
Solutions to Promote Digital Transformation for Logistics Service Providers (LSP) in Hanoi

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Abstract – Digital transformation in Vietnamese businesses recently has become a significant concern in both society and within the businesses themselves. Under the pressure of the 4.0 industrial revolution, businesses are compelled to adapt and apply digital technologies in their operations. Logistics service providers (LSPs) are not exceptions when logistics is considered to be a sector that demands high efficiency and effectiveness to enhance the ability to meet both time and spatial challenges while improving customer service quality. This article focuses on key issues related to digital transformation in businesses, the role of digital transformation in Logistics service providers (LSPs), and gathers secondary data and primary data from surveys with LSPs in Hanoi in order to analyze how businesses are integrating digital technologies into their logistics processes. Based on the above assessment and broad view of LSPs market, the research team will propose solutions for promoting digital transformation process of LSPs in this city.

Keywords – Digital Transformation, Green and Sustainable Logistics, Logistics Service Providers, Hanoi.

I. INTRODUCTION

In the context of rapidly developing, high-quality technology, businesses are gradually adapting to changes and transforming by applying information technology in production and business activities. The rapid shifts in the market, along with unusual geopolitical and health crises, further push companies to quickly adapt and accelerate digital technology application in their operations. In Vietnam, this issue has garnered considerable attention from experts and the whole society. Vietnamese companies are recognized for their ability to adapt swiftly, with a mindset ready to invest in technology and incorporate smart models into their processes. This has been further supported by the strong call for action from the government and state management agencies under the motto "New era, new opportunities." The government encourages investment in science and technology to foster breakthroughs in this field.

It is apparent that the application of information technology, and more advanced digital transformation, is now essential for business operations. This is particularly true in the cases of LSPs, which require efficiency and effectiveness in operations, integration, and connectivity to enhance competitiveness, speed up delivery times, and optimize costs, accuracy, and service reliability. The logistics industry now more than ever needs to apply digital technologies, including smart, digital, and fully integrated transformation in its business processes.

Starting from the essential requirements for LSPs, research on digital transformation in this sector is crucial. With real-time data from businesses in Hanoi, the capital of Vietnam, this research proposes solutions and recommendations for promoting digital transformation in LSPs in this city, which can also be expanded to other regions with similar models and conditions as well as other LSPs nationwide.

II. RESEARCH METHODOLOGY

In this research, a general theoretical review of digital transformation in businesses will be conducted, with s-

-pecific focus on LSPs. Based on this, the stages of the digital transformation process will be identified, forming the basis for proposing solutions.

Empirical data will be collected through secondary and primary data sources. Secondary data will come from two main sources: internal data from businesses and external sources such as related scientific studies, books, and internet resources. Primary data will be gathered through surveys to assess awareness, implementation methods, and the digital transformation readiness of businesses. Interviews will also be conducted to understand how businesses are integrating digital technologies into their logistics processes.

The data will then be analyzed to measure business performance indicators, the number of digital transformation applications, etc. A comparison will be made between the years before and after digital transformation, assessing changes in costs, revenue, and business effectiveness.

III. LITERATURE REVIEW

3.1. Issues Related to Digital Transformation

Rohit Prabhakar (1950) considered the term “digital transformation” as the shift in activities, processes, products, and business models to fully leverage digital technology opportunities. The main goal is to improve efficiency, manage risks, or discover new revenue streams. Digital transformation is about doing things in a new way. Although it has existed for a long time globally, it was not until the Fourth Industrial Revolution that digital transformation became widely recognized and popular [1]. There are many different definitions and understandings of digital transformation. According to Gartner, a technology research and advisory company, digital transformation involves the use of digital technologies to change a business's model, creating new opportunities and value that help accelerate growth and increase revenue. Microsoft defines digital transformation as the restructuring of thinking in coordinating data, processes, and people to create new value [2]. In Vietnam, digital transformation refers to the process of changing traditional business models to digital ones, using new technologies like Big Data, IoT, and cloud computing, to alter management methods, workflows, and corporate culture. For ordinary people, digital transformation changes our lifestyle. Therefore, digital transformation can be understood as the process of using digital technologies to innovate or modify existing business processes, cultures, and customer experiences to meet changing market and business demands. This transformation of business in the digital age is what constitutes digital transformation.

