Warehouse Costs and Distribution Planning in Project-Based Supply Chains: Project Performance Implications in Beverage Distribution [1]

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Abstract

Warehouse Costs and Distribution Planning in Project-Based Supply Chains: Project Performance Implications in Beverage Distribution The study examines the impact of warehouse costs and distribution planning on project performance among beverage distributors in Imo State, Nigeria, from 2017 to 2024. It examines the effects of warehouse costs on cost efficiency and productivity in project-based supply chains, and distribution planning on logistics performance in project-based supply chains. A survey research design was conducted and 333 logistics and distribution employees responded to a questionnaire. Data was analysed using descriptive statistics, Pearson correlation and analysis of variance (ANOVA). The findings reveal that there is no significant effect of warehouse costs on project productivity ($F(1,298) = 0.013$, $p = .908$). Similarly, there was no significant association between distribution planning and logistics performance ($r = .003$, $p = .960$). Nevertheless, survey participants reported that good distribution planning and inventory management support project delivery, efficient operations, reduced delays and cost management.

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As such, this research implies project performance in beverage distribution depends more on operational efficiency, inventory control systems and the integration of logistics activities, than warehouse cost levels. Therefore, it is advised that companies implement Warehouse Management Systems (WMS), improve distribution planning and provide ongoing training to improve project execution performance.

Keywords: *Warehouse Cost, Distribution Planning, Project Performance, Logistics Performance, Beverage Distribution, Nigeria*

1.0 Introduction

Our increasingly competitive, technologically advanced and customer-driven global economy demands that businesses adapt to constantly evolving market needs. As a result, companies are constantly seeking to create strategies to improve operational efficiency, minimise costs, and maintain profitability. In this regard, supply chain management has become a key driver for project and organisational success, and warehousing has evolved into a strategic element that facilitates project delivery, rather than simply being a storage location. In fact, recent literature highlights that today's warehouses are now considered as a key component in the supply chain and have a profound effect on project performance and service delivery efficiency, which in turn affects competitiveness (Christopher, 2016; Langley et al., 2016; Bowersox et al., 2013). As such, warehouse management is crucial to co-ordinate all other operational activities in the supply chain to support timely, economic project delivery. This is especially true in sectors like beverage distribution, where the products are highly perishable, delivery times are critical, and demand is highly variable and unpredictable.

In project-based operational settings, the effectiveness of warehouse activities impacts project schedules, on-time delivery, customer satisfaction and cost-efficiency. In the past, the role of warehousing has been considered a cost centre within supply chains, with little strategic importance (Rushton et al., 2017). But such views have evolved with the globalisation and development of supply chain management theories. Today, warehouses are sophisticated systems that perform storage, consolidation, repacking and other distribution functions which impact both pre- and post-project phases (Waters, 2014).

As a result, the main focus of warehousing has shifted to reducing total cost of operations while maintaining or enhancing service levels and delivering projects successfully (Monczka et al.,

2015). This shift underscores the need for effective warehouse management in delivering project performance, especially in distribution-intensive industries like beverage. In emerging markets like Nigeria supply chain inefficiency is a critical factor affecting firm and project performance. Companies still rely on archaic manual inventory management techniques, such as pen and paper, which are subject to inaccuracies, inefficiencies and inconsistencies (Anichebe, 2013; Anichebe and Agu, 2014). These inefficiencies lead to inaccurate inventory levels, demand planning and production and distribution inefficiencies, which in turn affect project performance and delivery (Okoro et al., 2016).

In addition, external uncertainties and infrastructural challenges also limit the responsiveness and reliability of supply chain operations, which are key factors in project success (Lee, 2004). The effective integration and coordination of supply chain activities across various functional areas also affect logistics performance, which is crucial in achieving project success (Mentzer et al., 2001). Inconsistent transportation systems also make distribution planning both locally and internationally a complex process, which affects project scheduling and on-time delivery. In Nigeria, these issues are compounded by poor logistics infrastructure, forcing many manufacturers and distributors to use third-party logistics services. But these providers are often unable to ensure timely delivery and project schedules (Nwankwo, 2020). This inefficiency further leads to frequent stock control problems and undermines the effectiveness of distribution systems, which in turn impact project performance (Anichebe & Agu, 2014).

Further, manual inventory recording, low technology usage and lack of inventory visibility compounds these issues. This highlights the need for digitisation and automation in warehouse management to improve the efficiency of project delivery, minimise delays and enhance logistics operations within the supply chain (Christopher, 2016).

Warehouse management is a broad and comprehensive set of processes that seeks to optimise the flow of goods from receipt through to shipment, while maintaining low costs and high accuracy (Frazelle, 2002). In today's project-based supply chains, modern warehouse management systems are not only aimed at improving operational efficiency but also at serving the project delivery goals by providing timely and accurate order processing (Hopstack, 2022). The primary warehouse operations of receiving, storage, inventory management, order picking and shipping are tightly integrated and critical for operational efficiency and effective project delivery (Langley et al., 2016). For example, during receiving, goods must be inspected and verified for quality and accuracy, which forms the basis for accurate inventory count and avoids downstream issues that

could impact project deadlines and performance (Rushton et al., 2017). Likewise, inventory management is crucial in achieving a balance between stock availability and cost, which includes ongoing stock monitoring, setting up reorder points, and ensuring product availability without overstocking or excess stock holding costs (Kumar & Singh, 2018). Practices like cycle counting and ABC analysis are commonly used to enhance inventory accuracy and inform decision-making in project management (Waters, 2014). Moreover, warehouse design and layout can affect efficiency, as they affect the distance travelled, time taken and space used (Bowersox et al., 2013). Techniques such as zoning and slotting are frequently used to boost productivity and improve the efficiency of operations, which, in turn, supports project operations (Bowersox et al., 2013). Order picking, a labour-intensive operation, can be enhanced through techniques such as batch picking and wave picking to increase efficiency and lower costs, helping to achieve the required project outcomes (Monczka et al., 2015).

