Digital Transformation in Vietnam Logistics Enterprises

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Abstract:
The logistics industry is regarded as the backbone of the economy, affecting all areas of production, distribution, circulation, and product consumption. With the explosion of Digital technology and the Industrial Revolution 4.0, the logistics industry has many breakthrough opportunities to contribute more to the economy if it accelerates digital transformation soon. The digital transformation of Vietnam logistics enterprises has achieved modest successes and results. This study presents the current digital transformation at Vietnam logistics enterprises, and identifies difficulties and challenges in the digital transformation. Some solutions are also proposed to facilitate the digital transformation at logistics enterprises.
Keywords: Digital transformation, Logistics industry, Vietnam.

I.   INTRODUCTION

Logistics is an activity related to the distribution and circulation of goods information on the market, is the "backbone" of the economy and brings increasingly higher value. Together with supporting the development of logistics industries around the world, Vietnam's logistics industry has been contributing to improving the competitiveness of enterprises, supporting, connecting and promoting the country's economic development. Currently, in the trend of developing the digital economy, competition between enterprises is increasingly fierce. In particular, the impact of the Covid-19 pandemic created disrupted and disrupted application chains, many logistics enterprises fell into difficulty, significantly affecting the economy. This requires promoting the digital transformation process in logistics enterprises to make use of science and technology to improve management capacity, competitiveness, reduce costs, and bring high efficiency to enterprises.

II.   CURRENT STATUS OF DIGITAL TRANSFORMATION IN VIETNAM LOGISTICS ENTERPRISES

According to the Transparency Market Research report, forecast spending by 2026 on digital transformation in the world logistics market is 94,972.3 million USD, with a pace of +15.2% in the period from 2018 to 2026. In 2021, spending on digital transformation of the logistics sector in the United States is estimated to be 14 billion USD, accounting for 28.98% of the global market share. China, the world's second largest economy, is forecast to reach an estimated market size of $13.7 billion in 2026 at a CAGR of 10%; Japan and Canada are forecast to grow at 7.7% and 8.5%, respectively. In Europe, Germany is forecast to grow at a CAGR of about 7.8%, while the rest of Europe market will reach USD 15.1 billion in 2027. Led by countries such as Australia , India and South Korea, the market in Asia-Pacific is forecast to reach USD 2.5 billion in 2026.

The growth rate of Vietnam's Logistics industry in recent times has reached about 14% -16%, with a scale of about 40 - 42 billion USD/year. Currently, the Vietnamese logistics market has the participation of more than 3,000 enterprises. Of these, 89% are small and medium-sized Vietnamese enterprises with capital of less than 10 billion VND, about 5% of this group have capital of 10 - 20 billion VND; 10% are joint venture enterprises and 1% are 100% foreign-owned enterprises (about 30 enterprises) providing cross-border logistics services, with big names such as: DHL, FedEx, Maersk Logistics, APL Logistics, CJ Logistics, KMTC Logistics,... Currently, there are only a group of large companies that can meet the conditions for digital transformation such as DHL, Fedex and leading Vietnamese brands such as Viettel Post and Vietnam Post.

The first digital transformation step in the Logistics industry in Vietnam can be mentioned with the birth of the project "ICD Vinh Phuc Logistics Center – SuperPort". Because two large corporations, T&T Group (Vietnam) and YCH Holdings (Singapore), cooperated in investing to create a smart and modern logistics center in Vietnam. The project integrates the Inland Container Depot (ICD) with the leading multi-modal high-tech logistics center in the region.

