

BLOCKCHAIN TECHNOLOGY IN INTERNATIONAL TRADE

A research in the import and export industry (Maersk
Logistic Company and Vietnamese market)



TRADE+LENS

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Preface

In this study, I decided to choose A.P.Moller - Maersk company. This is an integrated container logistics company, they are one of the famous companies applying blockchain in the field of import and export. In the first period, when I started my thesis, I had a lot of difficulties in choosing a topic and did not know which company system to learn about as well. Then filtering information as well as finding reliable sources for your essay is also a difficult problem to solve. But in the end, after a period of meeting and receiving exceptional support from Coach and Supervisor, I completed my thesis.

Here I would like to express my sincere thanks to Jan Veuger for helping me in the right direction in choosing the topic as well as guiding me in the right direction. Next, I would like to especially thank the two supervisors Ronald Kramer and Rob Berkhof for making suggestions and helping me to recognize my flaws.

The last thing I want to say is, thank you to all my family, friends, and relatives for understanding, listening, and motivating me to complete this thesis.

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Abstract

This article will analyze how blockchain technology is applied to manage and track cargo movement across the globe. First, the distribution of goods, as well as the bill of lading and quality assurance, the shipping time with the lowest cost, is always a problem for logistics companies. The cost of securing goods during transit or long time to complete customs procedures also affects the delivery results. This study will provide problems for the company as well as the impact of the use of blockchain technology developed by IMB in Maersk's logistics management system. Thereby the management of goods as well as guarantee orders to win the trust of customers as well as bring enormous profits for themselves Maersk company and provide a new direction for Indo-Trans Logistics, Vietnam..

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Chapter 1. INTRODUCTION

1.1 Problem description

Competitive analysis is the process of assessing the weaknesses and strengths of current and potential competitors. These analyzes provide businesses with a picture of offensive and defensive strategies, through which they can identify opportunities and challenges. Identifying the competitor is the process of collecting all sources of analytical information about the opponent into a system, in order to support the process of forming, implementing and adjusting the strategy in the most effective way.

Currently, the import-export transport industry in Vietnam has not been widely available, the market is limited, the tools are rudimentary and there are no reasonable policies. More specifically, when I learned about freight companies as well as Vietnam's Logistic market, I found that Indo-Trans Logistics (ITL) is very potential to become a competitor of Maersk Line. Currently, ITL is the oldest and the most powerful company in the logistics industry in my country. I want to base on the strengths as well as the points to note and supplement to the Blockchain segment to help my country and the ITL company grow more and more to help the economy be more stable. Therefore, as a Vietnamese student currently studying in the Netherlands, I want to research and find new methods to help import-export transport companies in Vietnam to grow more and more.

The Danish shipping company, Maersk, is the largest container shipping company in the world, accounting for about 20% of the global market share. In September 2017, Maersk cooperated with IBM to apply Blockchain technology in the shipping industry.

This Blockchain platform, called TradeLens, was developed by IBM and will be put to the test by Maersk. This revolution will have two main tasks. First, they will apply Blockchain to manage and track the shipping of goods globally, in a transparent and unalterable system. Secondly, TradeLens will use smart contracts to replace complicated paperwork, speeding up the transportation of goods. According to reported data, the company has grown at a rapid rate, nearly one million orders shipped per day. The company currently has the participation of

more than 20 global port and terminal operators, as well as international customs agencies, freight forwarders, freight forwarders, logistics companies, etc. "TradeLens can track all essential data about each shipment in the supply chain in real-time. With the participation of many large organizations, TradeLens promises to provide the best solution for global shipping problems. " as IBM and Maersk originated this solution on the open-source platform of Linux (Hyperledger Fabric). This technology is accessed through IBM Cloud solutions and IBM high-security networks, distributed via IBM Bluemix.

Besides, IBM and Maersk also shared:

"This new Blockchain-based platform will bring more trade partners. Moreover, TradeLens only provides a single shared interface for a transaction without compromising privacy or security. At the same time, the platform also integrates the Internet of Things (IoT) and sensor data to enable monitoring from temperature control to container weight. "

1.2 Research problem :

Currently, the import-export market is growing stronger and more competitive. Having a lot of strong competitors as well as strategies from rival companies will make the competition more and more fierce. In this report, I focus on studying the effects of Blockchain on the import-export market. Therefore, I found the central question for this study:

What are the opportunities of Blockchain Technology in logistics in International Trade?

There are several auxiliary questions to help you get to the main question:

1. How Maersk logistic companies apply blockchain technology in their system?
2. What are the consequences of applying blockchain technology in Maersk logistic company?
3. What are the opportunities and challenges of the Vietnamese market that support Blockchain Technology in International Trade?

1.3 Research design

In this study, I evaluate the document as a critical method to find out information about scenarios on blockchain technology, the relationship between Blockchain and logistics company Maersk about how Blockchain has changed Maersk.

This article focuses on the impact of Blockchain on the import and export of Maersk Logistic Company and how the company handles delays as well as resolves goods-related issues. Blockchain model design so that the company can maintain the quality as well as profit from the transport of goods.

