RESEARCH ON DEVELOPING MARITIME TRANSPORT SERVICE INFORMATION PORTAL FOR FREIGHT FORWARDING AND LOGISTICS COMPANIES IN VIETNAM

NGHIÊN CỨU XÂY DỰNG CỔNG THÔNG TIN TRA CỨU DỊCH VỤ VẬN TẢI ĐƯỜNG BIỂN CHO CÁC DOANH NGHIỆP GIAO NHẬN VÀ LOGISTICS TẠI VIỆT NAM

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Abstract

This study proposes the development of a maritime transport service information portal, designed as a digital platform to help logistics companies connect with and serve their own customers more efficiently. Notably, the system is built as a transferable product, allowing each company to customize and integrate its own logistics services. Based on a survey of over 50 logistics companies and customers, the findings reveal that current service access remains limited due to fragmented information, lack of transparency, and manual processes. To address these issues, the research introduces a portal with key features such as realtime vessel schedule lookup, automatic price quotation, online service booking, electronic document management, and customer support via chatbot. In addition, the study emphasizes the importance of a userfriendly interface. The proposed portal is expected to promote digital transformation, streamline operational processes, and enhance the quality of logistics services in Vietnam.

Keywords: *Logistics information portal, maritime transport services, service customization, digital transformation.*

Tóm tắt

Nghiên cứu đề xuất phát triển một cổng thông tin dịch vụ vận tải biển, đóng vai trò là nền tảng trung gian giúp các doanh nghiệp logistics kết nối và phục vụ khách hàng của chính họ. Đặc biệt hệ thống này được thiết kế dưới dạng sản phẩm chuyển giao, cho phép từng doanh nghiệp tùy chỉnh và tích hợp dịch vụ riêng họ. Thông qua khảo sát hơn 50 doanh nghiệp và khách hàng, kết quả cho thấy việc tiếp cận dịch vụ hiện nay còn nhiều bất cập do thông tin phân tán, thiếu minh bạch và quy trình thủ công. Để khắc phục, nhóm nghiên cứu đã xây dựng cổng thông tin với các chức năng như: Tra cứu lịch trình tàu theo thời gian thực, báo giá tự động, đặt dịch vụ trực tuyến, quản lý chứng từ điện tử và hỗ trợ khách hàng qua chatbot. Ngoài ra, bài nghiên cứu cũng thảo luận về yếu tố quan trọng là giao diện thân thiện với người dùng. Cổng thông tin dự kiến sẽ góp phần thúc đẩy chuyển đổi số, tối ưu hóa quy trình vận hành và nâng cao chất lượng dịch vụ logistics tại Việt Nam.

Từ khóa: *Cổng thông tin hậu cần, dịch vụ vận tải biển, tùy chỉnh dịch vụ, chuyển đổi số.*

1. Introduction

The motivation behind this study stems from the growing demand for digital transformation in Vietnam's logistics sector, especially among small and medium sized enterprises (SMEs) and freight forwarders (FWD). Despite their essential role in the supply chain, many logistics companies still face challenges in marketing and service delivery due to limited technological resources and high implementation costs. To address this gap, our research aims to develop an affordable and customizable information portal that enhances service visibility, improves customer experience, and optimizes operational efficiency for logistics enterprises.

This study used a qualitative research approach combined with an online survey. Data collection was conducted using a Google Forms questionnaire with closed ended questions and rating scales designed to measure satisfaction, identify challenges, and evaluate desired features of the portal. In addition,

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secondary data was obtained from industry reports and specialized literature. The analysis of descriptive statistics helps to summarize and present key indicators related to the needs, challenges, and expected benefits for both customers and enterprises. Then, functions and interface features of the information portal are proposed.

2. Literature review

The transportation of goods is rarely a simple transaction between the seller and the buyer as it requires coordination among multiple stakeholders. The image above provides a clear illustration of the shipping process from the exporter (Shipper) to the importer (Consignee), involving two freight forwarding companies including FWD 1 (at origin) and FWD 2 (at destination), as well as an international carrier. FWD 1 is responsible for handling export procedures and booking transportation, while FWD 2 manages import clearance and final delivery. The actual network can be more complicated with the involvement of other middlemen. This model highlights the critical role of freight forwarders in connecting and facilitating the smooth flow of goods throughout the global supply chain.

