

Cargo Booking and Transportation System (Review Paper)

Mitesh Gawade
Information Technology
A.C. Patil College of Engineering
Mumbai, India
miteshgawade603@gmail.com

Mayur Gaikwad
Information Technology
A.C. Patil College of Engineering
Mumbai, India
mayurgaik78600@gmail.com

Shaila Pawar
Information Technology
A. C. Patil College of Engineering
Mumbai, India
skdeore@acpce.ac.in

Ashish Brahmadaande
Information Technology
A.C. Patil College of Engineering
Mumbai, India
brahmadaandeashish@gmail.com

Anuj Gopanwar
Information Technology
A.C. Patil College of Engineering
Mumbai, India
gopanwaranuj@gmail.com

ABSTRACT:

The web application Cargo Booking Software (CBS) is accessible online. The management of customer goods, producer and seller input, (Admin) logins, and customer logins for various services is handled by cargo booking software. Customers will be able to monitor the goods they are transporting because of this portal. Customers can track their products on this website and reserve a slot based on the quantity of the item. Producer will enter the weight and other details of their cargo as they are transported through this system. The administrator can view the process and has full control over the system. The website will offer a variety of transportation service provided. The cargo industry is rapidly evolving, with increasing demands for efficient and reliable cargo transportation services. One of the critical components of this industry is the cargo booking system, which plays a crucial role in the supply chain management of various businesses. This paper presents a review of the cargo booking systems, focusing on the challenges and opportunities that exist in this sector. The paper provides an overview of the key components of a cargo booking system, including the booking process, tracking, and invoicing. The review also discusses the challenges that exist in the cargo booking system, such as the lack of standardization, communication barriers, and data security issues. Additionally, the paper explores the emerging opportunities in this sector, such as the use of blockchain technology, AI and machine learning, and IoT-based solutions. The review concludes with

recommendations for the future development of cargo booking systems, emphasizing the need for increased collaboration among stakeholders and the adoption of innovative technologies to address the challenges and seize the opportunities in this sector.

Keywords: *Cargo booking system, Transportation, customers*

INTRODUCTION:

The cargo industry has been a vital component of the global economy for decades, enabling the transportation of goods across the world. The industry has undergone significant changes over the years, driven by advances in technology and changes in consumer behaviour. One of the critical aspects of the cargo industry is the cargo booking system, which enables shippers to book cargo transportation services from carriers. The cargo booking system plays a crucial role in supply chain management, ensuring that goods are delivered on time, and the supplychain operates smoothly.

In recent years, there has been a growing need for efficient and reliable cargo transportation services, leading to an increase in demand for cargo booking systems. As a result, there has been significant innovation in this sector, with the development of advanced technologies such as AI, blockchain, and IoT. However, there are still significant challenges that exist in the cargo booking system, such as the lack of

standardization, communication barriers, and data security issues.

In this review paper, we aim to provide an overview of the cargo booking system, including its key components, challenges, and emerging opportunities. We begin by discussing the basics of the cargo booking system, including the booking process, tracking, and invoicing. We then move on to discuss the challenges that exist in this sector, such as the lack of standardization and communication barriers. Next, we explore the emerging opportunities in the cargo booking system, such as the use of blockchain technology, AI and machine learning, and IoT-based solutions. Finally, we provide recommendations for the future development of cargo booking systems, emphasizing the need for increased collaboration among stakeholders and the adoption of innovative technologies to address the challenges and seize the opportunities in this sector.

BACKGROUND

The cargo industry is a critical component of the global economy, enabling the transportation of goods across the world. The industry encompasses a wide range of businesses, including shippers, carriers, freight forwarders, and logistics providers. One of the essential elements of the cargo industry is the cargo booking system, which enables shippers to book cargo transportation services from carriers.

The cargo booking system plays a crucial role in supply chain management, ensuring that goods are delivered on time, and the supply chain operates smoothly. The cargo booking system includes various components, such as the booking process, tracking, and invoicing. The booking process involves the creation of a booking request, which includes details such as the type of cargo, the destination, and the delivery date. Once the booking request is created, it is sent to the carrier for acceptance. Once the carrier accepts the booking request, the cargo is transported, and the tracking and invoicing process begins.