However, there is still much confusion between "digital transformation" and "digitization." Digitization refers to the conversion of real-world values into digital formats, while digital transformation is a more advanced level and a complete phase of digitization. Specifically, after data is digitized, technologies like AI and Big Data are used to analyze, transform, and create new value. Artificial Intelligence (AI) (Daniel Crevier, 1993) is a broad branch of computer science aimed at building intelligent machines capable of performing tasks that normally require human intelligence [3]. Big Data (Roger Mougaldas, 2009) refers to vast and complex data sets that traditional data-processing software cannot collect, manage, or process within a reasonable timeframe [4]. Additionally, Cloud Computing (M. Alhamad et al, 2010), also known as virtual server computing, is a model that uses computing technologies developed around the internet, allowing users to access computer resources, databases, and remote systems like software, services, and hardware via the internet [5]. Thus, digital transformation is an advanced stage of digitization. Digital transformation is more complex than simple digitiza-

-tion.

3.2. The Process of Digital Transformation in Businesses

Most businesses undergoing digital transformation go through two main stages:

Stage 1: Digitization: In this stage, all physical documents within a company are converted into digital information and stored in online environments. Digitization allows businesses to save time on data entry and search, reduce printing costs, save storage space, and minimize the risk of data loss. This stage sets the foundation for moving on to the next, more advanced phase of digital transformation.

Stage 2: Digital Transformation: Once data is fully digitized, businesses begin transforming their workflows from a fragmented approach to one that involves unified processes, integrated from top to bottom. Naturally, technologies must be applied to make these processes easier to execute.

The digital transformation process in an enterprise generally involves five key steps (Prajith Khan, UNOSQUARE, 2020) [6]:

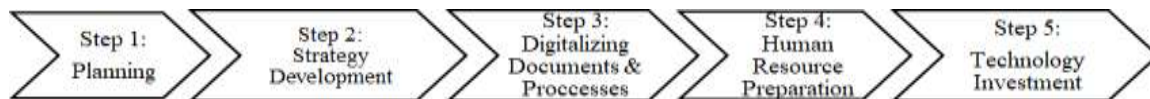


Fig. 1. The Digital transformation process in an enterprise. Source: PrajithKhan, UNOSQUARE (2020).

1. Planning: What is the goal of digital transformation? What tasks need to be done? What is the timeline for each task, and when is the expected completion date?
2. Strategy Development: The digital transformation strategy is a combination of government policies and the unique characteristics of each enterprise.
3. Digitizing Documents and Processes: Converting all business documents from physical to digital formats and storing them in online environments.
4. Human Resources Preparation: Establishing a dedicated team for digital transformation and training or recruiting staff with the necessary skills.
5. Investment in Technology: Choosing and applying the appropriate technologies for business operations.

3.3. The Role of Digital Transformation in Logistics Service Providers (LSPs)

Digital transformation plays an increasingly significant role in logistics, particularly in aspects such as shipment tracking or supply chain management. New technologies like blockchain have entered the logistics industry, contributing to efforts in standardizing processes and improving operational efficiency. The operations of ships, containers, and other transport vehicles are increasingly reliant on digital technologies at various levels, from route planning and IoT-enabled resource allocation to the use of autonomous ships. These innovations are already being tested in practice.

Training, education, and workforce management have also rapidly evolved with the introduction of IT-based solutions. The digital transformation of the logistics industry is evident in the increased need for stable, high-speed infrastructure to enable real-time data exchange. The application of digital transformation in logistics is essential for improving competitiveness and advancing trade, and it significantly enhances economic

development. However, challenges persist, particularly with issues like connectivity, asset utilization, and inefficiencies within the supply chain.

