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Impact of Material Management on Organizational Profitability in Kaduna Inland Dry Port Authority Limited: An Empirical Evidence

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ABSTRACT: *The impact of material management on organizational profitability at Inland Dry Port Authority Limited (IDPAL) in Kaduna, Nigeria was investigated in this study, which used a survey research design of ex-post facto type. The target population consists of 254 staff of IDPAL. Two research questions guided the study. A sample of 211 respondents was randomly selected using purposive sampling, and materials management organizational profitability questionnaires (MMOPQ) were administered and only 195 copies were returned. Two research assistants assisted the researchers in this study. MMOPQ validation by two experts demonstrated consistency with a coefficient index of 0.89. Analysis was conducted using descriptive statistics, correlations, and multiple regression models. Results showed material management has a positive impact on profitability but a negative relationship with production cost and a positive relationship with service delivery at IDPAL. Implication to research and practice was provided.*

Keywords*:* material management, organizational profitability, kaduna inland dry port limited

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INTRODUCTION

Management is the process of planning, organizing, controlling, coordinating, directing, monitoring, and budgeting to actualize the set goals of an organization in a timely, affordable, quality, effective, and efficient manner. It entails utilizing all 7 Ms resources (men, money, methods, materials, machines, markets, and measures) for an organization to accomplish its goals and objectives. This perhaps informs Kaehlr and Grundei's (2019) assertion that management can influence market, production, and resource operations within an organization and its unit, and can also handle human and non-human concerns. Regardless of the size and shape of any organization, management of these resources (assets) including the tangibles such as equipment, property, and warehouse, and intangibles like copyrights, trademarks, and brands are the keystone foundation or core of any high-performing organization.

Management ensures that managerial functions are done freely across the entire organization while maximizing the available limited resources to swiftly and successfully meet set goals. This explains why Carew, Kandarian, Parisi-Carew, and Blanchard (2010) and Blanchard (2018) argued that any aspirational high-performing organization should focus on "The target" which is "The right target; The Triple Bottom line" and additional the fourth main concept of "Quadruple bottom line". This implies "being the provider of choice", "the employer of choice", "the investment of choice" and "Corporate Citizenship of Choice".

In this context, "being the provider of choice" implies that organizations should have the resources (Employees, stakeholders, materials, valuable products, goods, and equipment both soft and hard wares, etc.) needed in their organization along with efficient services and delivery that are not only adequate, but at the right time, affordable, and of high quality in its organizations because of the fierce competition and cutting-edge technology ravaging organizations in this 21st century in order to survive and thrive. It is not enough to recruit personnel and leave them without any materials, or with inadequate materials and equipment to work with, or to have adequate materials and produce substandard goods and services to the customers and stakeholders because it will not augur well with the organization.

For "the employer of choice" means having strategic recruitment, selection, and placement (RSP) in place which entails having the desire and policy to attract, recruit, motivate, remunerate, and retain the best brains and skilled workers and continuously upskill and reskill employees to keep them abreast of current realities and to avoid mishap. This will ultimately make employees involved, satisfied, and empowered, and contribute meaningfully to the organization's success stories, expansion, and attracting investors considering the emergence of mobile workers and high technology.

On the other hand, "being investors of choice" implies the growth or expansion of the business (Carew, et. al.2010) especially having collaborations, affiliations, networks,

teamwork, and attracting investors. Moreover, training, and development as well as sensitization of both the internal (employees) and external customers (Customers and clients) including the shareholders, stakeholders, and citizens through media, radio, and television programs to be aware of the organization's vision, mission, and what they are up to and patronize it among others. "Corporate citizenship of choice" focuses on being socially responsible and contributing favorably to the communities and environment (Blanchard,2018). This can be provided by providing essential social amenities, scholarships, grants, and donations as the case may be.

This presupposes that for any organization to succeed, the management of its materials, customers, employees, stakeholders, investors, and contribution to the community, is essential in bringing in value, credibility, satisfaction, team spirit, collaboration, corporate citizenship, and profitability which is of immense importance in this empirical research paper. This is because organizations that don't have efficient material management systems will ultimately end up having "black holes" which is a failed organization. Defining "the black holes" Newman (2024) cited Conor's definition as whenever there is a discrepancy between executive pronouncement and the day-to-day reality a black hole forms. In the words of Newman (2024), black holes are when people think one's strategic initiatives disappear without a trace.

In the context of this study, there is the need to overcome "the black holes" or failed organizations by having a visionary ready-made leader who can efficiently pilot material management of the organization's resources by navigating obstacles and crises, fostering innovation, upskilling, and reskilling employees, embracing new technology and adapting to changes, as well as promoting collaborations for the success of the organizations. This explains why, organizations need ready-made leaders with the capacity and drive for self-reflection, individual leadership, team leadership, change leadership, and initiative leadership to overcome "black holes" in transformational initiatives (Newman, 2024).

The ability to anticipate future trends, plan and control, technical proficiency, and critical cross-functional skills that enable leaders to adapt are all necessary for effective material management and leadership as they allow leaders to flourish in the face of continuous constant change. Without effective and efficient material management of these resources, no organization will prosper or have sustained growth and development that would usher in continued existence and profitability. Such an organization will lose its value, credibility, and profitability and thus languish in poverty and extinction.

In this regard, Kaduna Inland Dry Port Authority Limited (KIDAPL), Nigeria is at the epicenter of this discourse and not exempted at all, for the organization deals with materials, people, cargo goods, agro-agricultural commodities, and stakeholders amongst others that makes this research study significant. It is located in the hinterland of a community hence the topic of this study is to determine the impact of material management on their profitability. The researchers foresee that material management depending on how it is managed will likely affect the organization's profitability

positively or negatively and directly or indirectly.

The primary goal of management in the 20th century was to increase profits for businesses and their owners. This resulted in the formation of their ideologies and their goal of maximizing profits. However, in the twenty-first century, maximizing the value for users and consumers is the core aim of management. When management focuses on creating value and providing customers with high-quality and affordable goods and services on time for users or customers' deep satisfaction, profits are the result and byproduct rather than the goal.

Profit is the applause you get for taking care of your customers and creating a motivating environment for your people (Carew, et.al, 2010p.4). At the same time, profitability reveals the competitive advantage that more successful businesses have over their less productive rivals (Dahmash., Salamat, Masadeh, and Aishurafat,2021). Profitability is a crucial factor in assessing and determining a business's long-term sustainability and viability. As such, it is a benchmark for gauging any organizational success in terms of how well it is moving forward, improving, liquidating, and achieving its stipulated goals and objectives.

Supporting this, Carew, et.al.2010 p.7) affirmed that "if an organization's financial success is a function of revenue minus expenses, one can become sounder financially either by reducing costs or increasing revenues. Most likely for this reason, Olaide and Omodero (2023) described profitability as the amount of money a business can make using its capital. Dahmash, et.al. (2021) stated that there are two main levels at which the profitability actors that affect a firm's profitability may be examined and assessed which are internal and external. The main indicators of external effects include the growth rate, inflation rate, interest rate, and trade interdependence. On the other hand, the internal levels are the financial metrics used to evaluate an organization's performance, efficiency, and profitability (Dahmash, et.al.2021). This is because a lack of materials drives up costs and impedes profitability hence the imperative for efficient management.