The shipping process, at the end of the warehouse operation, is vital to ensure the on-time delivery of goods, which affects project delivery schedules and customer service. The adoption of Warehouse Management Systems (WMS) has also improved this process to allow real-time tracking, coordination and automated customer communication, which has improved the overall logistics performance of project environments (Christopher, 2016). However, warehouse management systems still face some challenges. They include the management of labour costs in variable demand environments, the maintenance of inventory levels during supply chain disruptions and the pace of technological advancements (Rushton et al., 2017). Moreover, the growing use of automation technologies like robotics and artificial intelligence raises new issues surrounding workforce skills, integration and security (Waters, 2014). Such challenges point to the importance of ongoing human capital management and technological investment to support warehouse processes in meeting project delivery goals, performance improvement and supply chain resilience.

In this context, this research examines the effects of automated warehouse management on project performance outcomes among selected beverage distributors in Imo State, Nigeria, over the period 2017–2024. Supply chain performance comprises a set of interrelated processes, and the contribution of individual components such as distribution planning may not always have a direct effect on project performance but may instead exert an indirect or mediating influence (Lambert, 2008). While existing literature has extensively addressed general warehouse performance and inventory management, there remains a notable gap in studies focusing on third-party beverage distributors in Nigeria, particularly with respect to automation, distribution networks, and

operational efficiency within a project delivery context in Imo State (Akinlabi, 2021; Nwaohira and Onuoha, 2020).

Recent studies further indicate that digital transformation in warehousing, including automation and data-driven systems, plays a critical role in enhancing supply chain agility and responsiveness in complex and uncertain market environments (Winkelhaus and Grosse, 2020). Within project-based supply chains, these technologies are essential for improving coordination, minimizing delays, and strengthening overall project delivery performance. This study therefore seeks to address this gap by examining the influence of factors such as distribution channels, stock control systems, management practices, adoption of Warehouse Management Systems (WMS), seasonal demand fluctuations, and organizational growth dynamics on warehouse performance and project delivery outcomes in the beverage distribution sector (Ogbo et al., 2014).

In doing so, the study aims to provide empirical evidence that will be valuable to practitioners, policymakers, and supply chain stakeholders in improving operational efficiency, reducing logistics costs, and enhancing competitiveness in the brewery distribution sector in Nigeria (Ajayi et al., 2021). Furthermore, the study contributes to the growing body of knowledge on the role of digital transformation in project-oriented supply chains, particularly in developing economies characterized by infrastructural and operational challenges.

This study seeks to investigate the impact of automated warehouse management on project performance among selected beverage distributors in Imo State, Nigeria. Specifically, the study aims to:

i. Determine the effect of warehouse costs on project productivity and cost efficiency among selected beverage distributors in Imo State.
ii. ii. Examine the effect of distribution planning on logistics performance within the context of project delivery among selected beverage distributors in Imo State.

To achieve these objectives, the following hypotheses were formulated:

$H0_1$: Warehouse costs do not have a significant effect on the organizational productivity of selected beverage distributors in Imo State.

$H0_2$: There is no significant relationship between distribution planning and logistics performance within project delivery among selected beverage distributors in Imo State.

2.0 Conceptual Review

2.1 The Effect of Warehouse Costs on the Productivity of the Organizational Costs

The literature review analyses the relationship between the cost of the warehouse, the distribution planning, the organizational productivity, and the logistics performance in the framework of automated warehouse management systems. The discussion is informed by available academic and industry literature to elaborate how these variables affect the level of operational efficiency and competitiveness especially in emerging economies like Nigeria. In distribution intensive industries like beverage supply chains, warehouse costs continue to be one of the key determinants of organizational productivity (Adebola, 2019). Warehouse management is about streamlining the movement of goods in and out of the warehouse and ensuring that it is accurate, minimizing waste and minimizing operational expenses (Frazelle, 2002). Historically, warehousing was regarded as a passive cost center, but the modern understanding of the supply chain treats it as a strategic activity that helps companies become more competitive due to cost efficiency, shortening lead times, and providing better customer service (Christopher, 2016; Langley et al., 2016).

2.1.1 Expense Elements and Problems

The operating expenses of a warehouse are usually covered by the lease or ownership of the structure, insurance, labor wages, equipment maintenance, product losses due to obsolescence or spoilage (Ogbo et al., 2014). These expenses in Nigeria put a lot of financial strain on the beverage distribution companies, especially in settings that are defined by unpredictable economic situations and increased operational costs (Anichebe, 2013).

Moreover, poor infrastructure and bad logistics networks greatly exacerbate inefficiencies in warehousing. The lack of good road systems, unreliable power and access to modern storage points also increases the cost of operation and low productivity (Anichebe & Agu, 2014; Nwankwo, 2020). These limitations tend to lead to inefficiencies in inventory management, slow distribution and low profitability.