Despite the importance of the cargo booking system, there are significant challenges that exist in this sector. One of the critical challenges is the lack of standardization, which makes it difficult for different stakeholders to work together effectively. Additionally, communication barriers between shippers, carriers, and other stakeholders can lead to delays and inefficiencies in the supply chain. Furthermore, data security issues, such as the risk of cyber-attacks and data breaches, posesignificant risks to the cargo booking system.

To address these challenges, there have been significant innovations in the cargo booking system, such as the use

of advanced technologies like blockchain, AI, and IoT. These technologies have the potential to increase efficiency, reduce costs, and enhance security in the cargo booking system. However, there is still much work to be done to fully realize the potential of these technologies and address the challenges that exist in the cargo booking system.

LIMITATION OF EXISTING SYSTEM

There are the following challenges involved in the existing system.

- I. **Inefficiency:** The process of registering and transporting products can be slow and resource intensive as physical documents and visits are required to the office.
- II. **Lack Of transparency:** traditional systems can be opaque and difficult to contact making it difficult for farmers to contact.
- III. **High Risk of fraud:** In an offline system there are high chances of fraud from the transporter.
- IV. **Inflated cost:** since all process are offline and no one is there to keep control on transactions, xost of transportation increased for farmers.

Literature Review

“A Literature Review, Container Shipping Supply Chain: Planning Problems and Research Opportunities” [2] (Dong-Ping Song)

This paper presents a logistics-based overview of the container shipping supply chain (CSSC), which comprises various value-adding segments such as freight logistics, container logistics, vessel logistics, port/terminal logistics, and inland transport logistics. The objective is to identify the primary planning challenges and research opportunities within each logistics segment and to promote further studies in the field. Additionally, the paper discusses two significant challenges facing the CSSC, namely digitalization and decarbonization, and emphasizes the inefficiency of the system caused by its fragmentation. To address this issue, the paper proposes a digitalization pathway that involves the implementation of digital technologies in the business processes of each logistics segment and encourages stakeholders to change their behaviors and relationships. Furthermore, the paper acknowledges that decarbonization in the shipping industry may involve diverse pathways that rely on different fuel/energy systems for ships and ports, which present additional

research and application opportunities in the complex CSSC environment.

The container shipping supply chain (CSSC) is a vital global supply chain that moves goods from one country to another. It involves different modes of transportation such as vessels, trains, and trucks, as well as various handling equipment and facilities like terminals, cranes, trailers, wagons, lifters, and depots. Over 70% of world trade by value is carried by the seaborne transport mode, and over 50% of world seaborne trade by value is carried by container ships, making the CSSC an essential component of global trade.

The CSSC comprises several key stakeholders, including shippers, freight forwarders, shipping lines, port/terminal operators, inland carriers, and intermodal terminal/depot operators. These stakeholders are responsible for different operations in the five value-adding segments of the CSSC, including shipment arrangement, container management, seaborne transport, port and terminal management, and inland transport and depot management.

Although several studies have reviewed individual segments of CSSC, few have comprehensively covered the entire supply chain. This paper provides an overview of the logistics management problems and research opportunities in CSSC and addresses the challenges of digitalization and decarbonization in the industry. The article also highlights the extreme fragmentation of the CSSC, which causes inefficiencies in operations. Overall, the CSSC plays a significant role in global trade, and there is a need for more research to improve its efficiency, especially in the areas of digitalization and decarbonization.

This paper makes several contributions to the existing literature. Firstly, it provides a comprehensive overview of the container shipping supply chain (CSSC) and its five logistics segments. The paper highlights the main operations management problems and identifies research opportunities for each of the logistics segments. Secondly, the paper raises awareness of the fragmentation of CSSC, which causes issues such as schedule unreliability, port congestion, no-show, and rollover. Thirdly, the paper discusses the challenge of digitalization in CSSC and proposes a pathway to achieve it by using digital technologies in various business processes and changing the behaviours and relationships of the stakeholders in the supply chain. Lastly, the paper discusses the challenge of decarbonization in CSSC and argues that it will have a significant impact on the shipping industry in the next two decades. The paper suggests that shipping decarbonization will follow diverse pathways with different fuel/energy systems for ships and ports. Overall, the paper provides insights into the container shipping supply chain and identifies the main challenges that the industry is currently facing.