In the context of this paper, materials are commodities and products such as cow horns, shea nuts, yam, sesame seed, cocoa, groundnuts, ginger, charcoal, and solid minerals like columbite, graphite, gold, and various types of equipment and vehicles amongst others, used to manufacture other physical products. These materials can be for domestic use, commercial purposes, warehouse storage, or transportation as cargo for export or import by rail, road, or sea. Sakpaide (2024)., Ramakrishna (2005), Ogbadu (2009), and Ondiek (2009) various research studies have shown that materials are responsible for more than 50% of the yearly turnover in most human organizations.

This reveals that materials held by an organization make up most of the organization's assets (Zuzu, 2015). These resources must be effectively exploited and galvanized to provide positive results, profitability, and sustainability. It also highlighted how poor planning and inefficient management of material resources could seriously impair an

organization's overall performance (Asare and Boateng, 2021., Odusanya, et. al. 2018). Given these facts, there is a need for effective and efficient material management to achieve profitability and sustainability.

In light of the above, Material Management is one of the greatest instruments many businesses use to increase manufacturing efficiency and maximize profit by decreasing value (Saravanan and Kamalanathan,2021). In precise terms, material management pertains to the segment of business operations that plans, organizes, and coordinates the procurement, receiving, handling, storing, and release of materials for manufacturing purposes while implementing effective control mechanisms. Gurmu (2019) defined material management as the finalization of all obligations, actions, and procedures related to obtaining outside products, goods, and services for the business and its efficient management up until their use or application during production, operation, or sale. In the words of Bagaka and Moronge (2017), material management encompasses all operations management functions from the purchase of raw materials to the production processes via the final delivery of the end products.

It makes sense to submit that, material management is a tactic that helps optimize performance in meeting customer service standards and boosting profitability by cutting costs and making the greatest use of existing resources. In Yagi and Kokubu's (2018) view, a cross-functional strategy entails controlling the flow of raw materials into organizations and some internal processing of materials into finished products within the organization for proper and prompt delivery to the appropriate consumers. The availability of personnel, equipment, and resources in the right proportions is a major factor in any business activity's capacity to effectively produce goods and services (Bagaka and Moronge, 2017). This may make it easier to understand why ensuring that the right product is acquired and made available to the manufacturing processes at an affordable price with good quality, in the right location, and at the right time is the primary objective of material management.

As a result, material management covers the entire flow of materials from the supplier's location through the manufacturing process, into the finished goods warehouse, and finally to the product's end users (Miclo, Lauras, Fontanili, Lamothe, and Melnyk, 2019). According to Culvert (2021), a detailed schedule of material requirements and coordination of material orders and requisitions are necessary to ensure materials availability. This may clarify why material management involves planning, managing, controlling sourcing, conversion, procurement, inventory, and transportation to the appropriate customers and locations. As a result, a continuous manufacturing schedule was required to fulfill customer requests and meet specified objectives. The only means to achieve this is by having efficient materials and inventory management in stock. According to Ubabudu, Ozoemena, and Anam (2024), inventory management is the process of monitoring and controlling the flow of goods and materials within an organization.

The researchers noted that the public criticism of the Inland Dry Port Authority's operations, which was harshly criticized for purported shortcomings, does not exclude the Nigerian Inland Dry Port Authority. This raises concerns about the fate and position of the Kaduna Inland Dry Port Authority Limited (KIDPAL in the northern part of the country) in the face of all these criticisms and challenges. As Sulaimon (2018) noted, major stakeholders in the maritime industry are in Lagos to chart the blueprint for efficient use of the Kaduna Inland Dry Port Authority, which means that Kaduna Inland Dry Port is not an exception and has some challenges that need to be identified and proffer solutions to them.

Stakeholders and the citizenry have emphasized the lack of rail services for haulage, inadequate inventory, lack of facility for weighing and packaging of the commodities, lack of facility for preserving and value addition for the agro-allied commodities, production costs, exorbitant diesel prices that resulted in higher transportation costs, and many more issues in recent years. Consequently, most cargoes were diverted to other countries, resulting in a halt to their organizational business processes and a reduction in their profitability thereby affecting their sustainability. Dabo (2018) argued that Nigeria had already lost cargo to neighboring countries and that the Kaduna Inland Dry Port Authority needs to expand its cargo volume for profitability as it will boost government revenue. This will likely be the case because the port functions have progressed from simple cargo loading and unloading to working as a crucial part of the whole food chain (Chen, et.al.2019).

Therefore, it is understandable why Adejumo (2020) asserted that Nigeria's inland container depots did not serve their original purpose. Similarly, Agu, Obianike, and Nnate (2016) noted that many organizations claim efficient inventory control. Despite their claims, several issues exist, including stockouts, obsolete inventory, decreased efficiency and profitability, and consumer dissatisfaction. This is because ports currently face an environment characterized by the increased scale of carriers and vessel sizes, stakeholder opposition to port expansion, and heavy regulation.

Despite this, Odusanya, Olumuyiwa, and Bamidele (2018) avowed that the business environment remains unfriendly and that many firms have experienced profit margin declines regardless of how long they have been in business. This is most likely to occur because the Inland Dry Port Authority operates in harsher environments than seaports, and their organizations are generally modest in terms of both financial and human resources (Geerts and Doom, 2020). This could explain why Adejumo (2020) attributed this to the location of depots in densely populated areas whereas Geerts and Dom (2020) liken it to their typically small organizational size.

On the other hand, Arani (2015) stated that some of the challenges with material management include the lack of centralized databases to facilitate data flow on materials, the assignment of numerous sensitive material exercises to a single office, and a lack of flexibility. However, Dey (2015) made the point, that the organization's profit margin and ability to use resources effectively are impacted by how materials are

wasted, highlighting the significance of this research study. Specifically, ports used to demand manual handling in general cargo terminals, which presented physical difficulties for employees unlike contemporary times, ports offer a variety of terminals, including as dry bulk, containers, RoRo, and liquid bulk, that are operated by modern machinery and digital control systems (Kerdjoudj ,2024). However, Utulu (2024) stated that the general manager of Kaduna Inland Dry Ports Authority in the person of Hassan Rotimi during the media interactions reiterated that since vandalism of rail lines and terrorism have been rampant along Jebba to Kaduna on the Lagos - Kaduna – Kano axis, export activities for Kaduna Inland Dry Port Authority have been affected.

Articulating from this, it is thought that significant variables impede businesses' profitability, and these aspects must be identified for Inland Dry Port Authority Kaduna's future growth and development. This is necessary because some organizations cannot effectively manage materials, which will cause operational and financial challenges. This includes agro-agricultural commodities, goods and services, maintenance of roads, equipment for haulage services, and rail infrastructure, resulting in delays, congestion, warehousing costs, and increased production and transportation costs.