Vietnam Post builds the Vmap mapping platform and real-time address database to locate, address data and assign codes to household addresses. The postal address code platform has the ability to digitize and accurately locate customers' addresses to provide information for enterprises in the industries, fields, and services

that need to search. The solution contributes to optimizing the delivery of goods from sender to recipient of postal, transportation, logistics, and e-commerce enterprises. Saigon New Port Company, after successfully applying electronic ports and electronic delivery orders, advanced production management and operation programs, has reduced the time of ships at the port by 55%. Delivery time remaining 3/4; Reduce the number of labor and traffic safety incidents by 60%. FPT Corporation, thanks to the use of the customer data analysis platform Customer Insights Platform, has retained 38,000 customers, increasing revenue by hundreds of billions VND each month.

Currently, logistics enterprises are fully aware and appreciate the importance of digital transformation for production and business activities. According to Vietnam Report (2022), 100% of logistics enterprises have increased investment in digital transformation in the past year. In which, 86% of enterprises expect that technology, digitization and digital transformation will bring significant benefits in terms of productivity and business performance in the future; 36% of enterprises believe that bringing technology into the logistics journey will enhance the global customer experience.

The level of application of digital technology in logistics enterprises is increasing and becoming a key trend in enterprises' strategies. Logistics enterprises have made certain progress in the digital transformation process. Specifically, in addition to technology platforms that have been around for a long time and are commonly used in the activities of logistics enterprises, emerging technology platforms have been applied by enterprises, of which there are about 68 % of logistics enterprises have applied technological advances of the 4.0 industrial revolution to their activities. Typical technologies that have changed Vietnam's logistics industry are the IoT (19.4%), Cloud computing (18.4%), AI (18.4 %), Big Data and blockchain (14.3%) (Figure 1).

Under the impact of the COVID-19 pandemic, 58% of logistics service providers have shortened their technology roadmaps, the proportion of enterprises with high and very high levels of technology application has increased rapidly in many fundamental technologies, in which robotic process automation (RPA) reached 100%, big data reached 80%.
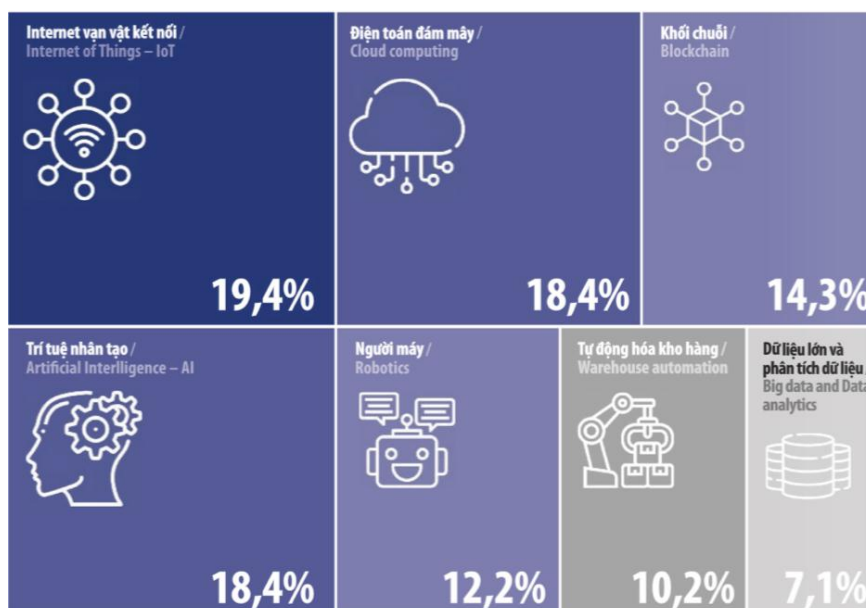

Figure 1. Technologies that change the logistics industry
(Source: Survey of enterprises in the logistics industry, Vietnam Report - November 2021)