This research is intended to intensify modern improvements in blockchain technology and management of import and export logistics in Denmark. Whether the optimization of technology and resources to deliver products on time or to ensure quality, meet market demand, and achieve the highest profit can be solved when the company applies this technology into management. Therefore, the vendor's blockchain technology project is like the most suitable solution for Maersk to handle border shipping delays to solve the problem in the most convenient way.

The study will be conducted in two parts. Part 1 discusses the effects of blockchain on the company - should Logistic companies apply Blockchain systems? , and part 2 will explain more clearly about the Blockchain model and how blockchain works in the company. The report also concluded a review.

1.4 Research methodology

Since becoming a student of Finance and Accounting at Saxion University, I have been taught by Ms. Bergmans and other professors how to search for documents as well as how to use the university library. These help me find a quick and correct source for my research. To support my all sub-questions, I have used methods including keyword lookup and source lookup.

1.5 Search sources

We can see in many scientific documents; the references occupy a very humble position, the information cited, references are presented improperly and are often quickly passed. In line with the explosion of

the Internet, the trend of using everything found on the Internet to incorporate into scientific literature without verifying the origin, reliability, value, and compliance with the rules of presentation and use of resources. Data has been increasingly popular. In the past, we can search for questions like "What were some simple questions like Blockchain?" or "Where will Blockchain apply in the company?". We often use Wikipedia to find answers. But now with the feature that allows the online community to edit documents, this information source is no longer trusted. The selection of the website, as well as the author of the article, gradually becomes more critical. The first thing I did was to get advice from the people around me. I will then try to go through each site, which may take a while at first, but it helps me a lot in finding the right information.

I find sources from the online Saxion library, Google, and the links guide from my Coach and Supervisors. I get information from books published from OECD's Trade Policy Report and 'Containerization in Globalization'- A Case Study of How the Maersk Line Became a Transnational Company.

Most of the time, I'll ask questions and find the keyword myself and try to find it in reliable sources. For example, "Why is Blockchain better than traditional trading?" are the words selected for information on Google Scholar and regular Google. Also, I have researched reliable sources and figures on Maersk's website. Because Blockchain technology has only been applied since 2017, I choose articles published from 2017 to 2020 to ensure the latest and relevant information.

Keywords

My keywords are often due to questions and aspirations of this research to collect words related to my research.

First, I have put this method into two separate sections to facilitate the search, including the common and the private. Commonly searched keywords are: Blockchain, import, and export, customs clearance, supply chain, Maersk Line, international trade.

More specifically, I divide the keywords into three sub-questions in turn. Regarding the first question, "How does blockchain support Maersk in Logistic?" I choose keywords: Logistic, Maersk in Logistic,

improved by Blockchain, blockchain change Logistic. The second question is "How Maersk logistic company apply blockchain technology in their system?", The keywords include: role plays of BlockchainBlockchain, Maersk process, apply BlockchainBlockchain, contract, IBM (because this is a contract between Maersk and IBM), how to transact and transport. The final issue is "What are the consequences of applying blockchain technology in Maersk logistics company?" Other keywords: transit time, shipping procedures, the cost of apply Blockchain, should we apply Blockchain, advantages, disadvantages, agreements, consequences.

1.6 Objectives of the study

The main aim of this study is to maintain the entry and exit position of Maersk based on blockchain technology. Therefore, it is essential to keep the volume of goods stable and quality to compete with other shipping companies. The import and export of goods require customs documents to leave the customs union as well as time management so that the delivery of assets is the least time-consuming. As Britain leaves the European Union, this will cause EU companies, including Maersk, to lose the benefits of free trade and become much more involved in exports. Besides, Maersk will export and import goods to countries outside the EU, so if the UK's quarantine requirements are not the same as the EU, each factory may need to inspect before Maersk can import. Transporting across the UK could be difficult if new border customs procedures were adopted, which would lead to delays in import and export of goods while certain types of products needed to trade folding in a short time. Finally, Maersk Logistic Company should apply Blockchain technology in transactions that will shorten the time as well as simplify the shipping process, bringing more profits to the company.

After finding the benefits and difficulties of applying blockchain to international trade, Vietnamese companies, particularly ITL companies, can find the best solutions for difficulties when applying blockchain in logistics. By researching and comparing this solution, companies can make the smartest decision about whether or not to apply blockchain in the company system.

CHAP 2: THEORETICAL FRAMEWORK

2.1 Introduction

I casually mentioned Blockchain in international trade, the context, and the situation of Blockchain in chapter 1 just now. Generally, the influence of Blockchain on the international trade-in global as well as Maersk Line. In this section, I will focus on researching and clarifying the relationship between Blockchain and the international trade industry at Maersk Line. Specifically, there are many different ways of applying Blockchain, and their impact on the International trade industry is not the same, so that they will be thoroughly studied. Besides, aspects of the logistics supply chain, such as distribution, delivery, and affected tariffs, addressed through the Blockchain, are highlighted in this chapter.