To the best of the researcher's knowledge, previous researchers, such as Ubabudu, et.al. (2024), Sakpaide (2024) Mboga and Mirriam (2022) Akinlabi (2021), and Dagim (2018) Odusanya, et. al. (2018), Dong and Su (2010), Olaide and Omodero (2024) and Rahman and Tilakasiri (2021) did not investigate the impact of material management on the organizational profitability of Kaduna Inland Port Authority, Nigeria. As a result, this research paper is important because the present researchers intend to close this knowledge gap of lack of comprehensive studies on the impact of material management on the profitability of Kaduna Inland Dry Ports Authority in order to fill the gap in the literature and advance knowledge, as it will be beneficial to not only the Inland Dry Port Authority Kaduna to enhance their organization and increase profitability but also be consulted and cited by scholars, decision-makers, policymakers in organizations, researchers, and students, and the general public because of the quantum of data it will provide.

This empirical research study will demonstrate how critical and relevant effective and efficient material management is to the Inland Dry Port Authority Limited Kaduna via its organizational profitability and elsewhere. Material management principles must be considered and adhered to in the operations of all organizations, whether service-oriented or not, for organizations such as Inland Dry Port Authority Kaduna amongst others to continue to succeed and achieve their stated goals and objectives. Most importantly, the researchers will examine material management impacts on the Kaduna Inland Dry Port Authority, including the challenges that impinge on its organizational profitability.

This will include examining issues such as lack of adequate materials, and material management, inadequate rail for haulage services, inventory, and production costs, high

transportation costs due to increased diesel prices, and the lack of seaports in neighboring landlocked countries, which increases the reliance on the Kaduna Inland Dry Ports Authority. Moreover, the researchers will also investigate whether the organization is effectively planning, organizing, controlling, and coordinating materials for efficient operations, production, and delivery. In addition, the researchers will analyze whether the organization can detect and address low supplies promptly to avoid depleting buffer stock and impacting profitability. Overall, this empirical study aims to contribute to the existing literature on material management and profitability in the context of dry ports and provide practical implications to research and practice for the Inland Dry Port Authority Kaduna to improve its operations and financial performance.

The scope of this study covers only the Inland Dry Port Authority Limited situated in Kaduna, Nigeria. Therefore, this study aims to determine how material management impacts the Kaduna Inland Dry Port Authority's organizational profitability.

STATEMENT OF THE PROBLEM

There has been a huge public outcry in the media and newspapers that since the commencement of Inland Container Depots in Nigeria, they have not served the purpose for which they were established. Although the Federal Government of Nigeria has expended much finance on the organization to make it a functional Dry Port Authority, there is a demand for justification for the public taxpayer's fund. It is essential to assess whether the benefits of the Kaduna Inland Dry Ports Authority Limited (KIDPAL) outweigh the costs and whether there are alternative uses for the funds that could bring greater economic benefits. This evaluation will help to determine the effectiveness and sustainability of the KIDPAL and ensure that public resources are allocated appropriately. The Kaduna Inland Dry Ports Authority Limited was established to address port challenges and provide a more efficient and convenient way for cargo businesses in the northern region of Nigeria to warehouse, package, import, and export goods. However, there are indications that the organization is not effectively managing its materials such as agro-agricultural commodities, goods, and services, facilities for the preservation and weighing of goods, equipment and production cost, and inventory management leading to significant operational and financial challenges.

One of the major challenges is inadequate material management. This raises concerns about its ability to effectively acquire agro-agricultural commodities and goods, transport, and clear cargo for shippers from the hinterland and fulfill its role as a primary port of origin for exports and destination for imports. Undoubtedly, inadequate material management will likely affect the overall efficiency of operations and the ability to maximize profits and meet customer demands. Additionally, the researchers noted that many Nigerian organizations are not applying advanced technology, smart port solutions, and automation devices for material management and building innovations that will not only equip them for the job, and transform their organization but also attract investors, despite the resources spent on purchases and maintenance of materials.

This highlights the imperative for identifying the potential factors impeding material

management at the Kaduna Inland Ports Authority Limited operations and its profitability. Another important factor that the researchers emphasize is the high rate of insecurity, kidnapping, and banditry in the Northern part of Nigeria where the organization is situated. This poses additional challenges and underscores the importance of good managerial acumen and skills to navigate these challenges and 'black holes".

Furthermore, there are concerns about the organization's ability to effectively plan, organize, control, coordinate, warehouse, and transport the materials in their custody appropriately on time and at affordable prices. This lack of effective management can breed in a lack of materials and facilities for agro-allied products, low-quality goods, production disruptions, and customer dissatisfaction. In summary, the researchers argue that ineffective material management, along with other factors such as geographical barriers and security challenges will likely contribute to the failure of the Kaduna Inland Dry Ports Authority to live up to expectations has to be subjected to empirical research hence the essence of this empirical study.

Previous researchers such as Akinlabi (2021) investigated the impact of inventory management practices on the operational performance of a selected Nigerian flour mill company. On the other hand, Ubabudu, et.al. (2024) research study focused on the Effectiveness of Inventory Management on the Profitability of Manufacturing Sectors in Nigerian Bottling Company, Kaduna while Sakpaide, (2024) research investigated how effective material management affected firms' productivity in selected aluminum manufacturing firms in Delta State, Nigeria hence not on the impact of material management on profitability of Inland Dry Port Limited Kaduna which is the topic of this research.

The specific objectives of this study are;
1 To examine the impact of material management on organizational profitability in Kaduna Inland Dry Port Authority Limited, Nigeria.
2. To assess the impact of material management on production cost in Kaduna Inland Dry Port Authority Limited.

RESEARCH QUESTIONS

In this study, the following research questions were stated and addressed;
I. What is the impact of material management on the organizational profitability at Kaduna Inland Dry Port Limited?
2. How does material management impact the production cost in Kaduna Inland Port Limited?

RESEARCH HYPOTHESES

Based on the specific objectives and research questions, this study went further and tested the following hypotheses.

H_{01}: There is no significant impact of materials management on organizational profitability in Kaduna Inland Dry Port Authority Limited.

H_{02}: Material management does not significantly affect production costs in Kaduna Inland Port Limited.

LITERATURE REVIEW AND THE THEORETICAL UNDERPINNING

Brief History of Nigeria Inland Dry Port Limited Kaduna (IDPLK).

The Nigerian Shippers' Council (hereafter, NSC) took the mandate to build inland dry ports authority (IDP) around the country as a government organization under the Federal Ministry of Transportation (FMOT) Marine and Blue Economy in order to promote and defend the interests of shippers, shipping companies, and other marine industry stakeholders. Babafemi (2018) averred that the NSC's interventionist role is purely economic as it is designed to protect strategic aspects of foreign trade from exploitative tendencies of monopolistic or oligopolistic shipping services. Following this, NSC controls the policies, fees, and tariffs of port operators, shipping firms, and other service providers.

The Kaduna Inland Dry Ports Authority Limited (KIDPAL) amongst others (Isiala Ngwa, Aba., Erunmu, Ibadan., Heipang, Jos., Zawachiki, Kano., Zamfarawa, Jos and Funtua Jauri, Maiduguri) are the seven authorized division of Inland Containers in Nigeria Limited (ICNL) that are operating under the terms of the Public Private Partnership (PPP) agreement to build, own, operate, and transfer (BOOT) (The Nigerian Shippers Council Annual Report, 2018). Specifically, these ICNL as it was known then, was approved for elevation to the status of 6,000 TEU by the Federal government official gazette No.60 Lagos on 26th May 2015 and its operational modalities are in line with International global standards of the United Nations Conference on Trade and Development (UNCTAD) as stated in the Nigerian Shippers Council Annual Report (2018).

