

# ENHANCING STAKEHOLDER EXPERIENCE THROUGH OMNICHANNEL LOGISTICS: AN EMPIRICAL STUDY FROM THE PORT SECTOR

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**Abstract**—This study looks at how omnichannel logistics can make the experience better for stakeholders in the port sector. It does this by asking employees what they think. The research uses design and looks at how different things like working together using technology talking to stakeholders and providing support services affect the overall experience of stakeholders. The study found that omnichannel logistics really does make a difference in how stakeholders feel. It found that when everything works together well it makes the service better and stakeholders happier. The people doing the study think that getting employees involved, having digital systems and working together across different parts of the company is important for making omnichannel logistics work. Omnichannel logistics is important because it helps make things more efficient and it makes stakeholders satisfied. The study shows that omnichannel logistics and stakeholder experience are connected in a way. This means that when omnichannel logistics is done well stakeholders have an experience. The research helps us understand how to make logistics better for stakeholders in the port sector. It also gives us ideas for how to make logistics strategies that focus on stakeholders. Overall, the study helps us learn more about how to use technology to make port operations better.

**Keyword :** *Omnichannel Logistics, Stakeholder Experience, Port Sector, Digital Transformation, Technology Adoption, Operational Integration, Service Efficiency, Multiple Regression Analysis*

## I. INTRODUCTION

International trade mainly relies on industry. Ports have no alternative to connect activities in the logistics industry. Ports enable trade and economic development by facilitating import and export activities, cargo movements, job creation and overall economic growth in developing economies. Ports need to function efficiently as supply chains become complex. They will have to invest resources to modernize their operations. This will have an impact on what stakeholders expect in terms of speed, transparency, coordination and seamless service delivery. In today's changing global supply chains omnichannel logistics has become an integrated approach. It creates experience for shippers, consignees, transport service providers, customs authorities and port staff. This is done by providing access to real-time information, simplifying processes and improving decision-making efficiency. Digital solutions like integrated cargo tracking, radio frequency identification technologies and electronic billing solutions make it happen. However, the success of omnichannel integration and its service quality depends on the employees of companies.

## II. RESEARCH OBJECTIVES

### A. Primary Objective

To examine the role of omnichannel logistics in enhancing stakeholder experience within the port sector.

### B. Secondary Objectives

To evaluate the relationship between operational strategies and the effectiveness of omnichannel logistics in port operations.

To assess employee perceptions regarding the implementation and effectiveness of omnichannel logistics systems.

To identify improvement areas that can strengthen stakeholder experience through enhanced omnichannel integration.

## III. SCOPE OF THE STUDY

This study is about looking at how omnichannel logistics helps people who work with ports have experience. We are only talking to employees who work at ports and asking them what they think about how things work, what technology is used, how people communicate and what kind of support they get. We want to see how these things affect the experience of people who work with ports and how well the services work. The study only talks to people who work at ports and in certain jobs and what we find out is mainly useful, for ports that use computers and work together with other systems.

## IV. LIMITATIONS OF THE STUDY

This study was done in a time. This meant we could not collect and look at much data as we wanted. We also could not talk to some people or see some official papers. So, the information we got was not as complete as it could be. The study also relies on what employees said. What they said might be affected by their feelings or loyalty to the company. This could make the results of the study not entirely fair. The study has these limitations because of these problems; with the data and the people we talked to. The limitations of the study are important to consider when looking at the results of the study.

## V. THEORETICAL BACKGROUND

This idea says that omnichannel logistics makes things better, for people who work with ports. It does this by putting five important things. These things are how well things run, using omnichannel logistics how much technology is used, talking to people who are involved.