2.2 The information of Maersk Line (Denmark) and Indo-Trans Logistic company (Vietnam)

2.2.1 Maersk Logistics Company (Denmark)

Maersk Logistic Company is considered as a large container shipping company in the world under the management of A.P.Moller-Maersk. The company operates in more than 120 host countries and has a fleet of more than 600 large ships and is located on a system of extensive commercial routes throughout the crane. Maersk has attracted many domestic and foreign partners with its large scale and long history, creating a brand with abundant financial resources and abundant and sufficient human resources. As one of the businesses involved in Tradelens - the blockchain system was jointly developed and designed by Maersk and IBM Corporation. Up to now, Maersk has applied the Blockchain system for nearly three years since September 2017, to improve the paperwork process through smart contracts, as well as towards saving costs and personnel force. Everything went smoothly until the COVID-19 pandemic broke out, affecting the international exchange economy as well as reducing Maersk's revenue significantly, accurately as follows:

| Market Demand Growth | | |
|----------------------|----------------|----------------|
| Growth % (Y/Y) | Quarter 1-2020 | Quarter 4-2019 |
| Global market | -4.7% | -0.3% |
| East-West | -5.7% | -2.2% |
| - Head Haul | -8.9% | -3.9% |
| - Backhaul | 0.6% | 1.2% |
| North-South | -0.6% | 1.7% |
| Intra Regional | -5.5% | 1.4% |

Based on data taken from Maersk's interim report 1st quarter of 2020, we can see that container transactions between Eastern and Western countries decreased by 5.7% at the beginning of 2020. Besides, the import situation goods coming from Asia to Europe decreased by 16% in the first quarter as the majority of products will be exported from China. Still, all activities will almost stop starting this February, and demand for European goods began falling in March. The problem with Maersk's business was thought to be due to the outbreak of the COVID-19 virus. Similarly, North American container imports fell by 7.8% in the first quarter. Next, Maersk feared that the turn-by-turn of border gates would severely reduce the import and export industry in general and Maersk in particular.

However, recently when the epidemic has lasted for nearly four months, some countries are gradually starting to return to normal (Vietnam); others are still at an early stage (USA, Canada). It is for this reason that Maersk researchers have forecast that there will be a drop in demand for containers and national commodity exchanges by 2020 compared to 2019. Currently, it is difficult to predict when and when. Global trade remedies, as they have to rely on the virus situation and policies of individual governments, which will almost certainly affect the economies of shipping businesses.

2.2.2 Indo-Trans logistic company (Vietnam)

Indo-Trans Logistics Company (ITL) was established in 1999 to provide professional services for transporting and distributing goods on a variety of trade routes. With the participation of strategic partners Singapore Post and Mitsubishi Logistic, the Group's goal stops in Indochina and reaches the international market with strong growth and investment. In particular, Indo Trans Logistics is among the 500 largest private enterprises in Vietnam for six consecutive years (2007-2012). Moreover, ITL is now aiming to develop its expertise in e-commerce and shared economy models to provide customers with transparency with cost-effective, innovative solutions.. In 2019, ITL cooperated with Tan Cang Song Than ICD - a member of Saigon Newport Corporation (SNP) to build a massive ITL-ICD Tan Cang Song Than logistics complex in Binh Duong with a large scale in the Southeast Asia, making a significant contribution to the domestic and regional supply chain.

ITL has implemented a strategic alliance and cooperation with big names over the years, including Keppel Telecommunication & Transportation, Mitsubishi Logistics, UPS Supply Chain ... to provide logistics services and solutions to customers global goods. Currently, ITL only distributes mainly in Indochina countries such as Cambodia, Laos, Myanmar, Singapore, and Thailand, with more than 150,000 tons/year. The company now offers a full range of services such as full freight (FCL), LCL, and LCS at all trade routes, which helps them easily attract and meet the needs of partner businesses.

2.3 What is Blockchain?

Blockchain, which has an initially named block chain is a decentralized database that stores data in data squares connected together by coding and stretching out after some time. Every data square contains introduction time data and is associated with the past square, alongside a period code and exchange information. Blockchain intended to keep information from being changed: Once the system has acknowledged the data, it is implausible to transform it. Blockchain sworn by configuration utilizing a decentralized figuring framework with great byzantine adaptation to internal failure. Blockchain can

accomplish such a decentralized accord. So Blockchain is appropriate for recording occasions, clinical records, exchange handling, legal approbation, character, and demonstrating the source. This can help wipe out tremendous outcomes when information is modified with regards to worldwide exchange.

By utilizing distributed systems and a decentralized information framework, the Bitcoin blockchain is overseen consequently. The creation of Blockchain for Bitcoin has made it the leading computerized cash to take care of the issue of twofold spending (false going through when a measure of money is utilized twice). Blockchain innovation is like a database, just not quite the same as connecting with a database. It is fundamental to comprehend the accompanying five definitions: Blockchain, decentralized accord, confided in figuring, savvy agreements, and confirmation of work. This registering model is the reason for making conveyed applications.

Blockchain technology can be said to be a combination of 3 types of technologies below:

- Cryptography: Use the public key and hash function to ensure transparency, integrity, and privacy.
- Peer network: Each node in the system is considered as a client and also a server to store application copies.
- Game theory: All nodes participating in the system must comply with the rules of consensus (PoW, PoS, etc.) and be motivated by economic motivation.

