 1 information channel frameworks, electronic customer feedback, and information management software assume an important role in information management and correspondence within the context of the medical supply stores. The illustrative and graphical result further affirms that information channel frameworks, electronic customer feedback, and information management software, or the lack thereof, are significant echelons in information correspondence in the medical supply stores aspiring to grow in terms of appropriation and logistics should embrace this assertion. Given this, the management of the medical supply stores should re-plan and create synergy among information channel frameworks, electronic customer feedback, and information management software. It likewise shows that the medical supply stores should optimize every echelon within information management to accomplish optimal correspondence and distribution. This was inferred and depicted based on the participatory outcome from the respondents in Table 3.1 and Figure 1.

Table 2 - Descriptive Analysis of Information Management and Logistics Operations

	Very Great Extent.	Great Extent	Moderate Extent	Small Extent	Not at all
Prompt distribution time performance	21	152	272	67	16
The organization shares data progressively via information technology frameworks / models within the organization.	136	108	197	44	43
The organization has a high level of information transfer within the logistics operational platform and with different businesses.	13	140	223	82	70
The organization has a high level of feedback	14	137	123	244	10
The organization utilizes logistics software's for the logistics operations	110	125	118	163	12

Table 3.2 depicts the descriptive analysis of information management and logistics operations: optimal distribution were measured using five (5) constructs. It was discovered that 21 of the respondents were of the opinion that their organisations have prompt distribution time performance to a very great extent. However, 152 of the respondents were of the opinion that their organisations have prompt distribution time performance to a great extent. 272 of the respondents were of the opinion that their organisations have moderately prompt distribution time performance. 67 of the respondents were of the opinion that their organisations rarely do that. While, 16 of the respondents were of the opinion that their organisations never engaged. It was also revealed from descriptive analysis that 136 of the respondents were of the opinion that their organisations share data progressively via information technology platforms within the organization to a very great extent. 108 of the respondents were of the opinion that their organisations substantially share data progressively via information technology platforms to a great extent. 197 of the respondents substantially share data progressively via information technology platforms moderately. 44 of the respondents were of the opinion that their organisations rarely share data progressively via information technology platforms. While, 43 of the respondents were of the opinion that their organisations have never shared data progressively via information technology platforms. The researcher also attempted to discover the extent to which the medical supply stores have a high level of information transfer within the logistics operational platform and with different businesses.

It was discovered that 13 of the respondents were of the opinion that their organisation have a high level of information transfer within the logistics operational platform and with different businesses to a very great extent. 140 of the respondents were of the opinion that their organisation have a high level of information transfer within the logistics operational platform and with different businesses to a great extent. 223 of the respondents were of the opinion that their organisation moderate a level of information transfer within the logistics operational platform and with different businesses. 82 of the respondents were of the opinion that their organisation have a high level of information transfer within the logistics operational platform and with different businesses. While 70 of the respondents were of the opinion that their organisation does not have any form of information transfer within the logistics operational platform and with different businesses. As regards the level of feedback. It was discovered that 14 of the respondents were of the opinion that their organisation has a high level of feedback to a very great extent.137 shares this concern to a great extent, 123 to a moderate extent. While 244 were of the opinion that their organisation has a high level of feedback.

10 were of the opinion that their organisations constantly paid important concern on the social well-being in all operations. The researcher also tried to discover if the respondents utilizes logistics software for the logistics operations. It was discovered that 110 shared it was to a very great extent. 125 believed it was to a great extent, 118 were of the view that it was moderately done. 163 believed

that it was rarely done while, 12 were of the opinion that it was never done.