Digital transformation is crucial for optimizing the operations of logistics service providers in Vietnam, improving operational efficiency, and enhancing competitiveness. Through technologies such as Transportation Management Systems (TMS), Warehouse Management Systems (WMS), and Big Data, companies can automate processes like warehouse management, transportation, order handling, and route tracking. Additionally, technologies like AI, IoT, and blockchain improve forecasting capabilities, enable real-time monitoring of goods, and enhance transparency across supply chains.

Moreover, digital transformation also improves customer experience. With digital platforms like mobile apps, chatbots, and automated email systems, businesses can interact with customers more quickly and effectively. Real-time order tracking enhances trust and satisfaction. Digital technologies also support businesses in analyzing customer behavior, enabling them to personalize services and better meet their needs.

Furthermore, digital transformation allows Vietnamese LSPs to expand market integration and enhance global competitiveness. It enables closer collaboration with supply chain partners, from producers to distributors, facilitating smoother international market entry. Additionally, it supports sustainable development by optimizing processes and reducing carbon emissions in logistics activities.

As e-commerce continues to boom in Vietnam, digital transformation has become crucial for LSPs to meet the growing demands of the market. The application of advanced technologies such as AI, blockchain, and IoT ensures speed, transparency, and accuracy in services, helping Vietnamese LSPs enhance their competitiveness and elevate their position in the global supply chain.

IV. CURRENT SITUATION OF DIGITAL TRANSFORMATION IN TRANSPORTATION AND FREIGHT FORWARDING COMPANIES IN HANOI

4.1. Overview of Logistics Service Providers (LSPs) in Hanoi

According to data from the Ministry of Industry and Trade, in 2024, the number of registered LSPs in Hanoi reached approximately 25,000, with varying sizes, levels, types, and service sectors within the transport and freight forwarding industry (of which 5,400 companies are officially active). Among them, 80% are private businesses, mostly small-scale with limited capital, capacity, technology, and human resources in both quality and quantity (around 10-20 staff members employed). There are some bigger enterprises that were established early in the Vietnamese logistics's history, such as Viettel Post JSC, which was founded in 1997. Over the past 24 years, Viettel Post has become the second-largest freight forwarding company and has received the second-class labor medal [7].

In addition to long-established businesses like Safway Logistics Co., Ltd. (2007), Indo-China Logistics Services Joint Stock Company (2009), and Truong Thanh International Freight Forwarding Co., Ltd., there are still later-established companies that have achieved success by innovating and adapting to market trends. Examples include GHTK JSC (2013) and Dai Son Freight Forwarding Co., Ltd.

According to the national level surveys made by the Ministry of Industry and Trade (2024), the majority of companies operate as joint-stock companies, accounting for about 77.8%. Most of these companies provide

services for both domestic and international markets, using multimodal transport methods, including road, waterway, air, and rail transport [8]. The combination of different transport methods creates a seamless transport chain, integrating the advantages of each method. Furthermore, these companies often serve as providers of simpler satellite services, such as customs clearance, vehicle rentals, and warehousing, for foreign-invested businesses, or they engage in selling shipping and air freight rates, customs agency services, and trucking services.

On February 14, 2017, the Prime Minister issued Decision No. 200/QĐ-TTg, approving an action plan to enhance the competitiveness and development of Vietnam's logistics services until 2025. As a result, logistics has been recognized as one of the key sectors in Vietnam's digital economy, and the country has increasingly focused on the development of logistics services [9]. According to data from Nguyen Tuong of the Vietnam Logistics Association (VLA) (2021), Vietnamese logistics companies now provide between 2 and 17 different logistics services, mainly including freight forwarding, transportation, warehousing, express delivery, and customs declaration. Approximately 50%-60% of businesses are applying various types of technology, depending on their size and service characteristics [10].