Besides, we will consider Blockchain from 3 different angles: Business, technical, and social. First, from a business perspective, it can be called an accounting ledger, or a database containing assets, or a data structure. It used to record asset history among members. Secondly, from a technical perspective, it is an immutable method to store the history of asset transactions. Conclusively, that social aspect is a phenomenon, which used to establish trust by the rules of consensus among members in a hierarchy.

2.4. What's the difference between Private Blockchain and Public Blockchain?

Private Blockchain

Private Blockchain has its own operating and regulatory organization. It only allows those personal accounts using the Blockchain to access and modify the information in the system. On the other hand, it also allows participants to use private will to choose their security mechanism based on the principle of Pre-approved participants. It can be seen that when participating in Private Blockchain, users are only allowed to read data without being adjusted because this belongs to a trusted third party. This organization has the right to give or not allow users to read data in some cases. Besides, the transaction speed in Private Blockchain is faster and easier. Because this is a Private Blockchain, the transaction confirmation time is quite fast because the third party will be able to change the Blockchain freely, so only a small number of devices are required to authenticate the transaction. As for the transaction costs, Private Blockchain is cheaper than Public Blockchain. The most important thing is that when the account owner loses the private key, the account will be lost forever.

Public Blockchain

Different from Private Blockchain, Public Blockchain is considered a public distributed ledger, everyone has access and read, as well as change information on the system. The system will automatically transparently record time and all activities. Also, people often mistake Private Blockchain for more security, which is more reliable and secure than the Public Blockchain, but this is quite the opposite. Because it is made public, and almost recognized by a large number of different accounts, hacking and hacking the network seems impossible because of the high cost of hacking. For that reason, Public Blockchain is said to be the safest. However, there are some limitations in terms of technology and legislation. A major technological limitation inherent to existing public blockchains concerns the issue of scalability. The legal requirements for data storage of customer personal data must store on servers (physical or cloud) controlled by the company.

Permissioned

Also called Consortium, a form of Private but adds certain features, combining "belief" when joining Public and "absolute belief" when joining Private. IBM uses the open-sources permissioned blockchain to develop the Tradelens systems.

Similarities between public blockchains and private blockchains

They are both peer-to-peer P2P networks, in which each participant has a copy of the detailed notebook attached to digitally signed digital transactions. Second, Both maintain synchronized copies through consensus. Finally, public and private blockchains ensure that the ledger cannot be changed, even if some participants fail.

The most significant difference between private and public Blockchain is:

If Private Blockchain investment to design, initialize, and manage, then in Public Blockchain, you will not have to pay additional costs to create and design. Just join the public system; all your Blockchain data will be public to the community. Additionally, Public blockchains like Bitcoin and VChain are designed to protect anonymity, which is why cryptocurrencies are based on Public Blockchains. However, in the corporate world, we see businesses applying private blockchains; they do not want to be transparent or share all their business data with competitors. For the same reason, they believe that private blockchains will ensure they have control over who can write or read detailed information on the chain.

2.5 The relationship of Blockchain and International Trade

Today, international shipping is structured around a cognitive process, ensuring that a specific containment can move effectively. This process proves that the maritime shipping industry on container ships through the growing fleet of specialized vessels is significant for the transport of goods. Blockchain could be the solution when businesses want to handle products at the port more effectively and automatically. When shipping across countries, the processing of customs documents is inevitable. The paperwork is complex, requires time and money, and the

terms of the paperwork are always added every year. Handling an export shipment requires up to four separate contracts: export sales, shipping, finance, and cargo insurance. In those four contracts, up to 37 different official documents will need to be added (an average shipment will have more than 20 various related documents). These documents cover all aspects related to commercial transactions, transportation, finance, and many government documents such as certificates of origin, import, and export.

2.6. Advantage and Disadvantage of applying Blockchain in International Trade

We all know that every problem or event has its advantages and disadvantages. The same applies to Blockchain, as Jan Veuger once stated that “This offers the business sector huge opportunities to assign these types of professionals to other tasks, perhaps at a more strategic or analytical level. This would offer such organisations much more power to innovate. It may take some time to get used to this idea, however.”. Here I will analyze the pros and cons to make Indo-Trans easier to visualize and decide whether Blockchain should be used for the company's operating system. We all know that every problem or event has its advantages and disadvantages. The same applies to Blockchain. Here I will analyze the pros and cons to make Indo-Trans easier to visualize and decide whether Blockchain should be used on the company's operating system.

2.6.1 Advantage of applying Blockchain in International Trade

In the past, when information sharing between business partners was different, low levels of reliability and information leakage were common. But for now, that seems to be easily overcome with decentralized blockchain processes. This solution can fix document delays, information delays, and other statutory requirements. Besides, this platform gives partners in international trade the right to collaborate and empower many other trading partners by establishing a standard view of transactions without compromising details, privacy, or security.

Electronic data exchange is currently widespread among the 4.0 cloud era. The transfer of electronic data is crucial because it allows

businesses to exchange faster, save costs, and time thanks to the replacement of management and traditional paper into systems. , electronic software.