Table 3 - Coefficients Output of Information Management role on Logistics Operations

	Coefficient	R^2	Std. Dev	T-statistics	P-value
Information Mgt ➡ Logistics Operations	0.420	0.169	0.081	4.102	0.000

Table 3.3 portrays the partial least square(PLS) result, which focused on information management's role in logistics operations. The discoveries show that information management has a significant role in logistics operations at (β= 0.420, R2=0.169, t-statistics=4.102>1.96, P=0.000 <0.05). The outcome further depictes the relative contributions of information channel frameworks, electronic customer feedback, and information management software in logistics operations. Table 3.3 also indicated that the echelons within information management (β= 0.420, P=0.000 <0.05) are significant indicators in distribution and logistics. Since the P-value is less than 0.05, the T- staistics greater than the minimum standard of 1.96 and R2 less than 1 then the conclusion is that information management(information channel frameworks, electronic customer feedback, and information management software) demonstrates an interconnective role in logistics operations in the context of distribution.

5. RESULT OF FINDINGS

The discoveries uncovered that information management plays a huge part in logistics operational activities.This is depicted in the linear connection that exists between information management and logistics operations, with an outcome of 0.420. Given this, the T-outcome of noticed variables is beyond the basic value of 1.96 at the certainty level of 95. These findings are in line with other comparative discoveries. For instance, Bordi, Okkonen, Mäkiniemi, and Tammi (2018) asserted that information management is a helpful and compelling instrument that directs and incorporates the cycles within the confines of logistics operations to achieve proficient performance.Therefore, a viable data sharing component additionally focus on the operations of exchanging valuable data among individuals and framework units within any production firm. This decreases sharing expenses, disposes data inadequacy or over-load, and further develops responsiveness. Therefore, a corresponding network is the component via which information streams and employees in a production firm exchange data optimally. Confounded and nuanced information would require an additional effective method for correspondence that further develops straightforwardness. Besides, data exchange assumes a significant part in guaranteeing that items and services are exchanged immaculately. Based on the study information management is a critical asset logistics operations echelon. More or less, data plays a critical part in logistics. It can be extrapolated from the study that maximal tracking of products and anticipation, optimized distribution process and information flow, extended echelons, timely conveyance, and improved information transfer between purchasers and merchants are among the variables recognized by the study, which can assist in achieving optimal distribution. As logistics operations become more critical and extensive, it is fundamental to adopt a proficient and viable information management framework. Therefore, there is a need to further develop logistics information flow in production firms since it will decrease waste, for example, inventories and non-essential operations from the providers to end clients.

6. CONCLUSION

This study has explored information management role in logistics operations to achieve optimal distribution. Based on the findings, information management models, framework and software's aids logistics operations in terms of procedures. Such procedures are optimal item tracking and anticipation, maximum information flow, improved information exchange between purchasers/merchants, optimal delivery and material utilization, logistics operations costs reduction, and better responsiveness to clients' requests. Therefore, medical supply stores need to utilize a fundamental and conceptual model of information management in their logistics operations activities. This can be attributed to the continuous growth of medical supply stores and their capacity to contend internationally with other organizations. However

this depends on information management. Therefore, a functional and pragmatic information management framework, model and software empowers medical supply stores to make optimized decisions in their activities based on the study. It is therefore, recommended that logistics operations echelons need to select an information management model, framework and software that will enhance the logistics operational process for optimal delivery and distribution. Additionally, the medical and health industry should ensure that medical supply stores adopt information management software's, models and frameworks for adequate information flow within logistics operations echelons. Furthermore, training of operations and logistics supervisors, on information management software's and models should be encouraged and adopted for the optimization of distribution and delivery performance. The utilization of information management models, software's and frameworks is important for tracking client requests, maximum information transfer, co-ordination, and control of resources within logistics operations echelons. Hence, studies could be further done by connecting information management frameworks, models and the decrease of vulnerabilities in logistics operations. Another future examination is the utilization of models to comprehend information management. Future investigations could likewise consider the difficulties of implementing information management models and frameworks in the era of globalization. The limitations to this study is the coverage of post-utilization stage by comparing the expected outcome to the actual outcome after enhancing the information management procedures. Another limitation is related to the logistics operations choice of software's, models, and frameworks.

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