To promote the growth of the logistics sector in Hanoi and contribute to the city's economic development, the Hanoi People's Committee issued a logistics service development plan for 2024 with five key tasks. This plan emphasizes the development of logistics infrastructure, with the goal of making Hanoi the logistics center of the country. It also aims to accelerate investment projects for logistics infrastructure, with plans to begin construction of two inland container depots (ICD) in Gia Lam and Hoai Duc districts as soon as possible. Additionally, the city is reviewing approved logistics infrastructure development projects.

Hanoi is effectively implementing its IT development plan, which aims to expand through 2030, in tandem with the Digital Transformation Program and IT Application Plan for government agencies during the 2021-2025 period. The goal is to invest in IT infrastructure and build a seamless network to connect government agencies with logistics businesses and shippers.

The city is also focused on developing logistics service infrastructure by allocating land and maximizing its potential to build appropriate logistics centers along key roadways. Moreover, there is a need to develop an intelligent traffic system and upgrade logistics infrastructure, such as inland ports, airports, and warehouses.

Hanoi will collaborate with the Ministry of Transport and other central ministries to mobilize social investment for the development of ports, airports, and other logistics infrastructure to ensure a modern and integrated system. Finally, the city will organize programs to connect logistics businesses with IT experts to support training, consulting, and upgrading IT applications for international-standard cargo management and delivery.

4.2. Digital Transformation in LSPs in Hanoi

Regarding digital transformation awareness, many companies have started to recognize the importance of accelerating digital transformation and applying technological advancements to enhance business efficiency and optimize production and supply chains. This process has gained momentum, particularly since the onset of the COVID-19 pandemic. Some large companies have successfully implemented technological solutions that have improved logistics services and significantly reduced related costs. For example, Viettel Post uses automation

robots in its warehouses, while Vietnam Post applies automated sorting technology for goods, and Lazada Express similarly employs automation technology in order processing and shipment tracking. Besides, various LSPs enhanced technology application in its own process of logistics service provision.

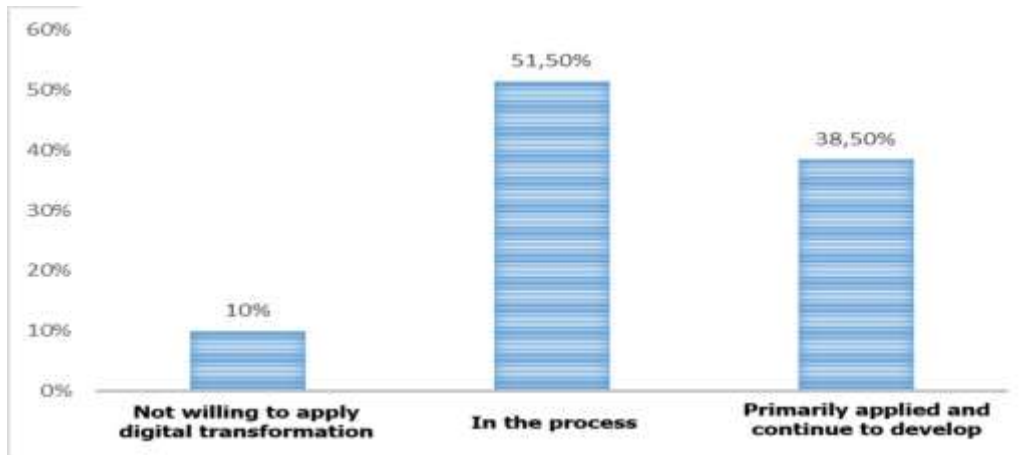


Fig. 2. The proportion of LSPs applying digital transformation. Source: Survey result from the research team (2024).

However, resources and awareness of the role of digital transformation in the context of Industry 4.0 remain limited in many businesses, resulting in less-than-optimal implementation of digital transformation, with many gaps still present. The transformation process is not always carried out according to set procedures, and many companies still lack a full understanding of its significance.

