

The Role of Electronic Bill of Lading and Challenges to the Current Legal Framework

Xiaohao Zhu¹, Zhipeng Cui² and Pengfei Zhang³

1. Xiamen Pilot Station, Xiamen 361026, Fujian, China

1. Law School of Dalian Maritime University, 1 Linghai Rd, Ganjingzi District, Dalian 116026, Liaoning, China

3. Navigation College, Jimei University, Xiamen 361021, Fujian, China

Abstract: Many instruments have helped traders to effectively communicate, establish contracts, manage risk and protect their benefits while collaborating with people who have diverse cultural backgrounds. The B/L (bill of lading) has been one of the most significant documents in the shipping industry since it was invented in the 13th century in Italy. It is an evidence of existing contracts between the shipper and the carrier, in which both of them agreed to deliver the goods safely from the port of loading to the port of discharge. However, many problems are triggered by requiring the presentation of the original paper B/L at the discharging port so that the buyer gets the cargo in time. As of today, many attempts were carried out to develop an electronic equivalent to the paper B/L. Additionally, many practices were formed in order for these electronic equivalents to be legally reinforced and enhanced. This article presents the main transitional stages of these efforts and the status of this progress. It analyses the legal background which has been established to validate these ventures and the option of using an electronic B/L in order for the ships to be able to deliver the goods without the presentation of the original document. In the meantime, this article highlights potential areas for further investigation.

Key words: eB/L (electronic bill of lading), carrier, shipper, goods, technology.

1. Introduction

In the early days of commerce, the owner of the goods would often travel with the goods and sell them at their destination. He would tender the B/L (bill of lading) to the master at the discharge port and, in return, the master would release the goods to him or, at his personal direction, to the buyer. The function of B/L remained simple. As commerce became more sophisticated the merchants and traders became involved in more shipments and were unlikely to sail with any of them. In that circumstance it became important for them to be able to give the master orders as to the delivery of the goods. The delivery order would be written upon the B/L and would tell the master with whom he should deal at the discharge port [1].

The law developed alongside these commercial

developments and soon recognized the B/L as a document that gave certain rights to the person holding it. The transfer of the B/L accordingly became the practical method of transfer of ownership of the goods. It became a document of title.

However, today the need to replace the traditional paper documents due to technological changes in the maritime sector is obvious. In the last years, most of the business industries have already embarked on the digitalization path, which is believed as a crucial method to improve and provide a better quality to all the logistics facilities and data science management. With a few years of delay, also the shipping industry has been deeply influenced by this modernization phenomenon, especially most of the major companies are committed to exploiting this technology in order to be faster, more efficient, and to make fewer mistakes, which are quite common due to human errors. On the other hand, there are several disadvantages to using

Corresponding author: Pengfei Zhang, Ph.D., professor, research fields: maritime shipping, maritime law, maritime safety and security.

these technologies in the B/L procedure. Some of the shipping owners have immediately shown their disagreement to rely completely on blockchain technology, being afraid of getting hacked by malware generated by hackers [2].

In this paper, an analysis is carried out for the current legal framework concerning the use of eB/L (electronic bill of lading) and hypothetically this article will explore the possibility of delivering the goods with a paperless B/L. The authors will search for previous attempts which failed to produce the required results or for some successful tries of eB/L and the advantages or disadvantages for both eB/L and the paper one.

2. Traditional B/Ls and Created Problems

Usually, B/Ls are prepared by the shipper or his agent and rarely are prepared by the ship-owner, his agent or the master of the vessel. A B/L contains information about: the description/condition and quantity of the cargo, the loading port and the date of shipment (loading), the discharge port, the name of the vessel, if the charter fees have paid and the terms of carriage [1].

B/L has the three following functions: as a receipt which shows what has been loaded on the ship, as a document of title which shows who can demand the goods at the discharge port and as a contract of carriage. But its most important single feature is that the holder of a B/L can demand from the carrier delivery of the goods to him when they arrive at their port of destination [3].

Some issues are rising such as the difference between ship's and shore figures after the completion of loading operation, the pressure on the master to create clean B/Ls, asking for delivery of the cargo without an original B/L existing and sometimes ship's agent signs B/L without the advice of chief officer figures/papers or in excess of his authority from the master [1].

There are various problems which could affect the

delivery of cargo and extend the duration of the delays such as: when damaged or otherwise defective cargo is presented for loading, when master is asked to sign "clean" B/Ls when these are not justified, when ship and shore loading figures differ, when a charterer's B/L has to be used, when the number of original B/Ls shown on the face of the bill is not the same as the number of negotiable B/Ls, when two or more sets of B/Ls are requested by the shipper, when a B/L presented for signing is written in an incomprehensible foreign language or alphabet, when the master is asked to sign blank or partially completed B/Ls, when B/Ls have to be re-issued or amended, when the master is asked to pre-date or post-date B/Ls, when delivery of cargo is requested without presentation of the relevant B/L, when cargo delivery is requested against presentation of an original B/L carried on board, when two parties present "original" B/Ls and when the goods are unclaimed at the discharge port [4].

The delayed arrival of B/L at the port of discharge is a primary problem as many countries reported in the past. Other disadvantages of traditional B/L are the high cost of issuing and processing the documents and the fraudulent issuance of B/Ls. The possibility of inaccurate or insufficient information in traditional B/Ls is an ever-recurring problem [5].

In the last decades, there were huge changes in the maritime sector due to the introduction of new technologies. The faster ships which are built, the containerized cargo and multimodal transporters need the eB/L, the revision of current transport documentation procedures and the increased use of non-negotiable sea waybills. Consequently, the cargo arrives in destination port faster than before, spending less time loading and discharging of containerized cargo than in the past [6].