WKA Tan and B. Sundarakani (2021) pointed out

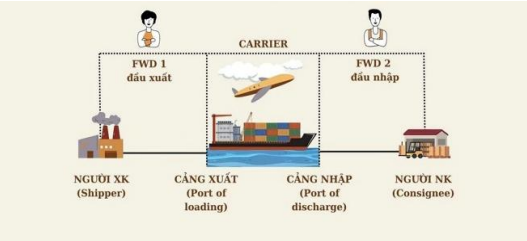

Figure 1. Flow diagram in the maritime transport supply chain

that freight forwarding (FWD) companies are actively adopting technology across various operations to enhance efficiency and service quality. Specifically, blockchain technology is proposed for the freight booking process, aiming to improve transparency, reduce fraud, and streamline transactions among stakeholders in the supply chain. Some large companies have also started using CRM systems to store customer data, automate quotations, and manage client interactions.

However, technology adoption in the sales process remains limited, particularly in the Vietnamese market, where most quotation and booking activities are still handled manually via email or phone. Only a few leading companies like DHL and DB Schenker have

Table 1. Comparison of information technology in logistics / freight forwarding companies

Criteria	Fast Pro	Hapag Lloyd	CargoWise	Freightek
Scope of operation	7 nations	Global	Global	Focused on the Asia market (Southeast Asia)
User Interface (UI)	Customized for each business, no standard interface	Simple, multilingual, optimized for multiple browsers	Professional, modern, optimized for large screens	User friendly, supports Vietnamese, easy to use across devices
User Experience (UX)	Complex, needs optimization for ordering and tracking	Easy to use, supports booking, vessel schedule lookup, shipment tracking	Comprehensive features but may be challenging for new users	Extensive training and support resources
Cost of using the website	Relatively high	High	Relatively high	High
Features	Transport, warehouse, finance, and Human Resource management	Shipment tracking by container booking, online booking, port information lookup	Multimodal transport management, customs, e-commerce, data automation	Freight rate management, realtime cargo tracking, business analysis
Compatibility	Not optimized for mobile, difficult to use on small screens	Responsive design, supports multiple browsers and devices	Integrates with ERP, CRM, runs on Windows/ macOS, supports multiple browsers	Multi-platform, mobile compatible, supports EDI & CRM

developed online platforms that allow customers to check rates, compare schedules, and book services directly highlighting significant potential for further digitalization in sales and customer service activities within the FWD industry.

3. Research findings

3.1. Status of Vietnamese logistics enterprises

According to the latest data from the WTO-FTA, Vietnam has approximately 46,428 transportation and warehousing enterprises, along with 5,000 enterprises providing third party logistics (3PL) services. Additionally, around 3,000 transportation and logistics enterprises operate domestically. Most logistics enterprises in Vietnam are small and mediumsized, accounting for about 95% of the total. The domestic logistics market in Vietnam remains uncompetitive. According to the Ministry of Industry and Trade, approximately 89% of logistics enterprises in Vietnam are domestic, but they hold only around 30% of the market share.

Common marketing tools and social media platforms from which customers can connect with logistics or freight forwarding enterprises to look for services, include directories such as trangvangvietnam.com, niengiamtrangvang.com, hosocongty.vn, etc; Google search engine; Facebook group namely "Hai Phong Import-Export Community - Logistics Services", "Import-Export Forwarders and Logistics Association"; Zalo groups; Tele sales, etc.

3.2. Requirements for the sea freight service information portal

Currently, freight forwarding companies have adopted technological applications in their operational processes to enhance efficiency and customer satisfaction. Specialized management software such as Fast Pro, CargoWise, and Freightek, with a focus on internal operations, or a website like Hapag Lloyd are employed. Authors have made a comparison between these applications (Table 1). It reveals that the operational software provides abundant specialized functions except for the high cost (installation and annual fee). Thus, small and medium sized enterprises may not fully utilize all of these benefits.

Currently, many businesses in the maritime transport sector use platforms such as INTTRA for vessel schedule lookup and booking, CargoSmart for shipment tracking and schedule management, Shipping Schedule that allows users to look up vessel schedules, Project44 and FourKites for multimodal transport monitoring and realtime data through APIs, Xeneta for freight rate comparison and market analysis, Freightos for searching and booking freight services, and MarineTraffic for tracking vessel locations using global AIS data. However, the implementation costs are relatively high, making these platforms less suitable for small and medium sized enterprises. Thus, the research team finds that an affordable information portal with core functions in maritime shipping and freight forwarding would be potential in Vietnam market. It can offer a higher level of integration and commercialization, enabling each freight forwarding company to own, customize, and operate its own portal to provide online services to its customers. Through the portal, maritime transport service user can search for services, book space, track shipments, and leave feedback. As a result, the portal not only supports the digitalization of service processes but also helps businesses expand their customer reach and deliver a more transparent and convenient user experience

Therefore, the research team conducted two surveys: (1) a survey with freight forwarders and logistics enterprises will provide insights into the needs and requirements for the information portal; (2) a survey with service users to discover the requirements for user experience and interfaces. The service users involve shippers, consignees, import-export companies, or even logistics companies who seek maritime and freight forwarding services.