Former Nigerian President Muhammadu Buhari officially opened the newly elevated ICNL to inland Dry Port Authority Kaduna on January 4, 2018, making it the primary port for exports and destination for imports. This clarifies the idea behind the term "dry port" for ICNL Kaduna elevated to Inland Dry Port Authority Limited, which means an inland intermodal terminal immediately connected to a seaport via rail, road, or both. It was the only one out of the remaining six Inland Dry Port Depots in 2018 that started its business operations. Additionally, the implementation of the dry port concept may come from decreasing port congestion, alleviating pressure on storage space, reducing

handling operations and time spent in ports, and lowering transaction costs to shippers (Haezendonck and Langenus,2018).

This may explain why 2018 was tagged as "A Year of Great Aspirations" (Nigerian Shippers Council Annual Report,2018). The Nigeria Shippers Council by May 2018 opened its office for services at the Inland Dry Port Kaduna for regulatory and supervisory functions. According to UNCTAD's definition of an Inland port cited in The Nigerian Shippers Council Annual Report (2018), it is a "Common user facility with public authority status equipped with fixed installations and offering services for handling and temporary storage of important import/export laden and empty containers". As the hinterland counterpart of a seaport, the Kaduna Inland Dry Port Authority Limited (KIDPAL) is expected to accept containers from the ports by road, rail, and sea and be inspected and cleared by customs and other authorized agencies. This is because it has been equipped with every loading and unloading tool required for managing containers.

The Nigerian Shippers Council Annual Report (2018) enumerated the functions of the Inland Dry Port Authority Limited as follows;
1. It brings shipping services to the doorstep of shippers, particularly for the hinterland shippers.,
2. it reduces congestion at the seaports
3. It brings about reduced transportation costs to the hinterland as well as transit cargo to land-locked countries
4. it boosts export due to its function as a point of consolidation for export and deconsolidation for import
5. it provides the impetus for the revival and modernization of the inland dry port projects.

From the preceding, Utulu (2024) cited Hassan (2024) that Kaduna Inland Port Authority Limited was established to enable international trade., decongest the seaport, and make shipping activities easier for hinterland shippers by providing the same facility or platform at the seaport to those in the hinterland.
It also functions as a landlock for neighboring countries that lack seaports, such as Ch ad and the Niger Republic.
The country's only inland dry port can handle capacity cargoes of roughly 29,000 tons annually (The Nigerian Shippers Council Annual Report, 2018).

It was on record in 2018 that Kaduna Inland Dry Port Limited (KIDPAL) had imports of two thousand, three hundred eighteen containers (2,318) containers (that is 20 TEUS equivalent) with per monthly imports of over 150 containers throughputs and these imports included household types of equipment and vehicles (The Nigerian Shippers council Annual Report, 2018). Aside from this, it exported twelve containers, of which ten containers of gingers went to Rotterdam, and one container each of corn horn and charcoal was transported to Vietnam (The Nigerian Shippers Annual Report,

2018). Hence, KIDPAL functions as a hub for the transshipment of maritime cargo to inland destinations.

Dabo (2018) affirmed that the Kaduna Inland Dry Port Authority enables efficient and economical transportation of commodities worldwide. Additional bills for lading preparation, customs clearance and documentation, packaging, storage, shipment booking, and quick tracking of the delivery of goods are among other services they offer.

Material Management and Organizational Profitability

Globalization and the liberalization of the economy have changed the business climate dramatically, exposing organizational businesses to fierce competition. The current market environment is undergoing significant changes, and every organization aims to remain in operation. Major competition has shifted from the market to the production floor, where manufacturing costs can be reduced and profitability boosted for firms to compete favorably with cutting-edge technology. According to the United Nations Conference on Trade and Development (2018), 90% of global trade is carried by sea, and global seaports handle more than 80% of international merchandise trade in volume and more than two-thirds of its value. This explains why, in this digital economy, any organization's ability to compete profitably and effectively with others depends on its ability to manage materials.

Materials are the stock of goods kept on hand to conduct business operations (Eke, 2024). Obizue (2023), defined materials as physical substances that make up the products that are used in business activities while Ebadan (2022) viewed material management as the coordinated role of organizing, purchasing, storing, transporting, and managing raw materials and finished goods to maximize the use of capital funds, labor, and facilities to achieve corporate objectives and offer online customer service. According to Edward (2013), material management involves controlling the flow of raw materials into a company in order to be transformed into completed goods. Maintaining a consistent supply of semi-finished goods, components, and raw materials required for manufacturing other firm goods is the responsibility of material management, an essential corporate activity (Saravanan and Kamalanathan, 2021). Dagim (2018) described material management as a coordinated function that plans, acquires, stores, moves, and controls raw materials and finished goods to maximize the use of capital funds, labor, and facilities while delivering online customer service in line with business objectives.

From an organizational perspective, material management aims to integrate all business processes directly related to the flow of materials into a single coordinated unit. This concept implies that material management involves managing the flow of materials as well as associated human and capital flows. This makes sense given that Egwuatu (2021) defined material management as the planning, organizing, directing, and coordinating of all activities related to inventory and material requirements from the

time of acquisition until resources are incorporated into the production process.

Zubair, Maqsood, Omair, and Noor (2019) provided an alternative definition of material management that is worth mentioning as a coalition of conventional materials activities under the umbrella of an integrated management strategy that encompasses the planning, procurement, conversion flow, and distribution of production materials from their raw material state to their final product state. The classic definition of material management objectives is the acquisition of goods and services. Acquiring materials and services of the appropriate quality, in the appropriate amount, at the appropriate cost, from the proper source, and at the appropriate time is the traditional definition of materials management's goals (Okorie and Ibegbulem, 2015).

This perhaps explains why material management has historically been seen as a cost center since supplies are purchased by the purchasing department and a significant amount of inventory is maintained in terms of both space and money (Mishra and Shrivastava, 2018). According to Gisario, Kazarian, Martina, and Mehrpouya (2019), progressive management has recognized that materials manufacturing can reduce manufacturing costs and be treated as a profit center. There is a growing realization that another effective way to manage cost is to make all your people your business partners (Carew, et. al .2010). Ubabudu, Ozoemena, and Anam (2024)., Olaide and Omodero (2023), and Dahmash, et.al. (2021) substantiated their assertion that effective material management can lead to substantial cost savings, lower business risk, optimize operations, and boost profitability.

One of the most crucial aspects of material management is acquiring the right materials. But, inspection, quality control, simplification, and standardization are the procedures that must be followed in order to measure the quality of the materials. According to Kotler (2002), the material management technique encompasses all the activities related to creating and maintaining stock levels, whether finished goods, semi-finished materials, or raw materials. As such, the strategy must guarantee that there are always enough supplies on hand and that the cost of having too much or too little inventory is controlled and checked. Keitany, et. al. (2014), concur that material management is a strategy that maximizes performance in meeting customer service standards, while concurrently increasing profitability through cost reduction and optimal utilization of available resources. Therefore, with the optimization of logistics and inland transport networks, more shippers in an extending hinterland could potentially be reached via seaports (Haezendonck and Langenus,2018).