2.1.2 Productivity and economies of scale.

The efficient warehouse management systems make them productive through improved utilization of space, less handling time and high level of labor efficiency. These enhancements have a direct

correlation with less overhead costs and enhanced customer satisfaction via order fulfillment on time (Hopstack, 2022; Langley et al., 2016). Also, new inventory tracking systems can assist companies in decreasing the amount of manual work related to counting the stock and order processing, thus enhancing the accuracy and minimizing operational errors (Kumar and Singh, 2018). Introduction of techno driven systems in the operation of a warehouse has consequently been the key to realizing cost efficiency and competitive advantage in contemporary supply chain.

2.1.3. Automated Systems and Cost Implications.

Automated warehouse systems are a part of saving money and making operations more efficient. Automation means we do not have to rely on people much it lowers the amount of inventory we have to hold, and it makes managing inventory more precise as mentioned by Extensiv in 2024. It also helps to minimize damage to products and correct mistakes which makes the overall cost more efficient according to SafetyCulture in 2024. There are good things about automated warehouse systems but getting the system and teaching the staff how to use it can be hard and it can be expensive to start.

A lot of money is needed to get started with automated warehouse systems. However, research shows that this money is usually made back over time because operations become more efficient we do not have to rely on people much inventory is more precise and there is less waste as found by Winkelhaus and Grosse in 2020 and Kembro and others in 2019.

So automated warehouse systems should be seen as a long-term investment, not something that will cost us a lot of money in the term. Research also shows that the cost of running a warehouse does not always affect how productive it is. This means that how productive a warehouse is might be determined by how efficient the operations how much technology is used and how well it is managed, rather than how much money is spent, as found by Ajayi and others in 2021 and Akinlabi in 2021.

However, the data shows that not every cost in the warehouse affects productivity in a way. It seems that productivity is more related to how efficient the operations are, how much technology is used and how well the warehouse is managed, rather than how much money is spent, as found by Ajayi and others in 2021 and Akinlabi in 2021.

2.2 The Relationship between Distributions Planning and Logistics Performance

Distribution planning is a part of supply chain management. It decides how well products move from warehouses to customers. Bad planning can really hurt logistics performance. This leads to delays, higher costs and unhappy customers.

2.2.1 Challenges in Distribution Planning

In countries like Nigeria distribution planning faces challenges. These include infrastructure, bad transportation systems and unpredictable logistics networks. These problems often make companies rely on third-party logistics providers. Many of these providers struggle with delivery and timely shipments.

These inefficiencies often cause delayed shipments, increased costs and lower customer satisfaction. Also, global transportation issues make logistics planning harder. It is tough for companies to keep delivery schedules

2.2.2 Importance of Effective Planning

Good distribution planning improves logistics performance. It speeds up delivery, reduces waste and ensures coordination across the supply chain. Efficient planning systems help organizations meet customer demand while controlling costs.

In industries like beverage distribution on-time delivery is crucial. It directly affects customer retention and market competitiveness. Distribution planning and logistics performance are key, to success. Effective planning is essential for businesses to thrive.

2.2.3. Distribution Efficiency and Cost Optimization

Distribution efficiency is important for making logistics work better. It helps us use transportation resources in the way possibly get things delivered faster and save money on operations. A good distribution system needs to have a plan for routes to make the most of loads and keep delivery schedules coordinated in real time (Christopher, 2016).

In countries like Nigeria that are still growing it is very hard to make distribution efficient. This is because the infrastructure is not good enough there is a lot of traffic and fuel costs keep changing (Ogbo et al., 2014; Nwankwo, 2020). All these problems make transportation costs go up and make deliveries less reliable.

The application of technological solutions, such as route optimization software and real-time delivery tracking systems, can significantly enhance distribution efficiency. These technologies improve decision-making processes, reduce operational delays, and increase the overall responsiveness of logistics operations (Winkelhaus & Grosse, 2020).

So having a strategy for distribution efficiency is crucial for saving costs and staying competitive in the modern supply chain of distribution efficiency. Distribution efficiency is a key driver in achieving this objective