All stages of logistics enterprises' operations have also begun to apply digital technology. Survey results on software used in the logistics industry in Vietnam show a diverse image of technology tools and systems. Most enterprises use popular software such as Microsoft Excel and Google Sheets for daily work, accounting for 97.8%. In addition, Vietnam Automated Cargo and Port Consolidated System (VNACC), Freight Forwarding Management Systems (FMS) and Customer Relationship Management (CRM) are also commonly used with a corresponding usage rate of 94.8%, 34.3% and 32.1%. Although Transportation Management Systems (TMS), Warehouse Management Systems (WMS), and Order Management Systems (OMS) has development potential, but the utilization rate is still low, with utilization rates of 11.0%, 10.1% and 6.3% respectively. Port management systems are reserved for a small number of port operating enterprises, so their proportion is insignificant.
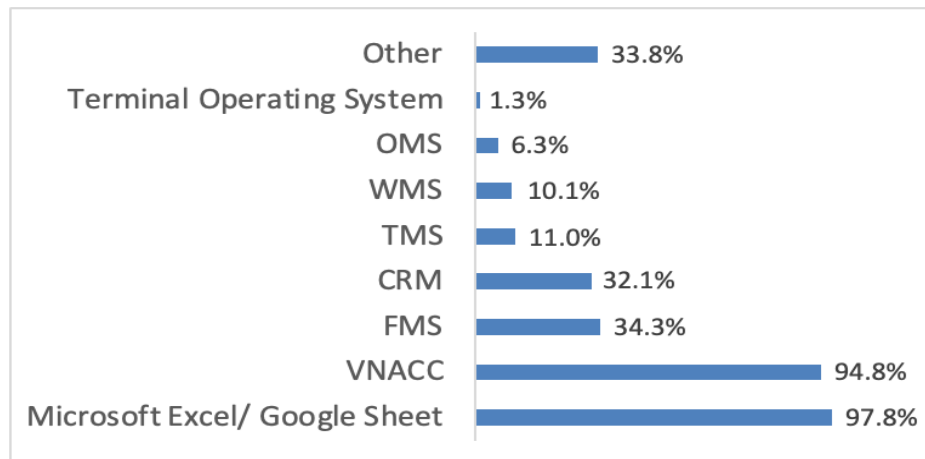
Figure 2. Software used by logistics service enterprises in Vietnam today
(Source: Vietnam Logistics Report, 2023)

Some large enterprises such as Da Nang Port, Saigon Newport Company, Chu Lai Logistics... have focused on applying digital technology on a large scale, with connections between functions to transform the management model. value and create connections with the business model, bringing optimal efficiency to the business. For example, Da Nang Port has deployed the use of Electronic Information Portal - DNP ePORT to improve customer service quality by connecting shipping lines to deploy: Electronic delivery orders - eDO; Connecting electronic customs - eCustom; Non-cash electronic transactions - ePayment; Electronic invoice - eInvoice (Ministry of Industry and Trade, 2020).

Digital transformation has contributed to improving service quality in logistics enterprises, creating conditions for the formation of logistics centers with a high level of digital technology application, especially enterprises providing services to the market. Europe, America and China. Many enterprises have joined the world logistics passport program, improving relationships with international customers. This shows that the reputation and competitiveness of many Vietnamese logistics enterprises have improved significantly. For example, Saigon New Port Company, after successfully applying advanced production management programs, has reduced ship arrival time by 55%; reduce delivery time by 3/4; reduce 60% of workplace safety and traffic safety incidents... Hai Phong Port has officially used electronic invoices instead of paper value-added invoices in goods sales and supply activities. service. The use of electronic invoices has helped customers shorten payment time by more than 90% and management units save up to 80% of costs for each invoice (Ministry of Industry and Trade, 2020).

Although logistics enterprises appreciate the role of digital transformation, the digital transformation process in these enterprises has not yet met expectations. According to the Vietnam Logistics Report 2021 (Ministry of Industry and Trade, 2021), the digital transformation process of logistics enterprises is facing many difficulties from building processes to selecting and applying technology. The report shows that, during the digital transformation process, many logistics enterprises have not fully implemented the digital transformation processes. Up to 28.95% of enterprises have difficulty building business plans and strategies, they do not know how much to invest and where to start; 15.79% of enterprises have difficulty digitizing data and processes on digital platforms, leading to limited access to digital resources between departments within the business as well as compatibility between enterprises within the business. chain (Ministry of Industry and Trade, 2021).