For effective material management operations that will usher in a reduction of production and transportation costs, there is a need to carefully allocate facilities and warehouses for materials, processing, and preserving of agro-allied commodities, equipment, access roads and rails for transportation, warehouses, and centers for weighing and packaging of the commodities in inland dry port Kaduna. This is because the scarcity of these materials and facilities increases costs and impedes productivity (Sakpaide,2024). Nwibere and Needorrn (2022) discovered a positive and significant

correlation between material management practices (MMP) and operational efficiency (OE) in the Nigerian manufacturing industry.

This suggests that providing efficient logistics storage capacity and facilities, good packaging systems, effective inventory, and rail transportation systems that have value to customers requires effective material management with good managerial acumen and skills in soft and hard wares. Consequently, the transportation of materials, products, equipment, and workers to the job site is a special and distinct aspect of material management since it is a part of the planning and control of flow. Experts in traffic control can save transportation costs and enhance performance (Dagim, 2018) by providing accessible good road and rail network systems.

This perhaps informs Oyebamiji's (2018) submission that material delivery to the site is a critical productivity-related aspect that demands the introduction of a carefully developed system of monitoring and control as early as possible, and transportation in terms of loading and offloading of materials should not be done in the rainy season to avoid damages and waste. No wonder, distribution and transportation are frequently given precedence over production processes in business logistics (Sakpaide,2024).

An efficient logistics system can be achieved by providing warehouse facilities for processing agro-allied commodities, and centers for weighing, and, packaging the commodities. Making the most of available space helps businesses minimize the risk of material damage and increase overall efficiency (Kasim, 2017), and Cecil (2006) posited that it enhances the material management procedures and saves expenses related to handling, storing, and shipping. After all, material management considers what customers need, how to acquire materials, what quantity and quality must be delivered, and how to use the supplied materials effectively and efficiently to offer the desired value to the client (Bagaka and Morongom, 2017).

Perhaps this was what informed Oyebamiji (2018) to put up the proposal for physical distribution management, contending that research has demonstrated that ideas concerning the movement, storage, handling, and acquisition of objects have been used haphazardly. This may help to clarify the necessity for effective material management control. Material control is a management activity that regulates the acquisition, handling, and utilization of inventory used in the production process. It is a procedure that calls for organizing, planning, and auditing every component used in specific productive operations (Ayoo and Moronge, 2019).

The primary goal of material control is to ensure a seamless and unhindered manufacturing process. This is because production halts and delays result in significant losses for the concerned party. The quality of the raw materials utilized primarily determines the quality of the final goods. This is because when the standards for raw materials are not met, the final product will not meet expectations for quality, which will impact its credibility, marketability, and goodwill. Given this, there is the

imperative for strict oversight and control over the acquisition, handling, and storage of materials (Adamu,2020).

Similarly, Haezendonck and Langenus (2018) affirmed that shipping lines and operators, whose combined presence and market share in multiple ports give them more power, have gained this power through consolidation and alliances. Their resulting growing scale and importance to the port may limit, in turn, the power and influence of the different port authorities downstream of the port's value chain (Haezendonck and Langenus, 2018). This may clarify Chiang and Hwang's (2009) assertion that ports in the same region should cooperate and integrate to enhance competitiveness. Because the competitiveness of a port today seems to heavily depend upon the network in which it operates. Instead of being restricted to the functions within the seaport area itself, an extension of the logistics chain is part of the new business model of port authorities (Haezendonck and Langenus, 2018).

The process of scheduling the production or acquisition of materials to support a master production schedule is known as material requirement planning. The raw materials are the first, while the components, subassemblies, and assemblies are the last. Making an inventory of the resources and components, figuring out whether more are needed, and setting up the production or procurement of those things are the three phases involved (Rahman and Thilakasiri, 2021). Furthermore, any company that produces goods that need assemblies, components, and resources to generate the finished products utilizing a master production schedule can use it effectively on computers (Dagim, 2018).

According to Miclo, et. al. (2019), the introduction of computer systems in organizational activities has greatly accelerated material management adoption because these services share a large number of common databases. Using cutting-edge technology, businesses continuously monitor their manufacturing expenses and implement efficient materials management techniques (Kerdjoudj, 2024., (Singh and Verma, 2018). Therefore, having a highly coordinated and integrated system that incorporates sales forecasting, purchasing, receiving, storing, production, shipping, and real sales is necessary for successful materials management. The effectiveness and profitability of an integrated system are primarily determined by the optimal arrangement of functions that contribute to the material cost.

This may clarify Bell and Stukhart's (2022) study of a material management system (MMS) that integrates material procurement, vendor evaluation, take-off, warehousing, and distribution. In this approach, labor productivity was improved, material surplus was reduced, material management was reduced, manpower was saved, and costs were reduced. These criteria collectively demonstrate how crucial managerial leadership and efficient material management are to maximizing profitability. They also highlight the significance of planning, organizing, regulating, coordinating, directing, and monitoring as components of material management. According to Carew et al. (2010), creating a visionary organization that lasts beyond the leader is more important to high-

performing organizations than developing a strong charismatic leader. Given this, what is profitability and how does it relate to this research study?

Concept of Profitability

Profit is the amount of money a business earns above or beyond what it spends on salaries and other expenses (Nickels, Mchugh, and Mchugh, 2005). Bryman (2012) cited in Ubabudu, Oni, and Fredrick (2022) described profitability as a state in which the generated income for a given period exceeds the expenses incurred, mostly for revenue generation. Profitability is a measure of efficiency used to assess the extent of a company's profit with the size of the business, and ultimately, its success or failure. According to Odusanya, Olumuyiwa, and Bamidele (2018), profitability is a core measure of the performance of a firm and it constitutes an essential aspect of its financial reporting. Most businesses measure their growth based on their profitability, revenue, and other financial obligations (Ubabudu, et. al. 2022). Other business owners may assess their growth through sales, number of employees, physical size, the success of a product line, or increased market share (Ubabudu, et.al. 2022).

Traditionally, managers have been reluctant to share financial information but these days, many organsiations are responding with open-book management (Carew, et. al. 2010). Profitability ratios are calculated to evaluate an organization's result, which is the single criterion of the whole company concern's efficiency (Tulsian, 2014). It is a key component of financial reporting because it measures a company's performance (Odusanya, et.al. 2018) and Maximization of profit is a crucial objective for a firm to remain in business and withstand competition from firms operating in similar industries (Odusanya, et. al., 2018). Material management maximizes profitability and customer service by cutting expenses and making the most use of resources (Sakpaide,2024).

In the words of Obizue (2023), profitability amounts to the margin a firm receives from its operational returns over its operational expenses. Obizue further posited that profitability is a measure of a firm's overall business performance. Ubabudu, et.al. (2022) asserted that increasing organization profitability results in a multitude of benefits, among which are: increased efficiencies from economies of scale, greater power, and greater ability to withstand market fluctuations, and increased profitability and efficiency. Management interest is necessarily confined to attaining total control but has been extended into the arena of achieving a total breakthrough in the practice of effective and efficient material management systems.