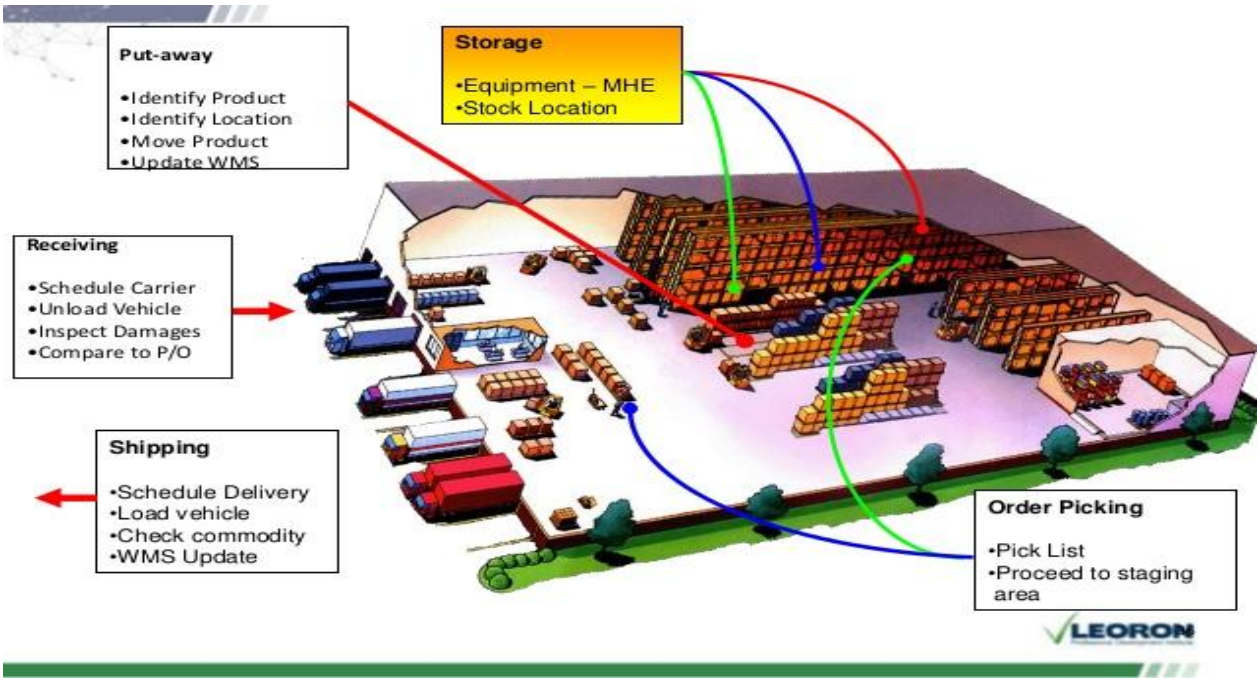
2.2.4 Role of Automation and Technology

Technology is important for making distribution planning and logistics work better. It helps people see what is in stock now so they can make good decisions about getting things from one place to another. For example, Warehouse Management Systems give people a picture of how much stuff they have so they can plan better.

Automated logistics systems make the roads more efficient, use the trucks better and get orders out faster which makes the whole supply chain work better. This means people get their things on time and it costs money. Technology like this also helps make sure the service is good and people are happy.

Some people think that planning how to get things from one place to another might not always make a big difference in how well logistics works. They think that how well logistics works depends on a lot of things, like the whole organization, the technology they use and what is going on outside the company and how all these things work together with the distribution systems.

Fig. 2.1. Shipping



Source: Al Ghamdi (2016)

Figure 2.1 shows the shipping stage as the very important part of warehouse operations. This is where goods are put together and sent to the customers. The shipping stage is very important for the logistics performance. It is especially important for how fast things are delivered and how accurate the delivery is. It also affects how happy the customers are. When the shipping operations are done well it takes time to handle things and there are fewer mistakes.

Goods being delivered on time. Help organization run more smoothly and efficiently. in this study the shipping process in influenced by how well distribution is planned and how effectively the warehouse is managed. This means that the shipping stage plays an important role in determining how logistics operations perform overall.

2.3.1 Resource-Based View

The Resource-Based View theory says that a company gets an advantage when it uses its resources in a good way. These resources are valuable, hard to find and cannot be replaced. For example, in

warehouse management things like automated warehouse systems and Warehouse Management Systems are very important. They can make the company work better and be more efficient. Companies that use these technologies well are more likely to be successful and stay ahead of others.

2.3.2 Technology Acceptance Model

The Technology Acceptance Model explains how people start using technologies. They use them when they think the technologies are useful and easy to use. In warehouse management people will use automation technologies and Warehouse Management Systems if they think these systems will make their jobs easier. So when a company wants to use these systems it needs to make sure that the employees are happy with them and know how to use them.

2.3.3 Supply Chain Management Theory

The Supply Chain Management theory is about making all the parts of the supply chain work. This helps the company work better, save money and make the customers happy. Warehouse management and distribution planning are important parts of this. They affect how products move and how happy the customers are. When all these parties work together the company does a better job and is more productive. The Resource-Based View and the Technology Acceptance Model are also important, for Supply Chain Management. They help the company use its resources well and make sure that the employees are using the technologies. This is all part of the Supply Chain Management theory and the Resource-Based View.

3.0 Methodology

3.1 Research Design

The research team executed their investigation through survey research methods which measured how automated warehouse management impacted the business results of selected beverage distributors operating in Imo State Nigeria. The survey design is appropriate for this study as it enables the collection of standardized data from a large population and facilitates quantitative analysis of relationships among variables (Saunders et al., 2019; Creswell, 2014).
The study employed a quantitative research approach that used structured questionnaires to obtain measurable responses from participants.

3.2 Population and Sample Size

The target population for this study comprised employees of selected beverage distributors in Imo State (Ogbo et al., 2014). The study examined brewery distributors who worked as third-party agents in the state (Anichebe, 2013). The total population consisted of 2000 staff members who worked at major distributors which included Deep Atlantic Energy Limited Immaculate Breweries Chukwuma Nwoha Jindu Best Amaraku Silas Beverage and Mac Den Beverages (Nwankwo 2020).

The sample size for this study was determined using the Taro Yamane (1967) formula for finite populations at a 95% confidence level and a 0.05 margin of error.

The calculated sample size for a population of 2000 employees was 333 respondents which can be expressed with the following equation: $n = N / (1 + N(e^2))$ $n = 2000 / (1 + 2000(0.05)^2) = 333$ The study used a convenience sampling technique which allowed researchers to select respondents who were easily accessible and available for the study.

This method functions as the standard procedure for conducting survey research that targets extensive population groups who are located throughout different geographic regions (Saunders et al., 2019)

3.3. Research Instrument and Data Collection

The primary research instrument used a structured questionnaire which the researcher delivered directly to the respondents.

3.4 Method of Data Analysis

Researchers applied both descriptive and inferential statistical methods to analyze field data. Researchers used descriptive statistics which included frequencies and percentages and tables and charts to present demographic information and study results. The researchers applied inferential statistical methods to assess the validity of study hypotheses. The researchers used Pearson Correlation analysis to study variable relationships, and they used Analysis of Variance (ANOVA) to investigate how warehouse costs impacted organizational productivity.