The application of Tradelens will be a method to help Indo-Trans Logistic companies send invoices, orders, customs documents, notices of ships, and business documents extremely quickly and economically. Increasing the efficiency of document exchange is to speed up the business process. Moreover, these processes are closely monitored, helping the company to monitor and manage the performance of tasks.

As a result, the management of data and goods becomes faster and more accurate, creating transparency, and building trust to attract business partners of the company.

2.6.2 Disadvantage of applying Blockchain in International Trade

The deployment of new systems always requires careful consideration of companies. The company may disrupt operations and need to overhaul the entire system if it wants to apply Blockchain, and the resources and capital of other projects may be destroyed. Therefore, senior management may hesitate to sign approval for this type of investment before realizing that other competitors in the same industry widely apply it. Next, when you want to apply Blockchain to your supply chain, the first change will be the company internally. We are required to introduce Blockchain, as well as the uses and benefits that Blockchain can help companies change most positively.

Getting to know the new working system as well as the time and cost of training is something that needs to be discussed carefully to save costs and still be most effective. The third issue is about company partners; we always know that transparency is not what all companies want. If we're going to apply the Blockchain system to the company's supply chain, we have to introduce it to essential partners, and they must be ready to participate in that supply chain. Participation needs some transparency, and this is what big companies are always concerned about this risk.

2.7 What is TradeLens?

Maersk cooperated with IBM to apply Blockchain technology in the shipping industry in September 2017. This revolution will have two main tasks. First, they will apply Blockchain to manage and track the shipping of goods globally, in a transparent and unalterable system. Secondly, TradeLens will apply smart contracts to replace complicated paperwork, speeding up the transportation of goods. According to reported data, the company has grown at a rapid rate, nearly one million orders shipped per day. The company currently has the participation of more than 20 global port and terminal operators, as well as international customs agencies, freight forwarders, freight forwarders, logistics companies.

2.8 Why Maersk operates with IBM?

Maersk realized that the current Blockchain technology is still in the testing phase to improve the scale as well as reduce the burden of logistics and maximize global market profits. According to the representative of Maersk Company, he said that the cost of managing and tracking freight is about 1/5 of the total cost, which is a very large number. So when IBM offered to cooperate, Maersk accepted and the cooperation of these two giants could be risky, but if the Blockchain technology is completed in the transport industry, benefits for both parties.

But an IBM spokesperson said the original 49% / 51% ownership split will no longer apply to the collaborative model that the two companies are currently marketing. IBM representative added: Both IBM and Maersk will sell access to the TradeLens platform. The seller will sign a contract with the customer, receiving all fees and revenue instead of sharing it with another partner.

CHAPTER 3: POLICY

3.1 Maersk company apply blockchain technology in their system

As mentioned above, TradeLens consists of three main components: Ecosystem, platform, and market. First, TradeLens participants, such as carriers, ports, 3PLs, customs authorities, and shippers, will connect and provide data to use a particular common platform, including Maersk, to have access to the Ecosystem. TradeLens will then provide Maersk with an open API accessible platform and establish a certain system standard for ecosystems so that all parties can exchange information and collaborate with Maersk most securely.

Finally, TradeLens further develops the market segment, which will provide an open platform that enables both Maersk, IBM, and third parties to publish services suitable for purposes on the TradeLens platform. This means that Maersk will have the right to add policies and contribute ideas for the TradeLens system without being too passive.

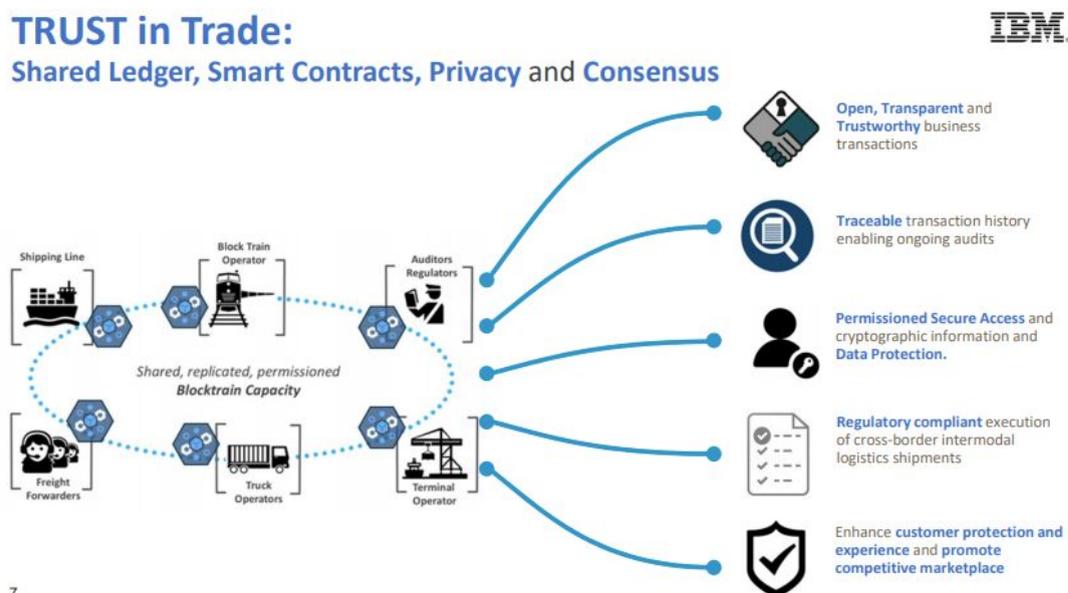


Figure : How does Tradelens work?