According to Sakpaide (2024), distribution and transportation are given priority over production processes in business logistics. Inferring from this, it is worthwhile to learn how material management can be improved in commercial businesses to maximize profits, especially in the Inland Dry Port Authority Kaduna among others. Despite the previous statement by Golpîra (2020), material management is demonstrated by the

amount of money allocated to materials and the important role that materials play in organizational success. When materials are managed effectively, it is feasible to lower material costs, increase profitability, and increase the rate of return on investment. Increases in profitability can be influenced by increases in sales (Zaloznova and Trushkina, 2019., Dahmash, et.al.2021).

Nevertheless, with increasing market pressure, organizations will have no choice but to reduce costs and have to put in place efficient material management in order not to jeopardize their profitability or provide substandard products to consumers which is the essence of this study. This is justified by the fact that increased operational efficiency has a positive impact on customer satisfaction, business expansion, shareholder wealth, and profitability (Nwibere, et. al. 2022).

This study adopted the Comprehensive Material Flow Theory (CMFT) and Physical Systems theory because of their features, applicability, and relevance to this research paper. According to Shoubo (2008), CMFT falls within the ambit of material management and material flow theory. The primary rationale for selecting CMFT is its objective of comprehending and refining the flow of materials within a system, encompassing their introduction, production, manufacturing procedure, and ultimate delivery. However, the physical systems approach focuses on the interactions between various components and their impact on the system's overall functioning and aids in the understanding of such complex systems. One important component of material management is the optimization of material movement and storage, and these two theories are very pertinent in this context.

This study examined a few related empirical previous studies and compared their findings as follows; Using a case study of the Commercial Bank of Nigeria, Dagim (2018) evaluated the impact of material management on organizational performance. Using census sampling, the researcher included every bank employee involved in material management as the study's population. According to the study's findings, planning and implementation are common practices; nevertheless, federal proclamations are not always followed. This led to the conclusion that there is no legal basis for the bank's attempt to get materials.

In contrast, Rahimah, et al. (2018) found that the number of sales materials days determined the profitability of Malaysian publicly listed companies. Additionally, the debt-to-equity ratio, current ratio, and firm size also significantly affected its profitability. Similarly, Capkun, et. al (2019), in their study, revealed a positive correlation between a company's material management and its financial performance. They also noted that degrees of correlation vary depending on the type of inventory and the financial performance reference. Similarly, Sakpaide (2024) found that effective material management positively influences firm productivity in selected aluminum manufacturing enterprises in Delta State, Nigeria.

Eke (2024) investigated the relationship between material management strategies and service delivery performance of upstream oil firms in Rivers State and found a positive relationship between material management and service delivery. Among the factors contributing to poor material management, according to Gulghane and Khandve (2015), research findings are bulk construction, mistakes in handling or application, material loss from inadequate supervision, waiting for materials to arrive at the location because of inflation, and significant changes in the purchasing scenario beginning with the prepared cost estimation.

Procurement and sourcing techniques that are effective in managing materials can have a substantial effect on a company's operational efficiency and financial performance. A 2019 study by Das and Chaisena found that choosing the right suppliers and negotiating advantageous terms and contracts can reduce costs and improve the caliber of goods and services, which in turn increases organizational profitability. Furthermore, the study conducted by Krasikova and Leaper (2018) revealed that an organization's competitiveness in the market can be positively impacted by effective sourcing and procurement practices.

Consequently, companies need to incorporate robust procurement and sourcing strategies to ensure maximum value creation and maintain a competitive edge. Poor supplier management results in lower-quality products, higher expenses, and delays in the delivery of materials, (Adams and Smith,2015). Moreover, the research findings revealed that proficient negotiating abilities empower organizations to get advantageous conditions from clients, resulting in increased revenue and enhanced profitability. Thus, for companies looking to increase their profitability, effective negotiation skills is important.

Furthermore, Jha and Barua (2017) found that implementing cutting-edge technology like artificial intelligence and cloud computing has greatly increased operational efficiency and decreased expenses for businesses. The implementation of sophisticated technologies has additionally bolstered staff collaboration and communication, leading to better decision-making and higher output. Okorie and Ibegbulem (2015) studied the relationship between organizational profitability and material management. The study's findings showed, among other things, that having enough storage facilities helps to prevent disruptions to the manufacturing process and that the organization's use of material management increases its profitability. Good storage and transportation within a warehouse are operations that require efficient control and supervision. This is known as warehouse management.

According to a study by Li, et. al. (2017), effective warehouse management lowers expenses related to order processing, transportation, and inventory keeping, which drastically increases organizational profitability. Aside from increasing overall operational efficiency and competitiveness, efficient warehouse management also improves customer satisfaction through accurate and timely order fulfillment. Companies in the transportation and warehousing sectors can achieve more profitability

by implementing effective storage and handling procedures, which can also boost customer satisfaction and efficiency. Redesigning the warehouse layout and adding automation can greatly increase a firm's operating efficiency, according to an empirical study by Abdul-Aziz, et. al. (2019). According to the authors, automating activities and rearranging the structure of the warehouse can improve overall profitability by decreasing inventory errors and streamlining material handling
.

Furthermore, the act of monitoring supplier performance facilitates the discovery of possible problems and opportunities for enhancement, which in turn leads to reduced expenses and improved operational effectiveness (Dong, Chu, and Xu, 2019; Sharma, 2012). By contrast, Ogbadu (2009) conducted a study to improve benefits through better material management. The delivery of inferior raw materials was noted by the respondents as a problem in material management. The inefficiencies, failure, and downtime of the factory discovered reduced profitability. By keeping positive ties with spare component suppliers, one may minimize losses from frequent malfunctions and retain increasing profitability.

According to a study by Schendel, et al. (2017), poor demand forecasting can result in excess inventory, which raises carrying costs and raises the possibility of stock obsolescence. Due to the tie-up of important resources and the rise in operating expenses, this difficulty may impede the profitability of the business. Thus, it is imperative to apply efficient demand forecasting methods in order to enhance material management and overall business profitability.

METHODOLOGY

The study's target population consists of 254 employees of Inland Dry Port Authority Limited Kaduna. Under the quantitative methodology, an ex-post-facto descriptive survey research design was used. This research study was driven by two research objectives, two research questions, and two hypotheses based on the factors under investigation. A sample of 211 respondents was chosen using a purposive sampling technique, taking into account the study's demographics and goals. The primary tool in this study for data collection and analysis was the Material Management and Organizational Profitability Questionnaire (MMOPQ) which was administered to 211 respondents. However, only 195 copies were returned and used in the study, while 16 copies (roughly 7.58 percent) were not returned.