The team used a decision rule that required a mean score of 2.5 to be considered valid. The team accepted any mean score that reached or exceeded 2.5 yet they rejected scores that fell below that threshold. Researchers used statistical software programs including SPSS to conduct their data analysis. 3.5 Validity and Reliability The study instrument achieved validity through content validity because experts reviewed the questionnaire with the research supervisor to confirm its clarity and relevant content which matched study objectives. The instrument's reliability was evaluated through Cronbach's Alpha coefficient which assessed its internal consistency. Social science research typically accepts reliability coefficients that reach 0.70 or higher according to Taber 2018. The instrument in this study produced a reliability coefficient within the acceptable threshold which showed that the questionnaire could be used reliably for data collection purposes.

4.0 Results and Discussion

The section provides the results from data analysis which examines the demographic characteristics of study participants together with the statistical methods used to measure how automated warehouse management impacts the efficiency of beverage distributors throughout Imo State. The results are discussed in relation to existing literature and their implications for organizational performance.

Demographic Profile of Respondents

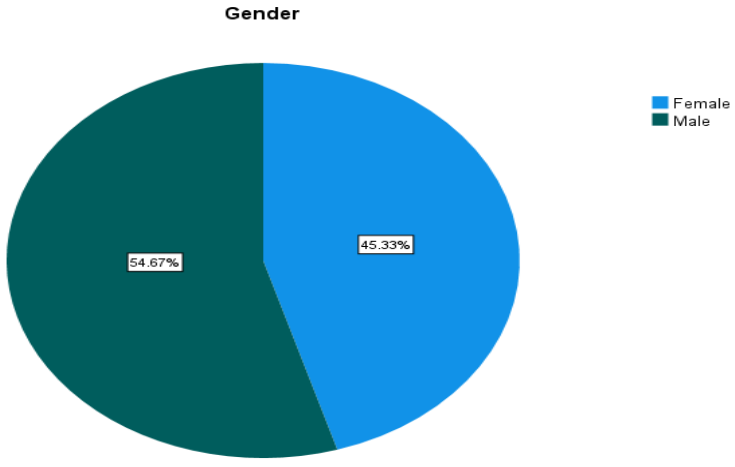


Fig 4.1. Distribution of respondents by gender

The survey of 333 respondents revealed a relatively balanced gender distribution, with males constituting 54.7% (182 respondents) and females 45.3% (151 respondents).

This distribution indicates moderate gender representation within the beverage distribution sector in Owerri, Imo State. However, the slight dominance of male respondents suggests that the industry may still exhibit characteristics of traditionally male-oriented occupations, although female participation remains significant.

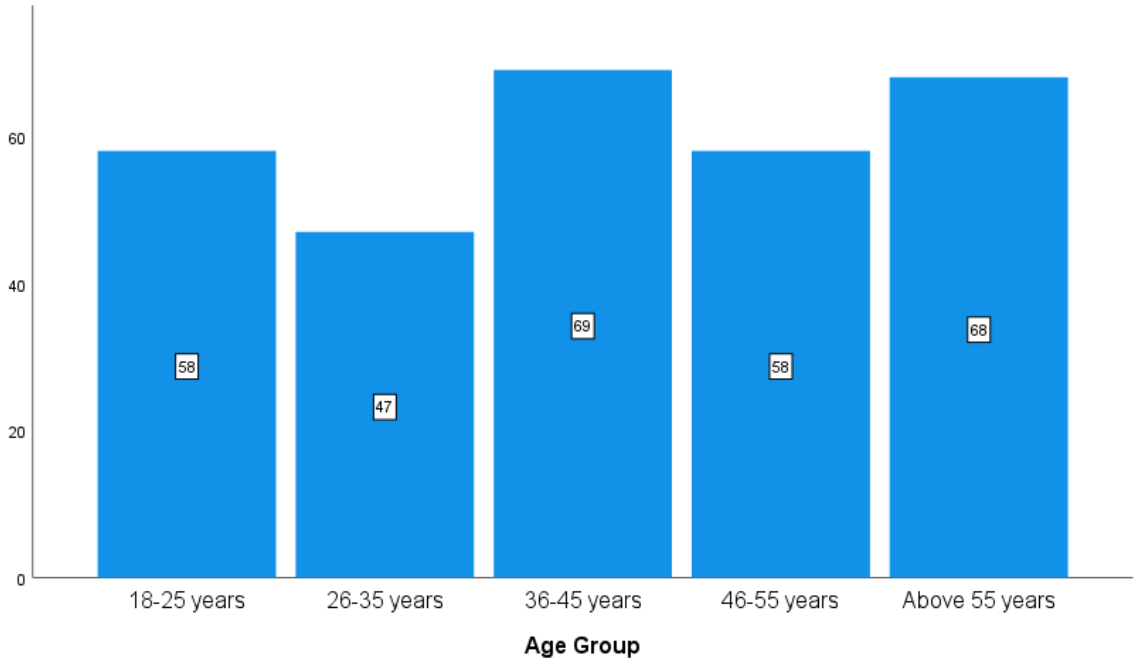


Fig:4.2: The Age Distribution of Respondents

The age distribution of respondents indicates a diverse workforce composition. The most numerous group included 36- to 45-year-old individuals who made up 23.0% of the total respondents at 69 people. Respondents within the 18–25 and 46–55 age categories each accounted for 19.3% (58 respondents), while the 26–35 age group had the lowest representation at 15.7% (47 respondents). This distribution shows that both experienced workers and younger workers exist in the beverage distribution industry which operates in Owerri, Imo State. The variation in age groups suggests a workforce composed of individuals at different career stages.