Sources from: Microsoft PowerPoint - Blockchain at UN n Customs of IBM /15

Permission

Depending on the role and type of documents uploaded, TradeLens will automatically provide the rights and limitations of each kind of

customer separately. First, the system under the licensing matrix has been set up and rules for data sharing of TradeLens, will check the authority of the document, based on the role of each organization. Uploaded documents must be linked to a shipment, shipment, or transport device directly related to the customer.

Invariant

The shipment Manager interface designed by Tradelens can provide organizations with the right to download data in individual files. Still, the system will also display a 'Consistency checking' message to customers to know if the document has been verified by Tradelens and its stakeholders on the blockchain. Once the document has been selected, the system will automatically retrieve it from Tradelens' secure Blockchain Document Storage for versions, as well as the content of documents stored on the blockchain will be compared with the new material created. After this process is completed, organizations will be notified that the document has been verified and immutable. This helps to gain the trust of the parties and avoid fraud in the maritime economy.

The screenshot displays the 'SHIPPING_INSTRUCTIONS.JSON' document details page. At the top, there is a document ID: d794e053-c839-4b17-ae5b-46cc4f45f8f5. Below this, a table lists document versions:

| Document Version | File Name | Date Modified | Originator Name |
|-------------------------------|----------------------------|--|-----------------|
| SHIPPING_INSTRUCTIONS.JSON V2 | SHIPPING_INSTRUCTIONS.json | April 2, 2020 at 8:36:42 PM GMT+0 by test-ocean-carrier | doc-sharing |
| SHIPPING_INSTRUCTIONS.JSON V1 | file.json | April 2, 2020 at 4:24:34 PM GMT+0 by test-ocean-carrier | doc-sharing |

Below the table, a warning message states: "Downloaded files have not been scanned for viruses. Please ensure that you have antivirus installed per your company policy and have the latest virus definitions." A 'Consistency Check' section indicates that the document was securely retrieved from the Blockchain.

Figure : The example of Consistency Check message in Tradelens system

Source: Copyright IBM Corporation and GTD Solution Inc. 2018, 2020

In Tradelens system, there are many different types of document which are presented by special characters. They are Data Provisioning Requirements (DPR) by Role table and Data Access Rights (DAR) by Role for all types of data. For system users to better understand, these special characters are carefully annotated by the publisher, and in this report I have divided two types so that your company can easily choose as follows:

- The first one is Data Provisioning Requirements by Role table for the document type:

M: The organization is required to implement data in all relevant situations.

C: We have conditions for cooperators to present data if the data and scenarios are relevant and applicable to the transport/deposit/delivery device. If the data is available to the participant, the participant must provide it.

O: Optionally, the data may be published to the platform at the participant's responsibility, and the role has the right to Upload / Write / Read the document.

If the role is empty (not M, C, or O), it means that it has no Update / Write permissions for the document type.

- The second type is Data Access Rights by Role table for the document type:

R: that role has Read permission for the document type.

If the role is empty (not R), then it has no Read permission for the document type.

3.2 The consequences of applying blockchain technology in Maersk logistic company

When interviewed about the development of the Tradelens system, Maersk executives hoped that the solutions they were implementing would not only reduce the cost of goods for consumers, but also make it easier for global trade. access to a larger number of players from both emerging and developed countries. This level of transparency helps reduce fraud and errors, reduces the time products spend on shipping and shipping, improves inventory management and ultimately reduces

waste and costs. In order to explore a breakthrough technology like blockchain to solve real customer problems, Maersk and IBM decided to work together to bring Tradelens to the shipping industry. Next, they created new innovative business models for the entire shipping industry and made global trade more accessible to a larger number of players from both emerging and developed countries. (Ibrahim Gokcen, chief digital officer, Maersk.).

As we all know, the shipping industry accounts for 90% of global trade in goods each year. This figure shows us that the economy of Denmark in general and of Maersk in particular will develop significantly if Tradelens can solve the difficulties that the maritime industry has. Through surveys, Maersk discovered in 2014 that a simple, cold shipment from East Africa to Europe could have to pass through nearly 30 people and organizations, including more than 200 different interactions between them. , from which they realized that the transportation industry took too much time, human resources and other transportation costs. Therefore, after the invention of Tradelens, in order to demonstrate the potential value of a commercial digitization solution, IBM and Maersk worked with a number of trading partners, government agencies and logistics companies. (Maersk Line, Netherlands Customs Agency, U.S. Department of Homeland Security Science and Technology, and U.S. Customs and Border Protection). In addition, the origin management of the shipment while using this solution was supported by Damco, the supply chain solution company Maersk.