Two experts in the Business Administration Department at Lagos State University, Lagos (LASU), and one expert in the Educational Measurement Department at Kaduna State University (KASU) Nigeria thoroughly validated the research instruments, and all corrections were perfected before subjecting the instrument to the Cronbach coefficient alpha method; a satisfactory reliability coefficient of 0.89 was obtained, which is high enough for this study. Analysis was conducted using descriptive statistics, and

correlations, and a multiple regression model was applied to determine the relative importance of material management concerning organizational profitability

RESULTS AND FINDINGS

Materials management		**SD**	**D**	**SLA**	**A**	**STA**	**Total**	**Mean**	**STD**
My organization's material management is effective and efficient in terms of checking material quantities and volumes for their right supply and storage, adequate haulage services, availability of effective transportation system and communication systems, and detection of supplies, and shortfalls amongst others	No	6	10	16	48	116	195	3.79	0.92
	%	3.31	4.96	8.26	23.97	59.50	100.00		
My organization speedily determines the daily allocation of materials to different operations on site.	No	3	16	13	42	121	195	3.97	0.92
	%	1.65	8.26	6.61	21.49	61.98	100.00		
My organization ensures that on weekly materials are returned to be submitted by the head of operation on site.	No	5	13	6	79	92	195	3.83	1.04
	%	2.48	6.61	3.31	40.50	47.11	100.00		
My organization has access to accurate and good specifications of materials to avoid wrong decisions	No	18	16	15	64	82	195	3.71	1.00
	%	9.09	8.26	7.44	33.06	42.15	100.00		
Organizational Profitability		**SD**	**D**	**SLA**	**A**	**STA**	**Total**	**Mean**	**STD**
	No	8	26	16	32	113	195	3.83	1.04

My organization level of profit has increased when compared to last year.	%	4.13	13.22	8.26	16.53	57.85	100.00		
My organization profitability level is satisfactory	No	16	13	5	73	89	195	3.78	1.02
	%	8.26	6.61	2.48	37.19	45.45	100.00		
My organization is performing well when compare to other firms in the same industry.	No	18	16	15	64	82	195	3.71	1.00
	%	9.09	8.26	7.44	33.06	42.15	100.00		
My organization has not recorded any loss for the past 5 years	No	16	13	5	73	89	195	3.78	1.02
	%	8.26	6.61	2.48	37.19	45.45	100.00		
Production Cost		**SD**	**D**	**SLA**	**A**	**STA**	**Total**	**Mean**	**STD**
Effective material management in my organization reduces inventory running cost.	No	3	16	13	42	121	195	3.97	0.92
	%	1.65	8.26	6.61	21.49	61.98	100.00		
Effective material management in my organization reduces total ordering costs.	No	5	13	6	79	92	195	3.83	1.04
	%	2.48	6.61	3.31	40.50	47.11	100.00		
Effective material management in my organization reduces total storage and holding costs.	No	34	5	2	42	113	195	3.63	1.08
	%	17.36	2.48	0.83	21.49	57.85	100.00		
Effective material management in my organization reduces the cost of stock out.	No	8	26	16	32	113	195	3.83	1.04
	%	4.13	13.22	8.26	16.53	57.85	100.00		

Table 1 Title: Descriptive Analysis of the Perception of the Respondents on the Study Variables

Table 1 Title above presents the results of a descriptive analysis of respondents' perceptions of material management and organizational profitability in Kaduna Inland Port Limited. Given the mean variables that ranged from 3.50 - 4.499, the result indicated that the majority of the respondents agreed to the items under each variable as stated in the table above.

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Correlation Analysis

		1	2	3	4
Material - management	Pearson Correlation	1	.611**	-.612**	.603**
	Sig. (2-tailed)		.000	.000	.000
	N	195	195	195	195
Organizational Profitability	Pearson Correlation	.611	1	.652**	.652**
	Sig. (2-tailed)			.000	.000
	N	195	195	195	195
Production Cost	Pearson Correlation	-.612**	.652**	1	.632**
	Sig. (2-tailed)	.000	.000		.000
	N	195	195	195	195
Services Delivery	Pearson Correlation	.603**	.632**	1	1
	Sig. (2-tailed)	.000	.000		
	N	195	195	195	195

Table 2 Title: Correlation Matrix

From the correlation matrix in Table 2 correlation matrix above, the study revealed that material management has a positive and direct correlation with organizational profitability. This implies that as material management and organizational profitability move in the same direction a unit increase in material management will increase organizational profitability by 0.611 units.

Again, material management exerts a negative and inverse or indirect relationship with organizational profitability. This means that there is an opposite movement between the two variables indicating that a unit increase in material management will cause a decrease or reduction in the production cost of Kaduna Inland Dry Port by 0.612 units

Regression Analysis

Hypothesis 1: There is no significant impact of materials management on organizational profitability in Kaduna Inland Dry Port Limited Authority.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.593[a]	.351	.348	.94819	.351	114.870	1	212	.000

a. Predictors: (Constant), Materials management
b. Dependent Variable: Organizational Profitability

Table 3a Title above Regression analysis of the impact of material management on organizational Profitability

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	103.276	1	103.276	114.870	.000[b]
	Residual	190.603	212	.899		
	Total	293.880	213			

a. Dependent Variable: Organizational Profitability
b. Predictors: (Constant), Materials management

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.386	.181		7.643	.000
	Materials management	.557	.052	.593	10.718	.000

a. Dependent Variable: Inland Dry Port Organizational Profitability

Table 3b Title: Regression Analysis of the Impact of Materials Management on Organizational Profitability

The impact of material management on organizational profitability in Kaduna Inland Dry Port Authority in Nigeria is demonstrated by the linear regression analysis of Table 3a and 3b models above. The correlation coefficient (R) and coefficient of determination (R2) in the model summary table revealed the extent to which material management affects organizational profitability. R2=0.351 and R=0.593, the findings of the linear regression, demonstrate a strong linear influence of material management on organizational profitability at Kaduna Inland Port Limited. This implies that 35% of the variation in an organization's profitability can be attributed to material management.

Material management has a major impact on organizational profitability, as further validated by the P value of 0.000 which is less than the 5% level of significance. The coefficient table above revealed a Pearson correlation of 0.593, indicating a positive association between material management and organizational profitability at the 0.000 level of significance. As shown in the ANOVA table, the null hypothesis was rejected due to the extremely low probability (less than 0.05). In conclusion, Kaduna Inland Port Limited's profitability is positively affected by materials management.

Hypothesis 2: Material Management does not significantly affect production costs in Kaduna Inland Port Limited

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.673[a]	.453	.451	.87041	.453	175.898	1	212	.000

Table 4A: Title: The effect of material management on production costs.
a.Predictors: (Constant), Material management
b. Dependent Variable: Production cost

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	133.264	1	133.264	175.898	.000[b]
	Residual	160.616	212	.758		
	Total	293.880	213			

a. Dependent Variable: Production cost
b. Predictors: (Constant), Material Management

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.122	.168		6.694	.000
	Materials management	-.650	.049	-.673	13.263	.000

a. Dependent Variable: Production cost

Table 4 B: Title: Regression analysis of the extent to which material management affects production

Tables 4 A and B above show the effect of material management on production costs. The coefficient of determination (R^2) and correlation coefficient (R) were revealed as R2=0.451 and R= 0.673 respectively. This also implies that material management has a strong linear influence on production costs in Kaduna Inland Dry Port Limited. This presupposes that a 45% variation in production cost is explained by material management. Given this, the probability value of 0.000 in the ANOVA table above which is also less than the 5% level of significance shows that material management also has a significant effect on production cost. From the Coefficients table above, a Pearson correlation of 0.673 was obtained which indicates that there is a relationship between material management and production cost at 0.000 level of significance. Following this test result, the null hypothesis was rejected, and the conclusion is that

materials management exerts a statistically significant effect on production costs in Kaduna Inland Port Limited.