For businesses, the team collected 49 responses from freight forwarding enterprises operating in Haiphong. Currently, the practices related to maritime shipping services include booking, document issuance, and information availability (Figure 2).

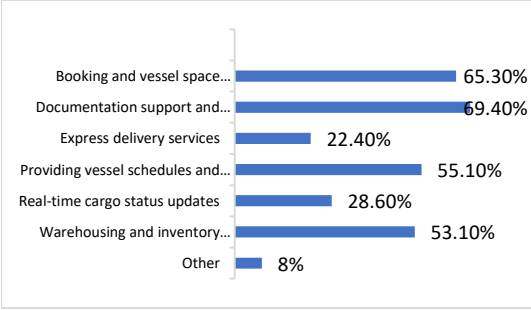

Figure 2. Common sea freight services provided

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According to the survey, 52.9% of respondents face difficulties in receiving customer requests because the process remains largely manual and distributed across multiple channels. Meanwhile, 51% of enterprises must go through multiple steps, from exchanging information and providing quotations to tracking progress, making the handling process timeconsuming and prone to errors. (Figure 3).

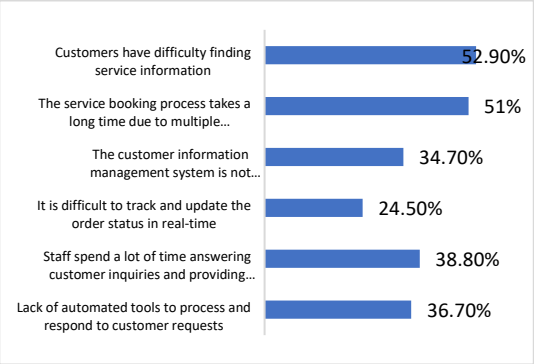

Figure 3. Challenges the company faces in receiving and processing

The second survey was conducted, targeting customers of freight forwarding and logistics companies including import-export companies, shippers, consignees, and other freight forwarding companies, all of whom directly use the services. From customers, the research team collected 92 responses.

The survey results indicate that 73.9% of customers face difficulties in finding information due to a complicated contact process, which requires considerable time and effort to reach the right service provider. 64.1% of customers noted that current service information often lacks detail and clarity regarding pricing, shipping times, and terms, making it challenging to make informed decisions (Figure 4).

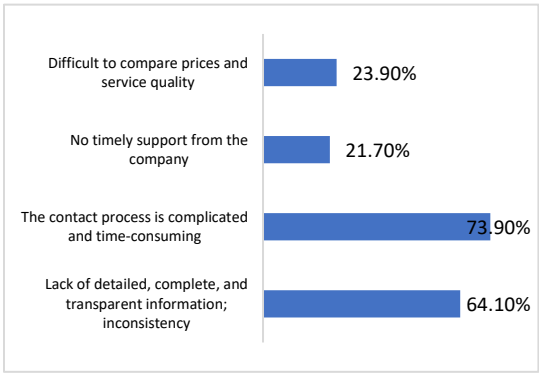

Figure 4. Difficulties faced by service users in finding seafreight service information

Based on the customer survey using a 5-point Likert scale to assess the level of convenience when dealing with multiple roles in a freight forwarding company, the average score was 2.34 out of 5. This relatively low score indicates that customers generally find the experience inconvenient. As shown in Figure 5, the majority of respondents 62% rated it as "Inconvenient," while 5.4% found it "Very inconvenient." In contrast, only 6.5% of participants rated the experience as "Convenient," and 26.1% considered it "Normal." These findings suggest that most customers encounter difficulties when having to interact with multiple roles or departments during their service experience.