When Maersk joins the Tradelens supply chain ecosystem, managers can view the progress of goods through the supply chain, knowing where the container is shipping. They can also see the status of the customs documents, which will contribute to providing information quickly so that Maersk Line supply chain staff can find solutions and fix mistakes. easier way, or see bill of lading and other data. On the other hand, the ability to display details about the progress of containers through the supply chain is energized with real-time exchange of events that help manage. and track paper traces of tens of millions of shipping containers of the Maersk Line system worldwide by digitizing supply

chain processes. This means that neither party can modify, delete or even append any records without the consent of Maersk and its partners.

After applying blockchain to its supply chain, Maersk improved workflow as well as real-time tracking of the status of each shipment and container. This will help the contract signing with the terms agreement between the parties with Maersk be done more quickly through information sharing and the application of smart contracts. Being more confidential and more efficient to handle the documents processes necessary to move goods across international borders without cumbersome customs procedures like the traditional way.

In addition, Maersk can save on the costs associated with handling and managing commercial documents, which are estimated to account for up to one fifth of actual physical transportation costs. This solution will help manage and track paper traces of tens of millions of shipping containers worldwide by digitizing the end-to-end supply chain process to enhance transparency and secure information sharing. high among trading partners. When applied at scale, the solution could potentially save the industry billions of dollars. The solution is designed to help Maersk control fraud and errors, reduce product time spent on shipping and shipping, improve inventory management and ultimately reduce waste of time delay. and the cost is not worth it.

3.3 The opportunities and challenges of the Vietnamese market that support Blockchain Technology in International Trade

Infrastructure and human resources

Through surveys and market research, Vietnamese logistics enterprises are still assessed as not developing infrastructure, and the main reason is mainly that Vietnam's logistics costs are the most expensive in the world. According to the Vietnam Chamber of Commerce and Industry (VCCI), the cost of transporting a container of cargo from Hai Phong port to Hanoi or vice versa with a distance of 100km costs three times more than the cost of transporting a cargo container from China or Korea to Vietnam (Xuan Thu, 2017). First, in terms of business size, Vietnamese logistics businesses are small and

cannot raise enough capital to grow. Second, knowledge is always an important issue when it comes to referring to a country. In the past, the curriculum and teaching methods of Vietnam have only followed the theory of teaching, which is not much applied in practice; that's why new graduates do not know how to operate and apply knowledge to stay up at work.

Next, studying abroad and working in American and European countries has been and still is a trend of Vietnamese people, they always think elsewhere or work for foreign companies, everything will be better. This thinking also comes from the fact that in developed countries such as the United States and Canada, students will be able to practice since the first year, while in Vietnam, students can only practice in the last year and be forced to work. Non-specialized jobs, such as printing documents, buying coffee, or just going to the company office to sit all day and back. Finally, what Vietnamese students receive only after 4 years of study are in-depth theories and not applied to life. Most Vietnamese will carefully consider and decide to stick with foreign companies when choosing between international companies and domestic companies.

Because of the urgency of the problem, the Vietnamese education system is continuing to improve by aiming to apply more. Still, it is not sufficient because Vietnamese enterprises lack the most experienced and qualified human resources. In this regard, Indo-Trans Logistics company can overcome it by training new personnel according to each specialty. This can significantly increase costs if the company chooses On-job training (on-the-job training) or can save costs through online training (confusing to access information as well as challenging to direct advice). After going through the training process, when the company receives a new import-export project, an original amount of work, new communication requirements from customers, or new regulations of the transportation industry, employees will easily approach and learn from the changes in the company's workflow.

Finally, we can see that training for employees is an important task to build a quality workforce, consistent with the direction and business strategy of the unit. Besides, businesses also face difficulties in the lack

of infrastructure connecting the port areas with goods concentration areas, lack of specialized freight and service delivery centers, and an essential link in the exchange of domestic as well as international goods.

Currently, Vietnamese importers and exporters still prefer the form of import and export of products: the purchase of Cost, Insurance and Freight (CIF), and the sale of Free on Board (FOB). Since then, the transport role has shifted to foreign partners. This creates additional costs and poses one of the significant disadvantages for the domestic logistics industry.

International relations between Vietnam and EU

The EU is now considered as one of Vietnam's leading trading partners, with two-way trade turnover increasing by 15-20% per year on average. Currently, the EU is the third-largest trading partner and the second-largest export market of Vietnam. The essential products of Vietnam exported to Europe will be seafood, wooden products, electronics, and consumer goods. As for Vietnam, it will mainly import from Europe for machinery, equipment, pharmaceuticals, chemicals, and vehicles. It is worth noting that on March 30, 2020, during the COVID-19 disease outbreak, the EVFTA agreement was approved by the European Council. EVFTA is an Agreement to ensure the balance of economic interests for both Vietnam and E. This is considered an excellent success for Vietnam's import-export industry and Indo-Trans Logistics. The agreement will help diversify markets and export commodities. Secondly, it will also contribute positively to building a transparent legal and investment environment, enabling Intro-Trans Logistics to be able to make it easier to join the Tradelens system, attracting more investors from the EU and other countries.