DISCUSSION

The results demonstrated that material management increases organizational profitability at Inland Port Authority Kaduna. The impact of these material management challenges on profitability is significant. It was discovered that inefficient material management processes could also cause delays in the fulfillment of orders and a lack of investors, leading to dissatisfied customers, lost sales, and potential damage to the reputation of the Inland Dry Port Kaduna. In addition, the researchers also discovered that efficient material management procedures and strong leadership can contribute to cost savings, improved customer satisfaction, attract investors, boost sales, and ultimately increase the port's profitability. Again, it was discovered that automating the warehouse, revamping its design, implementing state-of-the-art technology, building new roads and trains to the hinterland, and having facilities for weighing, preservation and packaging would aid profitability.

The findings of Sakpaide (2024), Capkun (2019), Rahimah et.al. (2018), Ogbadu (2009), Kerdjoudj (2024) Umaru, Pate, and Haruna (2015), Okorie and Ibegblem (2015), Wonah (2015), and Abdul-Aziz et.al. (2019) are in congruence with the findings of this research study. For instance, Sakpaide (2024) found that effective material management positively influences firm productivity in selected aluminum manufacturing enterprises in Delta State, Nigeria. Also, Capkun et. al. (2019), research study showed a positive correlation between a company's material management and its financial performance. However, the degrees of correlation vary depending on the type of inventory and the financial performance reference. In the same vein, Rahimah et.al. (2018) discovered that the number of sales materials days determined the profitability of Malaysian Public Listed Companies. In addition, the debt-to-equity ratio, current ratio, and firm size also significantly affected its profitability.

Ogbadu (2009) discovered that the delivery of inferior raw materials was identified by all eighty-six respondents as a problem in material management. The inefficiencies, failure, and downtime of the factory discovered reduced profitability. By keeping positive ties with spare component suppliers, you may minimize losses from frequent malfunctions and retain increasing profitability. Kerdjoudj (2024) showed that developing a skilled workforce is essential for attracting and retaining private investments in ports. Therefore, investing in education, vocational training, and workforce development programmes tailored to the needs of the maritime industry can enhance the attractiveness of port locations for investors (Kerdjoudj (2024). The findings of Obizue (2023) further validated and laid strong credence to the report in this study that effective material management accounts for high corporate performance which is measured by profitability.

The results of hypothesis two revealed that there is a negative relationship between material management and production cost in Kaduna Inland Port Limited. These results are consistent with the results of studies conducted by Edeh and Ugwueze (2014) who utilized the theory of material management and production cost in manufacturing firms in Nigeria.

IMPLICATION TO RESEARCH AND PRACTICE

The following suggestions were made in light of the findings:
1. Adopting and maintaining state-of-the-art material management appliances, software, and technologies such as RFID, SAP, ERP, bar code technology, and EDI is essential for efficient and effective material management in Inland Dry Port Kaduna. These tools will help with haulage cargo services and stock movement monitoring, from material availability to transportation, production, delivery, and storage of cargo, among other things.

2. There is a need for employees of Inland Port Authority to be upskilled and reskilled continuously through training and development with development programs, workshops, seminars, and initiatives that will equip them with insightful knowledge of emerging technologies and methods thereby helping the organization to produce knowledgeable and driven workforce and attract investors, especially in material management which will eventually boost the overall organizational success and profitability. This is imperative because their functions are numerous (materials, digital inspections, ships, sophisticated equipment, and cargo handling) and involve risks.

3. There is a need to improve the security architecture of the place to reduce insecurity and vices like stealing, kidnapping, and destroying apparatus by liaising with security agencies such as the tri-services such as the Army, Navy and Airforce, the police and locals to serve as vigilantes, spies, and another eye of the organizations.
4. The organizational profitability of the inland dry port Kaduna will be improved by raising awareness, working with reputable organizations and tertiary institutions, and researching marketable items. Public education about the roles played by the inland dry port authority through media outposts, newspapers, radios, and television will increase public awareness of their functions and encourage citizens to support the organization by bringing in supplies, machinery, and products for import or export. Similarly, agile receiving and transportation of commodities to their various ports of destination will be required in order to work with renowned organizations like the Federal Ministry of Agriculture and the Nigerian Export-Import Bank, adapt to the constantly shifting demands of the market through strategic alliances based on core capabilities, manage change and uncertainty through organization, and use people and information.

5. Improving organizational systems and profitability has been shown to depend critically on the continuous observation and assessment of material management procedures by providing efficient managerial planning and inventory control systems as well as having standard gauge rail and haulage systems for cargo instead of

transportation always by road where there are a lot of potholes and bad roads on the way that can fall containers and even cause delays of materials and goods shipment. This calls to mind the Lagos Apapa gridlocks that are worsening or affecting the Inland Port Authority Kaduna profitability that need to be addressed without further delays.

6. The researchers are of the view that having tarred good roads and a good connecting system, efficient rail, and security system will enhance the inland dry port Kaduna's profitability. According to empirical research, companies can increase overall operational efficiency, optimize inventory levels, decrease waste, and proactively uncover inefficiencies in the materials management process by implementing efficient monitoring methods. These kinds of observations and assessments offer vital information for formulating plans to boost profits and preserve a competitive edge in the industry.

CONCLUSION

The profitability of Kaduna Inland Dry Port Limited is significantly impacted by its material management procedures. This study demonstrated the impact clearly and showed how an organization's profitability could be greatly increased by putting excellent material management methods into place and having strong managerial leadership who can effectively and efficiently manage the organization. It also illustrated the relevance and use of physical system theory and comprehensive material flow theory (CMFT), which served as the theoretical cornerstones of this research study. The results also highlight how crucial it is to approach material management holistically, accounting for factors like operational and logistical issues like the traffic jams in Apapa, Lagos, the ineffectiveness of the rail system, the lack of teamwork, the lack of preservation and weighing facilities, the poor quality of the roads, and the inadequate network of connections.

FUTURE RESEARCH

This study is expository as it revealed the impact of effective and efficient material management on organizational profitability in Inland Dry Port Authority Kaduna, Nigeria. Further research studies on this subject matter are expected to be more in-depth than this current study and can be done on a wider sectoral basis and geographical location. This will be achieved by examining this subject matter in other economic sectors and states in Nigeria including other nations, and by going so far as to draw differences and similarities between the understudied sectors, states, and countries, as applicable. This can be done by using more organizations and developing more objectives, research questions, and hypotheses that could even make this study a comparative analysis.

Further research studies could be done to establish the effect of other organizational, sectoral, national, and global economic differences in promoting how organizational materials can be effectively managed to achieve higher organizational profitability. It is expected that this could help in resolving some theoretical underpinnings of the

results obtained in this study. It is possible that the outcome of this study can also be made more robust if future research work in this area should widen the scope of the study by specifying some models that will incorporate more dependent and independent variables, and by increasing the study population and sample size.

Again, further studies on this subject matter can make use of different statistical analytical tools to further estimate the residuals.

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