Human resource preparation is also a major limitation for logistics enterprises. Up to 42.11% of enterprises said that their human resources are limited and their ability to use information technology applications in the business is still only at an average level, which causes difficulties in the transformation process. numbers, leading to a slow speed of digital transformation in enterprises.

Choosing and applying digital technology appropriate to the scale and level of the business also faces many challenges due to limited investment budget (42.11%), concerns about safety and security. information security of online platforms (5.25%) (Ministry of Industry and Trade, 2021).

Besides the above difficulties and challenges, the level of application of digital platform technologies in logistics enterprises is not as high as IoT (30%), Blockchain (40%), AI (50%), Big Data (80%). %), the rest are still at average, low and very low levels. Technology solutions applied in low-level business processes mainly focus on customs declaration activities, transportation management, warehousing, delivery, and barcode scanning. Applications that can optimize operations such as VRP (vehicle routing system), automatic storage and retrieval system AS/RS or automatic pickup trucks are still used by very few enterprises. The equivalent rates are 19.4%, 16.67% and 11.11%. In particular, the application of drone technology has not been used at all (Ministry of Industry and Trade, 2021).

Looking at the entire Vietnam Logistics industry, the proportion of enterprises achieving a strong transformation is still small. This is also consistent with research by the International Data Corporation (IDC) on digital transformation readiness. According to this result, only 16% of Vietnamese enterprises are in the stage of readiness for high-level digital transformation. More than 50% are in phase 2, making digital transformation efforts but sporadic and small. Up to 31% of enterprises still react passively to market changes and hardly make any efforts for digital transformation. FPT statistics also show that up to 70% of Vietnamese enterprises in digital transformation fail and below are the biggest barriers that Vietnamese logistics enterprises are facing.

Regarding technology: In the digital transformation of the logistics industry, technology plays the number 1 role. According to VLA's 2018 survey, the level of application of science and technology to logistics in Vietnam is not high, most are simple solutions. In retail, international standard software has not been applied much, customs declaration is the most used, accounting for 75 - 100%. Especially with the e-commerce market, orders can reach millions of orders per day, many types, scattered with many different delivery locations. If not equipped with an automatic goods classification system, it will not work. can meet delivery and accuracy needs. Small logistics enterprises process orders and classify goods manually, so they only provide simple, slow, and sporadic services within the locality. Digital transformation of the logistics industry also requires equipping Order Management System (OMS), Warehouse Management System (WMS), Transportation Management System (TMS), Enterprise resource planning (ERP),... to connect information infrastructure, provide realtime data, look up order information anytime, anywhere. The cost of investing in such synchronous information technology infrastructure is up to tens or even hundreds of billions VND, which is too big a burden for small and medium-sized logistics enterprises. Sao Bac Dau's statistics show that 75% of ports, ICDs, and depots are currently unable to apply modern software, mainly using labor combined with some simple software. Gradually, it becomes impossible to optimize goods throughput, causing delays and congestion. Only large enterprises such as Tan Cang Company, Gemadept, Vinafco, U&I, TBS, Transimex, Sotrans,... have enough resources to develop OMS, WMS, TMS,... applications to a synchronous level. data between delivery, inventory management, and financial accounting departments.