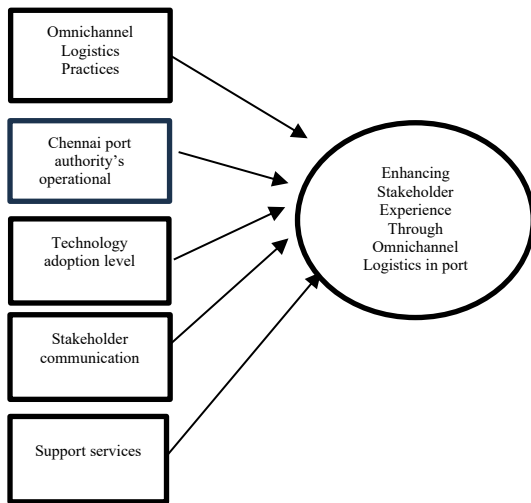


Fig no 1 Theoretical Background

## VI. REVIEW OF LITERATURE

B. Swaminathan and T.S. Aravind (2024) examined the acquisition of Kamarajar Port and its transformation into a green port, focusing on operational and strategic outcomes. Using a case study approach with performance data and policy analysis, the study found improved operational synergy, competitive positioning, and cargo retention following the acquisition. The research concludes that integrated port management, infrastructure development, and environmental compliance play a vital role in strengthening logistics capabilities and enhancing stakeholders.

Haytham Omar Abdelakher Moh (2024) proposes the use of basket-level purchase data to improve demand forecasting, anticipatory shipping, and inventory management in omnichannel retail. The study develops graph-based models that capture product relationships and outperform traditional forecasting methods, particularly for irregular demand patterns. It introduces a two-step anticipatory shipping approach that predicts basket contents before orders are placed, reducing delivery time and costs. The research highlights the operational benefits of basket data in improving inventory coordination, reducing stockouts, and enhancing service levels.

Fernando Almeida (2023) examined the challenges involved in the digital transformation of ports through global case studies. Using thematic analysis, the study identified key barriers such as outdated infrastructure, lack of system interoperability, and cybersecurity risks. The findings emphasize that successful port digitization depends on strong stakeholder engagement, integrated digital systems, effective data protection, and alignment with sustainability objectives. The research highlights the importance of advanced digital collaboration platforms and real-time visibility systems in strengthening port transformation efforts.

Ranjit Roy Ghatak (2023) analyzed barriers to logistics system integration in omni-channel retailing using an integrated ISM–Fuzzy MICMAC approach. The study identified 26 major barriers, including IT infrastructure gaps, resistance to organizational change, and financial constraints. By mapping interrelationships among these barriers, the research classified them based on driving and dependency power. The findings highlight leadership commitment, cost factors, and network design as key driving barriers, indicating that addressing these factors can significantly facilitate successful logistics integration.

Dr. I. Parvin Banu and Aravind Babu K. (2022) compared the competitiveness of Rotterdam Port and Chennai Port using qualitative and comparative analysis. The study found that Chennai Port lags behind in infrastructure, governance, and connectivity, while Rotterdam’s efficiency is driven by strategic location, strong investment, and advanced infrastructure. The research concludes that improving governance models, infrastructure development, digitalization, and stakeholder integration is essential for enhancing port competitiveness.

## VII. RESEARCH DESIGN

The study adopts a descriptive research design to systematically examine the role of omnichannel logistics in enhancing stakeholder experience within the port sector. It focuses on analyzing employee perceptions regarding the effectiveness of omnichannel logistics practices, operational integration, technology adoption, stakeholder communication, and support services. The design enables a structured assessment of how these factors collectively influence stakeholder experience and service efficiency in port operations.

## VIII. ANALYSIS

### A. Descriptive Analysis of Demographic profile

The study presents an analysis of the respondents showing how they are distributed across key demographic factors, like age, gender and work experience. This section gives an overview of the respondents involved in the study. It highlights their distribution across demographic factors

<i>Demographic Profile of the Respondents (N=100)</i>		
Age	Frequency	Percent
41-50	5	5.0
50	95	95.0
Total	100	100.0
Gender	Frequency	Percent
Male	40	40
Female	60	60
Total	100	100
Designation	Frequency	Percent
Field Staff	3	3.0
Supervisor	28	28.0

Manager	5	5.0
Senior Manager	2	2.0
Top level officials	5	5.0
General Workers	57	57.0
Total	100	100
<b>Experience</b>	<b>Frequency</b>	<b>Percent</b>
6-15	3	3
16-25	4	4
More than 25	93	93
Total	100	100
<b>Departments</b>	<b>Frequency</b>	<b>Percent</b>
Commercial	7	7
Operations	10	10
Marketing	35	35
Administration	11	11
Railways	10	10
Others	27	27
Total	100	100

**INTERPRETATION**

The people in this study are mostly employees with a lot of experience. A big part of the study 95 percent is made up of people who're over 50 years old. 93 Percent of the people in the study have been working for more than 25 years. Most of the people in the study are women they make up 60 percent. The kinds of jobs people have are mostly General Workers, they make up 57 percent and Supervisors make up 28 percent. This means that the study is mostly about what people think who work on the ground and who supervise. If we look at what departments people work in the Marketing department have the people in the study, they make up 35 percent. Then there are the Others they make up 27 percent. So, the things that people from the Marketing department and the Others think are very important to the study. The study is mostly about what these groups of people think.