The widespread and the reliable of Blockchain system in International trade on the world

Why say Tradelens is a reliable blockchain system? First, this system was released by IBM and Maersk, considered to be two large enterprises in the world, while IBM was inclined to study Blockchain, Maersk specialized in international trade. However, in the past,

entrepreneurs were always concerned when applying Blockchain to their work systems. Explaining this, we must understand that when an enterprise wants to use Blockchain as a solution, this forces Indo-Trans Logistics partners to join the Blockchain system so that it can be easily exchanged, provide rights, and documentation to each other. This has always made it difficult concerning Indo-Trans Logistics to decide because currently applying Blockchain to manage company systems is not accessible in the Vietnam market. Next, this system is joined by large enterprises in the world, such as Lenovo, Glaxo, Nokia. In addition, when piloted by Customs in Saudi Arabia, Tradelens is gradually entering the Asian market to connect the FASAH cross-border trading platform with the TradeLens blockchain platform of IBM and Maersk. After that, Indonesian customs approved and officially applied Blockchain to the cargo transport system of Tradelens and, most recently, Cai Mep International Port, Vietnam.

Cai Mep International Terminal (CMIT) decided to join the Tradelens system.

Cai Mep International Port (CMIT) is a joint venture port between Vietnam National Shipping Lines, Saigon Port, and APM Terminals (Maersk A / S) -AP Moller - APM Terminals Maersk is an independent business unit that has its headquarters in The Hague-Netherlands. CMIT is one of the largest ports in the deep-water port cluster at Cai Mep - Thi Vai gateway, located in Vung Tau and is currently receiving cargo for mother ships with a tonnage of up to 194,000 DWT / 21,500 TEU (maritime unit industry) directly connecting Vietnam to significant markets in Europe, the Americas and Asia. Also, Cai Mep port is always approaching and innovating, switching from traditional invoices to e-invoices, or using automated customs monitoring software (e-cargo), etc. Most recently, one of the dramatic changes of CMIT is joining the Tradelens system released by joint venture companies Maersk and IBM. This helps the ships and foreign companies quickly develop the flow of goods to Vietnam, thereby increasing cooperation, exchange, and international trade for the Indo-Trans company. Logistics. Since then,

they are growing the economy of Vietnam's shipping industry in general and Indo-Trans Logistics itself in particular.

The cooperation and exchange of information between Maersk and the Ministry of Transport of Vietnam

In early March 2020, the representative of Maersk Group in Southeast Asia & Korea, Mr. Rene Piil Pedersen, had a meeting with Deputy Minister Nguyen Van Cong to introduce Tradelens technology to the Ministry of Transport of Vietnam. "Maersk Group wishes to share this technology for application in Vietnam's maritime industry," said Rene Piil Pedersen. Next, Cai Mep International Port had begun to conduct the test when the Margrethe Maersk mother vessel with a tonnage of 194,000 tons (DWT), with a capacity of over 18,000 TEUs, joined the port. This action is an essential milestone for CMIT and Vietnam's shipping industry, demonstrating the port's ability to become a regional transshipment hub for Southeast Asian cargo, This is especially so for the import and export goods of trade routes in Asia and Northern Europe. It was opening a unique bridge for Indo-Trans and foreign partners.

The costs of the shipping industry

Currently, the investment costs to build maritime routes are assessed below. Because maritime routes are mostly natural routes, it does not require too much investment capital or labor force to build, maintain, preserve except the construction of canals and port. Moreover, the shipping cost is meager due to the large tonnage of ships, the distance of transport usually has a broad average, and low payroll leads to high productivity in the shipping industry. Currently, the shipping cost is about 0.7 USD / kg/km, equal to 1/6 of the cost of air transport, 1/2 compared with rail and 1/4 compared to transportation by road car. In addition, in international trade, transport costs account for 10-15% of the FOB price or 8-9% of the CIF price. Compared with other modes of transport, shipping by sea will contribute to reducing product costs, thus increasing the competitiveness of such goods with goods of the same kind of other countries. That stimulates the consumption of customers,

makes the use of products as quickly and smoothly as possible with large quantities of goods, boosting production and trading activities to develop. Thus sea freight will play an essential role in promoting the export of goods between countries, which will increase both supply and demand for Indo-Trans Logistic.

CHAPTER 4: CONCLUSION

Through what has been studied, the difficulties of the world shipping industry are mainly due to the problematic legal procedures, the lack of transparency between processes, high labor costs, inventory, and the cooperation relationship has not closed between logistics enterprises and ports, warehouses. These causes have had a long-lasting impact on Vietnam's shipping industry and worldwide. On the other hand, recently the economic situation, as well as foreign relations between Vietnam and other countries in the world, are now increasingly cohesive, helping the exchange as well as promoting import and export cooperation. This will be considered as a premise to help Indo-Trans company have a stable launcher when it can attract investment capital as well as foreign partners. However, Indo-trans Logistics needs to explore and analyze when deciding to use Blockchain in its system, because at that time, the company must change the entire working system and require business partners of the companies must join this system. After all, we have had a pioneer in joining the Tradelens network in VietNam, Cai Mep International Terminal. That is why Indo-Trans Logistics Company can learn as well as refer to how to participate as well as workflow, policies and advantages and difficulties when applying Blockchain to import and export. From there, the company will be able to decide whether to join the Blockchain Tradelens system.

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