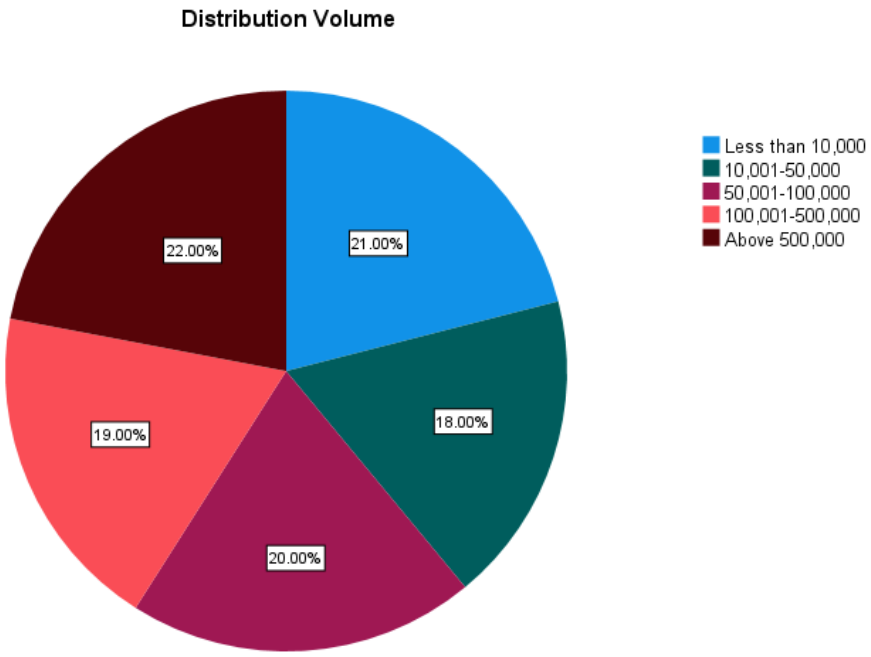


Fig 4.3: Distribution Volume

Significant variation was observed in how different organizations distributed their units.

The largest group, which was 22.0%, said to have distributed over 500,000 units.

This shows that some firms have a high operational capacity.

On the other hand, 21.0% of respondents said their organizations distributed less than 10,000 units. Other distribution categories were also well represented.

These included:
* 50,001–100,000 units (20.0%)
* 100,001–500,000 units (19.0%)
* 10,001–50,000 units (18.0%).

This distribution shows that there are small and large beverage distributors in Owerri, Imo State.

The study looked at distributors of Breweries in Imo State, Nigeria.

The focus was on how automated warehouse management affects the performance of these organizations.

The case study was on selected beverage distributors.

The study included 2000 staff from distributors.

These distributors were:
* Deep Atlantic Energy Limited,
* Obinze,
* Immaculate breweries,
* Jindu Best Amaraku,
* Araha Group,
* Silas Beverage,
* Mac Den Beverages etc all, in Imo State.

Table 4.1: Categorization of Distributors Population.

Distributors	Managers	Supervisors	Cashiers	Loaders	Operators	Store keepers	Total
Macden	13	24	30	120	11	30	228
Auscatec	10	28	32	65	10	21	166
Deep Atlantic	10	30	40	54	9	38	181
Anthony Hero	14	34	29	92	7	40	216
Quivers	8	19	19	28	4	56	134
Vital view	19	28	22	24	8	48	149
Silas	20	47	24	20	6	56	173
Immaculate beverages	25	50	45	80	5	50	255
Phocles	20	42	30	39	6	45	182
Opics	17	31	26	39	4	38	155
Frankjulie	5	25	17	80	5	29	161
Total	161	358	314	641	75	451	2000

H_{01}: ***Warehouse costs do not have a significant effect on the organizational productivity of selected beverage distributors in Imo State.***

Table 4.2: ANOVA Result of the effect of warehousing cost on the organizational productivity

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.003	1	.003	.013	.908[b]
	Residual	76.660	298	.257		
	Total	76.663	299			

a. Dependent Variable: Productivity metrics
b. Predictors: (Constant), Implementation and Operating Costs

This study examined whether the amount spent on warehouse operations influences how effectively organizations perform. An Analysis of Variance (ANOVA) test was conducted to assess this relationship. The findings indicate that warehouse costs do not have a statistically significant effect on project productivity. The results show **F (1,298) = 0.013, p = 0.908**, suggesting that variations in warehouse expenditure do not meaningfully affect how well organizations perform, particularly among the beverage distributors in Owerri, Imo State.

Further analysis using ANOVA also confirmed that the level of spending on warehouse activities does not significantly influence organizational outcomes. The results remained consistent with **F (1,298) = 0.013, p = 0.908**, indicating that warehouse costs alone are not a determining factor of performance. Therefore, it was not possible to establish that warehouse expenditure has any measurable impact on project productivity within the selected firms.

In addition, the study reassessed whether warehouse-related spending affects organizational performance using the same statistical approach. The results again showed no significant effect, with **F (1,298) = 0.013, p = 0.908**, reinforcing the conclusion that warehouse costs do not directly influence productivity levels among the beverage distributors in the study area.

Finally, repeated testing using ANOVA yielded consistent results, confirming that the amount spent on warehouses does not significantly affect how organizations perform. With **F (1,298) = 0.013, p**

= 0.908, the evidence suggests that warehouse costs are not a key driver of project productivity and therefore cannot be considered a significant predictor of performance outcomes in this context.