Regarding cost challenges: According to a report by the General Statistics Office, Vietnam has more than 98.1% of SME enterprises and 99% of these enterprises are facing capital difficulties. Because of lack of capital, these enterprises believe that digital transformation is a game for large enterprises and only prioritize investment in short-term forms of growth.
Financial resources to invest in digital transformation to develop information technology infrastructure are also a major barrier for logistics enterprises. With 90% of enterprises having capital of less than 10 billion VND, 5% having capital of 10 - 20 billion VND, the ability to apply expensive technology solutions is very difficult. While the digital transformation process requires spending from hundreds of millions to tens of billions of VND. An automated goods sorting system that can handle millions of orders with many categories costing millions of US dollars. Software solutions are also very expensive, for example, a typical delivery software costs around VND 100 million to VND 200 million, paid in full once and then there will be an annual maintenance fee of about 10% - 20%. CargoWise One (CW1) is an internationally famous technology platform, including many integrated modules such as customs, TMS, WMS, freight forwarding, etc. Helps unify all business activities, from CRM (customer relationship management, marketing, sales,...) to operational activities (reservations, shipment monitoring, declaration submission, etc.). CW1 is charged based on the number of users and number of transactions. For enterprises with 25 - 50 people, the total estimated cost of use is about 50 million VND to 150 million VND per month, users must pay from 1 billion VND to 1.5 billion VND. This cost level is a big challenge for most Vietnamese logistics enterprises today in digital transformation, so currently they can only apply mainly individual software such as electronic customs declaration, geolocation, cars, email and internet.

Regarding cognitive barriers and human resources: Digital transformation is the application of internet-based technology to all business activities, so it requires very high levels of both technical and human resources. Current quick survey data shows that only 6.7% of enterprises are satisfied with the expertise of logistics staff. Many logistics enterprises are still not fully aware of the role of digital transformation in the 4.0 revolution. The barriers they are facing such as lack of digital skills and human resources, lack of modern information technology platform, lack of financial capacity and above all, lack of digital thinking are significant obstacles in their perception. knowledge in the digital transformation process. Reality shows that many business leaders still have concerns about the safety and information security of online platforms, leading to slowness and lack of sensitivity to applications of transformational technology.
With the above barriers, the survey of the Ministry of Industry and Trade on the readiness to apply 4.0 technologies of 17 production and business industries shows that 16/17 priority survey industries have a low readiness level, 82%. Enterprises are in a new position to participate, of which 61% are still on the outside and

21% of enterprises have started initial preparation activities.

III. CONCLUSIONS AND RECOMMENDATIONS

With the goal of Vietnam Logistics industry striving to reach 8% - 10% of GDP in 2025, service growth rate reaches 15% - 20%, logistics service outsourcing rate reaches 50% - 60%, ranked according to the Logistics Performance Index (LPI) in the world reaching 50th or higher,... digital transformation is an inevitable path to achieve the above targets in the context of the 4.0 revolution.

3.1. Towards the government

The government always has a supporting role in digital transformation. Cisco research shows that Government programs have a clear impact on the digitalization process of Vietnamese enterprises, the majority of enterprises (64%) are aware of the Government's support initiatives and benefit from those policies and the remaining 30% know but have not participated. Therefore, the Government needs to continue implementing the following solutions:

- With the industry's biggest difficulty being the lack and limitations of information technology infrastructure in digital transformation, the Government needs to have action programs to apply modern science and technology to catch up with the level of innovation. internationally, forming the e-Logistics industry in the context of industry 4.0. Accordingly, focus on investing in digital infrastructure to meet the explosive demand for connection and data processing; Mobilize information technology corporations to build and transfer logistics software to Vietnamese logistics enterprises at preferential prices to create opportunities to use and participate in digital transformation activities equally.

- Research and apply new technologies and technical advances in management, operations, and training on supply chains and logistics services. Encourage and guide enterprises in a number of industries to apply advanced supply chain management models in production and business, with a focus on logistics activities based on the application of information technology and new technology.

- Continue to improve the legal framework for logistics services and digital transformation, especially security issues, sabotage prevention cooperation, and technical management issues. Integrate network monitoring functions, Ensuring network safety and security right from design and construction. Research, amend and promulgate new policies and laws regulating logistics services, multimodal transport, and cross-border transport in e-commerce.