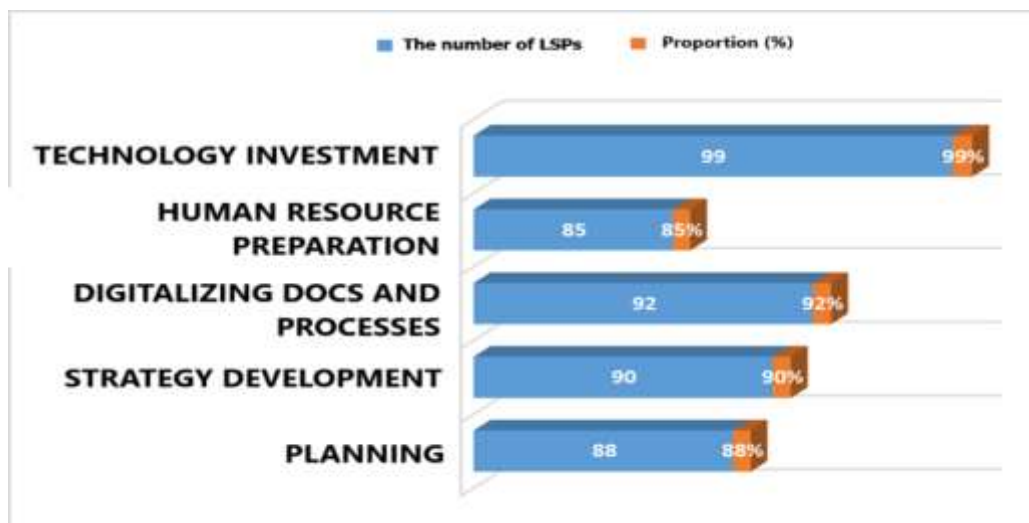


Fig. 3. The rate of LSPs implementing each step in the digital transformation process. Source: Survey result from the research team (2024).

The data indicates that many companies have not fully developed digital transformation plans and strategies. Some focus only on planning without a clear strategy, while others invest in technology but overlook human resources. A crucial step in digital transformation is document digitization, which requires a shift in mindset about the role of data. Previously, data was mainly used for management and planning, but storing it in isolated databases has become costly. The last two steps in the digital transformation process are closely linked: technology investment is a sufficient condition, while resource allocation is a necessary condition. Despite significant investments in technology, many businesses still need external expert support or digitization services to meet customer demands.

Alongside the benefits, each business model faces different challenges. For logistics companies nationwide and in Hanoi specifically, the biggest obstacle is the digital transformation process in response to market changes. A small survey highlighted the key difficulties LSPs currently face during digital transformation.