H_{02}: ***There is no significant relationship between distribution planning and logistics performance of selected beverage distributors in Imo State.***

Table: 4.3: Result of the relationship between distribution planning and logistics performance

Correlations Analysis

		Distribution operations	Logistics performance metrics
Distribution operations	Pearson Correlation	1	.003
	Sig. (2-tailed)		.960
	N	333	333
Logistics performance metrics	Pearson Correlation	.003	1
	Sig. (2-tailed)	.960	
	N	333	333

The study examined the relationship between distribution planning and logistics performance using Pearson correlation analysis. The results indicate that there is no statistically significant relationship between the two variables, with a correlation coefficient of **r = 0.003** and a p-value of **0.960**. This suggests that distribution planning does not significantly predict logistics performance among the selected beverage distributors.

The implication of this finding is that distribution planning, as currently practiced within the studied organizations, does not independently influence logistics performance outcomes. In other words, improvements in distribution planning alone may not necessarily lead to better logistics performance or enhanced project delivery efficiency.

Based on the statistical evidence, the null hypothesis (H_{02}), which states that there is no significant relationship between distribution planning and logistics performance, is therefore not rejected. This indicates that the relationship between the two variables is weak and not statistically meaningful within the context of this study.

5.0 Discussion

The study revealed that warehouse costs do not have a statistically significant effect on the productivity of beverage distributors in Imo State. This suggests that the magnitude of the investment in warehousing alone does not affect project productivity or the final performance outcomes. Instead, it seems to matter more how warehouse resources are used and how efficiently operational processes are managed.

This result is consistent with the Resource-Based View as proposed by Jay Barney (1991), which asserts that competitive advantage is not merely a function of resource possession or cost levels, but rather of the efficient and strategic use of available resources. Therefore, in the context of beverage distribution, it means that process efficiency, technology adoption, workforce capability and inventory management practices are more important to enhance project productivity than just warehouse costs.

This finding is also consistent with earlier research, for example Martin Christopher (2016) and Winkelhaus and Grosse (2020), which revealed that operational efficiency and system integration are more important performance determinants than the act of spending money. In developing logistics environments, high warehouse costs may reflect operational inefficiencies rather than strategic investment. This further supports the argument that cost is not a good predictor of productivity.

The implication is that warehouse costs should not be evaluated in isolation to assess project performance. “The focus should instead be on the integration of management systems, including automation, real-time inventory tracking and streamlined workflow processes, as these are likely to lead to improvements in productivity and project delivery outcomes.

Furthermore, the study examined the relationship between distribution planning and logistics performance using Pearson correlation analysis. The results indicated that there is no statistically significant relationship between the variables ($r = .003$, $p = .960$), leading to the acceptance of the null hypothesis (H_{02}). This suggests that distribution planning, as currently practiced by the selected beverage distributors, does not independently predict logistics performance within the context of project delivery.

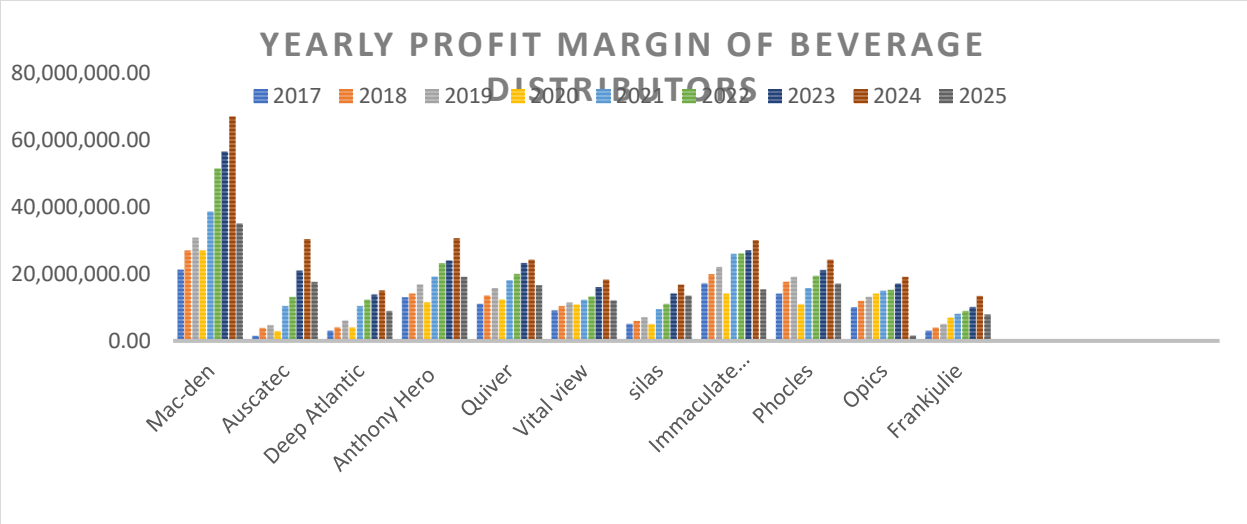
This finding contrasts with established supply chain literature, which emphasizes the importance of distribution planning in enhancing delivery efficiency, responsiveness, and overall logistics performance (Christopher, 2016; John T. Mentzer et al., 2001). However, the result does not necessarily imply that distribution planning is unimportant. Rather, it indicates that its impact may not be directly observable when considered in isolation.