- Issue preferential policies on taxes, land rental, and loan interest to support logistics enterprises to invest in warehouse networks, goods classification systems, and high-productivity automation equipment. There is a policy to encourage digital transformation, support loans and preferential interest rates for startups with digital technology solutions, to help logistics enterprises buy or rent solutions from enterprises providing digital technology solutions. providing software without sufficient financial capacity.

- Strengthen digital transformation links between state agencies and organizations and enterprises between associations, information technology industry associations and logistics associations to create synchronous efficiency in digital transformation efforts.

3.2. Towards enterprises

- Logistics enterprises need to raise awareness about the urgency of digital transformation, considering digital transformation as inevitable if they do not want to be eliminated from the market. The central element of digital transformation lies in human factors, thinking and culture. Changing thinking about digital transformation must start from the leadership level. Human resources are the core factor to operate a digital logistics system and require higher skills than traditional logistics, so training and retraining are needed. Focusing on coordination between logistics enterprises, associations and universities to provide a knowledge base for industry human resources is extremely important.

- Digital transformation needs to proceed steadily, according to a roadmap suitable to the specific capabilities of each business. It is necessary to transition from data digitization to process digitization and change the business model to a digital platform model suitable for automated processes. In each stage, it is necessary to plan methodically, be careful in choosing processes, and find suitable suppliers in terms of reputation, quality, and financial capacity to create a continuous system of parameters with the same standards. ink, highly interconnected and easy to retrieve data.

- With large logistics enterprises like Vietnam Post, Viettel Post will quickly innovate technology and retrain human resources. Take advantage of the agent and post office system covering the whole country, from rural and mountainous areas to remote areas; the warehouse network has been well invested for delivery activities across the country to create strength to pave the way in the digital transformation. Investing in technology and changing management methods will help these enterprises compete fairly with foreign competitors, and even have an advantage. For small and micro logistics enterprises that do not have the conditions to invest in technology or

warehouse systems, they can also participate in niche markets, small scale, and simple product categories to serve enterprises selling goods. retailers, individuals doing e-commerce business on social networks or mobile application platforms. Niche markets will fit the scale of this business in terms of quantity as well as logistics service quality requirements.

- Choosing a digital transformation model needs to be researched meticulously and thoroughly. Closely link within the logistics industry, as well as seek advice from digital transformation service providers to help enterprises determine the appropriate direction. If you find a suitable model and grasp new technology, logistics enterprises can quickly keep up with market trends. Enterprises should pay special attention to improving their financial capacity through cooperation, merging with enterprises with good financial potential or finding strong investors to have stable financial resources for development. Developing technology and high-quality human resources,...

- When implementing digital transformation, logistics service enterprises must have a synchronous transformation. Focus on building a digital platform for the logistics service chain, helping to connect stakeholders in the chain (ports, carriers, agents, forwarding companies, warehouses,...) to share data, Increase chain visibility and improve efficiency. However, prioritizing investment in modules is necessary, allowing digital technologies to be gradually integrated to synchronize the entire business system in a sustainable way.

- In the long term, it is necessary to build a digital logistics ecosystem, exploiting existing data of enterprises into a competitive advantage to effectively circulate goods; Build common storage data, centrally manage vehicle journey data, thereby providing a basis for adjusting traffic planning, arranging inner-city parking lots, and freight transit areas. priority hours.

Digital transformation plays an extremely important role for the Logistics industry to ensure the sustainable development of the national economy in the 4.0 era. To be able to transform successfully, logistics companies need to start self-awareness and change their qualifications, management and operational skills. Technology can only be implemented effectively by outstandingly intelligent hands and minds. Huge resources in terms of infrastructure and costs always require the ultimate support of State agencies. Only a harmonious combination between the self-reliance of enterprises and strong motivation from the Government can successfully digitally transform the logistics industry as well as the Vietnamese economy in the future.

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