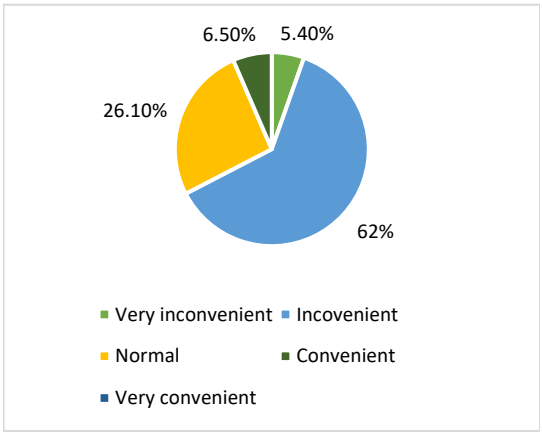

Figure 5. Service user opinions on dealing with multiple roles in a freight forwarding company

The survey results reveal that 82.6% of users expect the portal to have a simple, easy-to-read interface, while 78.3% value a clear and wellstructured layout. Additionally, 65.9% of users want it to be accessible on both mobile devices and computers. Also, 62.8% of users also appreciate intuitive visuals and icons to better enhance the user experience.

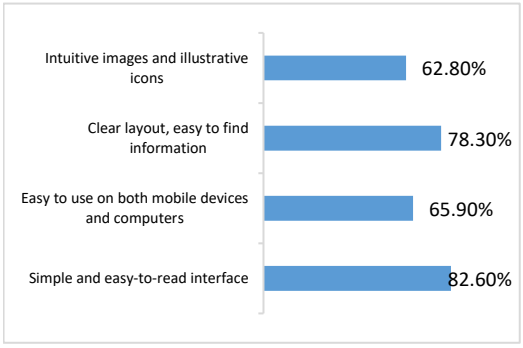

Figure 6. Service users' expectations for the portal interface

4. Proposal of information portal for logistics and freight forwarding enterprises

The portal is designed to optimize logistics and maritime freight forwarding services, offering a transparent and convenient experience for customers. The user journey begins with customers logging into the system using their registered accounts, ensuring secure access and effective data management.

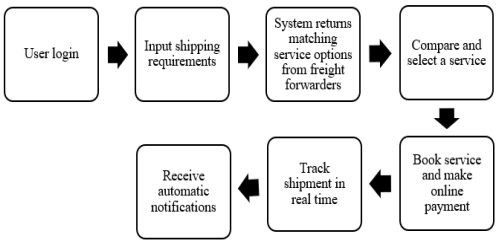

Figure 7. Functional workflow

Instead of searching for vessel schedules, customers start by entering their shipping requirements, including: Origin and destination points, departure and arrival dates, mode of transport,... and any special requirements if applicable (Figure 8).

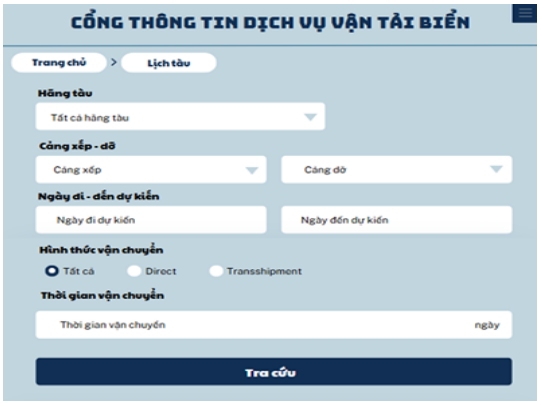

Figure 8. Shipping service search interface

Based on this input, the portal returns a list of suitable service options provided by various freight forwarding companies (Figure 9, Figure 10). These options may differ in terms of shipping carriers, transit time, transshipment requirements, and freight rates. This enables customers to easily compare and select the most cost effective and time efficient solution.

After selecting a suitable service, customers can proceed to book the service online and make payments through various methods such as bank transfer or debit note (Figure 11). The system also provides realtime shipment tracking via Bill of Lading (B/L) number or container number. Additionally, it automatically sends notifications via email or SMS if there are any changes in vessel schedules, port calls, or unexpected delays during transportation.

Figure 9. Search results for shipping services

Figure 10. Search results for shipping services

5. Conclusion

The study confirms that developing a maritime transport service information portal is a critical solution for improving the operational efficiency of logistics enterprises. By narrowing the information gap between customers and service providers, the system optimizes order processing and enhances user experience. Functions such as service search, freight rate comparison, and online booking not only save time but also reduce transaction errors. The proposed information portal integrates diverse data and online services, with strong customization and integration capabilities, making it particularly beneficial for small and medium sized enterprises. The maritime portal is more accessible, cost effective, consolidating information and services from various logistics companies while enhancing both customer experience and business management.

Consequently, it is essential for enterprises to invest in technological infrastructure and personnel training to operate the system effectively. The integration of realtime data and a user friendly interface is expected to provide a sustainable

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competitive edge in an industry undergoing significant digital transformation. Also, possibilities in cost cutting are revealed through the reduction of staffs required for sales and customer service.

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