“The use of IT system in the distribution of the courier service” [1]

January 2016 25th international academic conference Paris

Businesses must employ current information systems to perform effectively in the global economy. It is made up of aspects such as people, processes, information, and data resources, and it is intended to meet the information demands of the company and make sound choices. Data is processed using computer systems.

The Use of DRP system in distribution of courier services:

The basis for arranging and simplifying the flow of completed products to the distribution network is Distribution Requirements Planning (DRP). It operates in a courier - service distribution system by gauging demand for the goods and aggregating it into a single estimate. There are two concurrent adjustment processes: adjusting plans to market needs and considering distribution restrictions. An inventory plan in the DRP system is intended to represent the future time adjustment of product delivery to particular cells. Demand predictions that are regularly updated and confirmed, prepared for short time periods such as days or weeks, and timely deliveries are critical components of DRP. DRP employs operational rules to establish the temporary demand schedule, the existence of gross needs resulting from the demand, the availability of net requirements for open orders, and additional orders in the event of actual need. DRP is a popular and versatile way of assessing the optimal level of inventory in a distribution logistics system, which is typically used in conjunction with an ERP system. It enables more accurate demand forecasting and the utilisation of data to determine sales and distribution requirements. The DRP system is used to estimate demand for each stock keeping unit (SKU) and streamlines the procurement and maintenance of distribution inventory. It is distinguished by the fact that demand is independent on the network's lowest level and set on the basis of forecast, with planned demand computed at higher levels. The DRP system offers advantages such as increased customer service, lower stock exhaustion, stock levels, transportation costs, and improved distribution centres. It also has a marketing module that allows for the building of databases and the transfer of pertinent information.

The use of CRM in customer service : CRM solutions are used to manage customer connections and keep customers loyal. They are very young, having grown from less advanced systems targeted primarily at organising consumer information and constructing computer databases. CRM software is classified into three types: operational, analytical, and communication. Operational CRM directly supports client-related operations such as sales, marketing, and after-sales care. Analytical CRM enables the processing of analytical data and converts it into the information required to assist decision-making. The system stores, processes, and analyses client data, providing reports based on the information gathered. CRM is a communication system

that enables direct contact with customers through both traditional and electronic communication channels. It is advanced and allows the integration of many activities related to customer service such as sales, marketing, service and after-sales service. In many cases, CRM systems include scheduling and communication management, telemarketing, and integration with ERP systems. There are many modules for integration, data synchronization, interoperability between portable devices, e-commerce and call center services, telephone customer service, and more. CRM frameworks are coordinated frameworks that assist with making overhauls and upgrades in regions like online business and ERP frameworks. An integrated customer service system can be achieved through the efficient use of CRM in an organization by using information technology. CRM is a set of applications that work together to support an organization's CRM strategy. It is becoming more and more popular in Poland and other countries. In the current activity of logistics centre's, supporting areas where customer service may build a competitive advantage through the use of information systems is a daily practice. The need to improve the flow of information also determines the level of logistics customer service and the efficiency of the distribution process.

“Design of Logistics Information Management System Based on Information Technology”[3]

As society advances, manual operations are gradually being replaced by network technology, resulting in intelligent management that saves time and effort and ensures the efficient operation of enterprises. Logistics management information technology is becoming increasingly important, and logistics enterprises must become proficient in its application to promote sustainable development. The arrival of technology conferences has changed society, as people rely heavily on smartphones and computers, and industries are increasingly dependent on information technology. As freight transportation is a vital part of social and economic development, logistics enterprises must adopt scientific management methods and continuously strive for progress. This article explores the role of information technology in logistics information management and introduces design requirements for a logistics information management system. It analyzes the problems of logistics management informatization and concludes that logistics enterprises must pay more attention to logistics management informatization, improve relevant standards and levels of information technology, and strengthen supervision and management of information construction to achieve high-quality information technology.