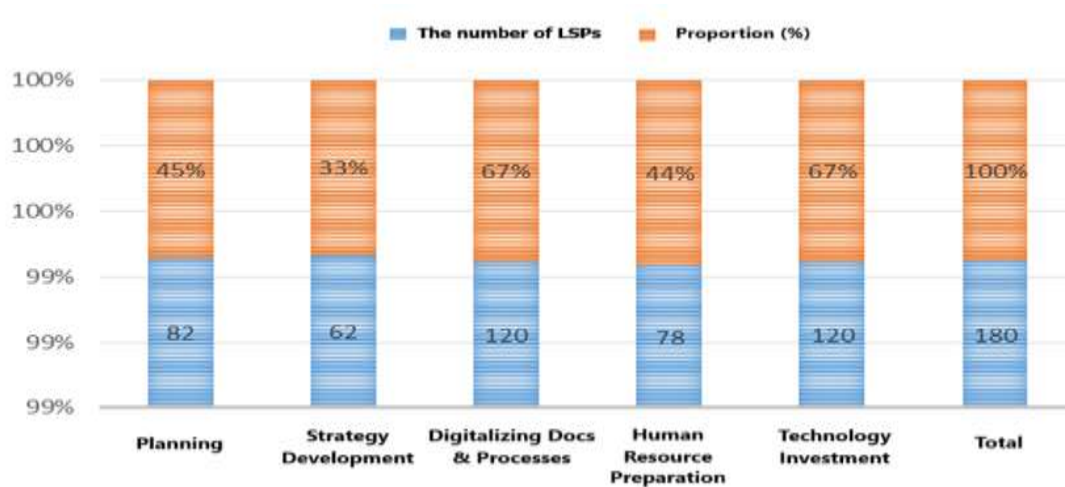


Fig. 4. The percentage of LSPs facing challenges in each step of the digital transformation process. Source: Survey result from the research team (2024).

The survey results show that most companies encounter difficulties during the technology investment phase. Technology is constantly evolving and has become an essential factor for most companies. The next challenge involves digitizing documents and processes, with many businesses only achieving basic digitization (converting data into electronic storage formats) without the capability to connect and retrieve data or process orders online. Additionally, preparing human resources for digital transformation is a major struggle. First, there is no long-term workforce development strategy, and there is a lack of proactive investment in logistics workforce development. Second, the workforce is insufficient in quantity and lacking in quality. According to the Vietnam Institute of Logistics Research & Development, logistics companies will need an additional 18,000 workers over the next three years. Moreover, the lack of confidence in digital technology applications and the resistance to change among both company leaders and staff hinder digital transformation efforts [11]. Finally, many logistics companies lack experience and competitive capacity, which prevents them from meeting customer demands in terms of cost and responsiveness for import-export needs.

V. CONCLUSIONS AND RECOMMENDATIONS

The digital transformation in the logistics sector, in general, has been, is, and will continue to be an incredibly important issue in the context of international economic integration. In the case of receiving the promotion direction and supports from Vietnamese government, LSPs in Hanoi have actively engaged in this process and are increasingly aware of the significant impact digital transformation has on business performance. However, based on primary data from the survey methods, the research team could determine that in the current intense competitive environment, many companies have not yet fully met the requirements of digital transformation due to the challenges including setting procedures and lack of fully understanding of digital transformation's significances. Specifically, logistics service providers in Hanoi started the first steps in digital transformation in the tactical level while the activities related to strategic level such as planning, strategic management or human resource management still lack of concern when less than 50% LSPs in Hanoi are developing digital

transformation process in those aspects. Basically, LSPs in Hanoi have to face with some unique difficulties and challenges such as lack of experience, lack of competitive capacity, lack of confidence and high-skilled labour, etc.

Based on the fundamental conclusions, the research team gives some recommendations related to digital transformation in order to promote the process within Vietnam effectively and efficiently in 3 main aspects: strategy, human resources and technology as following:

Firstly, businesses need to change their mindset about digital transformation and eliminate the "fear of change" mentality. Additionally, people play a crucial role in the success of digital transformation; thus, human resources must be trained and equipped with the necessary knowledge and technical skills. This ensures that the transformation process will run smoothly. Furthermore, companies need to develop a suitable digital transformation strategy, making effective investments in information technology, especially in selecting digital platforms such as 5G, IoT, and customer data management platforms. Strengthening connections with partners within the global supply chain is vital to ensuring long-term impact.

Secondly, enhancing the training of digitally skilled employees, along with flexible leadership, is a key factor for sustainable business development in the digital age. Businesses need to foster a digital culture, eliminate the boundaries between leaders and employees, and thereby overcome difficulties to keep pace with modern trends. Some critical issues that need to be addressed in the near future include: changing the mindset, training a digitally skilled workforce and update the criteria for hiring job candidates who is suitable for digital transformation process.

Thirdly, companies must invest in suitable information technology in both fields of software and technical platform. Technology forms the foundation for digital transformation in any business or organization. However, selecting appropriate technologies is crucial to ensure feasibility, cost-effectiveness, and alignment with each stage of the company's digital transformation journey.

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