*B. Multiple Regression Analysis*

Model	R	R Square	Adjusted R Square	Change Statistics				
				R Square Change	F Change	df1	df2	Sig.F Change
1	.672	.452	.446	.3993	.452	80.802	1	.98

*ANOVA Results of Multiple Regression Analysis*

Model	Sum of squares	df	Mean Square	F	Sig.
Regression	12.884	1	12.884	80.802	.000 <sup>b</sup>
Residual	15.626	98	.159		
Total	28.510	99			

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta				Lower Bound	Upper Bound
(Constant)	1.512	.284			5.333	.000	.950	2.075
CBM	.156	.017	.672		8.989	.000	.122	.191

**INTERPRETATION**

The analysis shows a link between the variables with an R value of 0.672. This means that the model is a fit. The R Square value of 0.452 tells us that 45.2% of the variation in the data is explained by CBM. The model is also statistically significant with an F value of 80.802 and a p value of 0.000. CBM has an effect on the outcome with a B value of 0.156 and a p value of 0.000 which is significant. The Beta value of 0.672 confirms that CBM has an influence. Overall CBM is a predictor of the dependent variable and CBM plays a big role in explaining the variation. CBM is a factor, in understanding the data.

**IX. MANAGERIAL IMPLICATIONS**

The results of the study show that omnichannel logistics has an impact on the people involved with the company. The numbers are clear: R<sup>2</sup> is 0.452 and p's less than 0.001. This means that omnichannel logistics is very important and the people in charge should make it a top priority. They should not just think of it as technology but as a key part of their overall plan. Omnichannel logistics is a part of this plan.

Omnichannel practices are very effective with an impact of 0.672. This means that managers should focus on making the systems work together, tracking things in real time and making sure everything runs smoothly across all parts of the port. Omnichannel logistics is the key to making this happen.

Many employees have been working at the port for than 25 years with 93% having that much experience. This is why it is so important to provide them with training and help them adjust to new technologies. This will help them get used to logistics technologies.

Most of the people who responded to the study are workers with 57% of them doing this kind of job. This is why it is so important to involve these employees in the process of changing to digital systems. They need to be part of the team to make sure the new systems work well.

Different departments need to work especially the marketing, operations and administrative teams. This will help them communicate effectively with the people they serve and provide service.

The people in charge need to keep an eye on what the stakeholders saying and how well the services are doing. This will help them see if the omnichannel logistics systems are working well. They need to monitor this to ensure that omnichannel logistics is successful.

The leaders should encourage everyone to work and value the different ideas and experiences that each person brings. This will help them solve problems and make the logistics integration work better. Omnichannel logistics will benefit from this approach.

To stay competitive in the term the port sector needs to keep updating its technology, engage with its employees and communicate clearly with the stakeholders. This is the key to success, in the port sector and omnichannel logistics is a part of this.

#### X. CONCLUSION

The study thus concludes that omnichannel logistics is critical in enhancing stakeholder experience in the port sector through operational efficiency, communication, and service integration. Regression analysis shows that integrated logistics practices have a significant influence on stakeholder satisfaction, proving that digital transformation initiatives are strategic enablers rather than just technological upgrades. Perceptions from employees also show that for the implementation to be a success, the system integration must be effective, continuous training is necessary and all related departments should work together. However, in addition to leveraging experienced personnel as a strong operational backdrop, it requires structured digital adaptation programs to harness system effectiveness to its maximal best. Focusing on the technology-based integration, open communication with stakeholders, and engaging the port's employees will guide the port management towards achieving sustainable service improvement and long - term competitive advantage in an increasingly more fluid logistics landscape.

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