China's growing economy has led to an increase in the circulation of production materials and products,

alongside the expansion of domestic online shopping and express delivery industries. Consequently, logistics and transportation businesses are expanding rapidly, making the logistics industry more crucial than ever before. Improving the management and optimization of logistics is essential to reduce costs and meet customer demands. This requires effective data collection, storage, and dissemination to achieve centralized logistics information management. The logistics management platform is a software system that combines tangible and intangible management resources to efficiently use internal and external resources and achieve organizational goals. It allows for personalized modules for each object in the logistics chain, promoting upstream and downstream collaboration. Logistics enterprises must continuously adapt to changing business models and meet customer needs while reducing costs and increasing speed. Informatization of logistics management is necessary for enterprises to stay competitive and improve logistics management information levels. This article highlights the importance of enterprise logistics management information and proposes innovative ways to improve its level.

Our System

A cargo booking system is a software application that facilitates the booking and management of cargo shipments. It is used by freight forwarders, shipping lines, and other logistics service providers to manage their operations efficiently. With the growing demand for e-commerce and global trade, the cargo booking system has become an essential tool in the logistics industry.

Traditionally, cargo booking was a manual process that involved a lot of paperwork, phone calls, and emails. This method was time-consuming and prone to errors, resulting in delays and inefficiencies in the supply chain. The advent of technology has revolutionized the cargo booking process, making it faster, more accurate, and more convenient.

The cargo booking system is a web-based application that can be accessed from any device with an internet connection. It allows shippers to book, track, and manage their shipments from a single platform. The system provides real-time visibility of the cargo, enabling stakeholders to monitor the status of the shipment at every stage of the journey.

The cargo booking system streamlines the entire booking process, from quotation to invoicing. It allows shippers to compare rates, select carriers, and book shipments in a matter of minutes. The system generates all the necessary documentation, such as bills of lading,

commercial invoices, and packing lists, reducing the risk of errors and delays.

One of the key features of the cargo booking system is the chat system. The chat system allows shippers to communicate with carriers, freight forwarders, and other stakeholders in real-time. It eliminates the need for phone calls and emails, which can be time-consuming and inefficient. With the chat system, shippers can get instant updates on their shipments, ask questions, and resolve issues quickly.

The cargo booking system also provides analytics and reporting tools that enable stakeholders to track and analyze their performance. The system generates reports on key metrics such as on-time delivery, transit time, and cost per shipment. These insights help stakeholders identify areas for improvement and make data-driven decisions.

THE CURRENT SYSTEM HAS THE FOLLOWING THINGS:

- Provide registration to service providers (rail/road/ship/air) with access to their space availability, in real-time. Service providers will be able to apply for registration through the system, however, approval should be a result of an inspection and the quality of data provided by the service provider.
- Provide self-registration options to traders—importers and exporters. No inspection/checks.
- Show the available space container-wise to all registered farmers and service providers.
- farmers should be able to book the space by clicking and making payment for the space online.
- Online chat window between traders, farmers, and logistics service provider
- Link to the payment gateway.

CONCLUSION:

The cargo booking system is a critical component of the logistics industry, and it has undergone significant changes and improvements with the advancements in technology. This review paper examined various aspects of the cargo booking system, including its definition, key features, benefits, and challenges. We also discussed some of the existing systems and their limitations, as well as the potential solutions and innovations that can enhance the effectiveness and efficiency of the system. Overall, the cargo booking system plays a crucial role in streamlining the logistics operations, reducing costs, improving customer satisfaction, and promoting sustainable development. However, there is still a need for further research and development to address the

remaining challenges and fully exploit the potential of this system in the logistics industry.

REFERENCE:

- 1) Tomasz szczpanik, Katarzyna sukiennik “The Use of It System In The Distribution Of The Courier Service”, 25th international academic conference OCED Headquarters Paris January 2016
- 2) Dong-Ping Song, “A Literature Review, Container Shipping Supply Chain: Planning Problems and Research Opportunities” , School of Management, University of Liverpool, Chatham Street, Liverpool L69 7ZH, UK
- 3) Hongquan ZHANG, “Design of Logistics Information Management System Based on Information Technology”, IOP Conference Series Materials Science And Engineering, March 2020
- 4) https://www.startupindia.gov.in/content/sih/en/India_EODB_Grand_Challenge/problem-statement.html