The absence of a significant relationship may be attributed to the complexity and multidimensional nature of logistics systems. Logistics performance is influenced by a wide range of interrelated factors, including operational coordination, infrastructural conditions, technological capability, and environmental uncertainties. Within such a system, the effectiveness of distribution planning may depend on how well it is integrated with these other components.

Additionally, the result may suggest that current distribution planning practices within the studied organizations are not sufficiently optimized or technologically advanced to produce measurable performance improvements. It is also possible that the influence of distribution planning is indirect, operating through other logistics processes that collectively shape project performance outcomes.

In summary, the relationship between distribution planning and logistics performance appears to be complex and context dependent. While distribution planning remains a critical component of supply chain management, its effectiveness in improving project delivery outcomes depends largely on the broader operational and technological environment in which it is implemented.

Fig. 4.4: Trend Analysis of Profit per Year for Selected Distributors



Trend Analysis of Profit per Year for Selected Distributors

The chart above shows how the profits of the beverage distributors changed over time. The distributors who started using warehouse automation made more money and kept making more money over time compared to the ones who started using it later.

This tells us that using automated warehouse management systems on is good for how much money the distributors make in the long run. This is probably because they can do things efficiently, make fewer mistakes and keep track of what they have in stock better.

However, we can see that it takes some time to start seeing the benefits of using automation. This is because the distributors need some time to get used to the systems to learn how to use them properly and to make sure the technology is working well with how they do things.

So what we found out is that it is very important for the beverage distributors in Owerri to invest in warehouse automation on. This will help them do better than their competitors and make money over time.

6.0 Conclusion and Recommendations

6.1 Conclusion

This study looked at how automated warehouse management affects the performance of some beverage distributors in Imo State, Nigeria.

The study had three goals:
* Seeing how warehouse costs affect how productive these distributors are
* To check if controlling stock helps them work better
* To find out if planning how to distribute products affects how well they handle logistics.

The researchers asked 333 people questions and used numbers to analyze the answers.
They used tools, like descriptive statistics, Pearson correlation and ANOVA to make sense of the data.

What they found out was that the cost of running a warehouse did not really affect how productive these distributors were.

This means that just cutting costs might not be enough to make these distributors work better.

They also found that keeping track of stock properly helped these distributors work effectively.

This is because they had stockouts worked more efficiently and made better decisions.

Good stock control helped them do things right.

The study showed that stock control really matters for these distributors to do well.

It helps them have products when needed and make smart choices.

The distributors need to focus on managing their stock to improve.

Furthermore, the study found no statistically significant relationship between distribution planning and logistics performance. This indicates that logistics outcomes may be influenced by multiple interacting factors beyond distribution planning alone, including infrastructure, coordination, and technological capabilities.

The study shows that warehouse management is important. We should look at the picture when it comes to managing a warehouse. If just trying to save money or planning things separately companies should think about how everything works together. This means using technology, keeping a close eye on stock and helping staff get better at their jobs. All of this will help the warehouse run smoothly.

We need to think about the system when we manage warehouses and logistics, for beverage distribution.

If companies follow these suggestions, they will be able to run their operations in a sustainable way. This is because they will be combining technology, processes and what people can do in a way. Beverage distributors will be able to do their jobs.

6.2 Recommendations

Based on the findings of this study, several recommendations are proposed to help beverage distributors in Imo State improve their performance. These measures are aimed at enhancing operational efficiency and overall organizational effectiveness.

i. **Invest in Efficient Warehouse Management Systems**

Beverage distributors should spend money on Warehouse Management Systems to make their work easier and faster. This means using computers to track inventory, making the warehouse a better place to work and using technology to reduce mistakes when handling stock. If they do this well, they can make sure they have the amount of stock that is required by getting things done on time and do better in the long run. We saw that companies that started using automation early did better over time.

ii. **Strengthen Stock Control Procedures**

Companies should make sure they have systems to control their stock so they do not run out of things and must stop working. They should use real-time data try to guess how much they will need and check their inventory regularly. The people in charge of stock control need to be trained all the time so they can do their job well and quickly. This is important because good stock control helps the whole company do better.

iii. **Adopt an Integrated Approach to Distribution Planning**

Even though planning how to deliver things did not seem to make a difference in how well logistics worked companies should still pay attention to it. They should try to combine distribution planning with things like infrastructure, coordination and technology. If they can make their delivery schedules better work well with logistics partners and use tools they might be able to make logistics work better.

iv. **Focus on Staff Training and Development**

Beverage distributors should always be training and teaching their employees things about warehouse management, stock control and logistics operations. If their staff knows how to use technology and adapt to changes, in the industry the whole company will work better. Spending money on staff training will also help them use automated systems well and be able to change when they need to.

7.0 Contribution to Knowledge

This study helps us understand more about how automated warehouse management affects beverage distributors in Imo State, Nigeria.

It shows some things:

- Warehouse costs do not directly affect how well a company performs.
- This means that just cutting costs may not be enough to improve performance.
- Controlling stock well is very important for a company to work effectively.
- It helps to reduce stockouts, delays and make decision-making
- Effective stock control practices are key. Stock control is crucial.
- Planning how to distribute products does not directly affect logistics performance.
- Logistics performance is affected by things not just planning.
- Distribution planning and logistics performance are connected. Planning alone is not enough.
- A company's performance in warehouses and logistics is best explained by looking at things together like technology, efficient processes and people's skills.

It is not about one thing, like a single operational variable.

The study on automated warehouse management and beverage distributors in Imo State, Nigeria provides insights.

The role of automated warehouse management is important for performance.

Automated warehouse management helps companies.

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