When a B/L is not available an LOI (Letter of Indemnity) is used to discharge the cargo. Even this is an issue which happens for a long time, non-availability or non-production of B/L is becoming

more usual. Sometimes the vessels arrive at the discharge ports prior to the completion of relative papers due to increased speed of transportation. Even though all the documents can be sent around the world, some delays are observed until B/Ls are released at the loading ports [7].

Protection and indemnity insurance does not cover any liability which arises due to mis-delivery of cargo. The directors will decide about the coverage by the club of a claim for liabilities. In any case, the ship-owner faces liabilities, for which he may not be able to recover from the P&I Club, in case he misdelivered cargo [7].

3. Previous and Existing Forms of Electronic Bills of Lading and Their Results

The meaning of EDI (electronic data interchange) is: computer to computer exchange of information in predetermined formats. EDI has many advantages such as: saving time, reduction of costs, decrease of the number of middlemen, increased accuracy and standardization of business communications [5].

As per Yiannopoulos, an EDI system called: "swift" (Society for Worldwide Interbank Financial Telecommunications) is currently used in international commerce by the banking industry for the communication of commercial letters of credit among banks worldwide.

Furthermore, an eB/L may be either negotiable or non-negotiable. The problems surrounding the development of an EDI system for non-negotiable B/Ls are relatively few and susceptible of swift resolution. The real challenge lies in the development of an EDI system for negotiable B/Ls. Electronic transmission and negotiation of negotiable B/Ls should be the ultimate goal of EDI use in the field of maritime law.

A London-based corporation formed by INTERTANKO and Chase Manhattan Bank was SeaDocs registry limited. The specific project began in 1986, but it had an active operational duration for less than one year. Under the SeaDocs system, the carrier

issued a traditional B/L; it was immediately taken out of circulation and deposited with SeaDocs, which functioned as a depositary-custodian of the paper-based original bill as well as a registry of B/L negotiations. Although the SeaDocs project failed to attract clients (trading partners and banks) to survive due to the following reasons: the expected expenditures of registry operations insurance, the disagreement of commodity traders to save the history of their deals in the system, the ultimate buyers hesitated to obtain B/Ls from a program which had created for speculators and intermediaries and finally the exclusive control of the registry business by Chase Manhattan Bank it is something negative for rest of the banks [8].

Another model for eB/L was offered by the CMI in 1990. Theoretically, that model could be used by carriers but there is not any evidence that some companies used it in practice. In general, the use of a unique code called "private key" is essential which is known only to the carrier and shipper. The goal of that system is to specify who the holder of eB/L is at any time and consequently who has the right/responsibility to handle the specific cargo and carry it to its destination. The carriers create the original paper B/Ls and are the parties who incur duties and liabilities under them. The CMI system recognizes the importance of the carrier's role. Online logistics services relating to the handling and stowage of the cargo are already made widely available by carriers and nowadays it is not hard for the maritime industry also to supply services such as those envisaged by the CMI rules [8].

An eB/L is not just another edition of a typical B/L. It is an ideal blend of a legal rulebook and technology which can replace and execute all the purposes of a traditional B/L. Since 80's many attempts took place targeting the creation of an eB/L [9].

Therefore, that system that is related to eB/Ls is Bolero. It is a closed (that is, member-only) system, which requires a would-be user to register as a member before it can use Bolero. Its legal framework which is

called Rulebook is followed by all members and gives us the definition of terms. Using a combination of notification and authentication with digital signatures Bolero operates the title registry and transfers possession of eB/Ls [10].

Today, an active system is set by the Korean Republic concerning the eB/L. Korea introduced a new article into its Commercial Act 2001 and issued a Presidential Decree implementing the article. The operator of the system is KTNET (Korea Trade Net), a private company which is selected by the Korean Ministry of Justice in order for an eB/L to be functionally equivalent to a paper bill.

An alternative electronic shipping document established in 2010 by ESS (Electronic Shipping Solution) is CargoDocs, an electronic shipping document exchange. The system was created five years before its establishment. ESS data bridge development group was set up as a forum for the promotion of the use of electronic documentation, and to develop the DSUA (Databridge Services & Users Agreement) and the ESS-Data bridge's functionality. Exporters, forwarders and logistics companies can manage the online creation and approval of trade documentation in our DocPrep+ module. Original documents required for export, shipping, trade, finance and import can then be electronically signed and exchanged in our DocEx module. CargoDocs digitizes all key original documentation, including bills of lading and certificates of origin. CargoDocs also enables Banks to manage financial messaging with their corporate customers, receive and digitize presented documents and offer financing under a 4-corner digital Bank Payment Obligations or Supply Chain Financing solutions. The solution combines title, quality, condition, location and other key data to reduce risk and improve visibility and control [11].

The third approved system is e-titleTM which is patented, peer-to-peer technology that enables the creation and transfer of title and negotiable documents, such as the B/L. As peer-to-peer technology, e-titleTM

works equally well in the back office of a carrier, bank or multinational company as it does when provided by an ASP (Application Service Provider) for SMEs (small and medium enterprises). e-titleTM enables title transfers by using peer-to-peer technology. This eliminates the reliance on costly central registries, reduces the concentration of risk, and ensures that the service provider or national platform maintains operational control over title documents [12].

Another system is the TradeLens platform that has been jointly developed by Maersk and IBM (International Business Machines). As an open and neutral industry platform underpinned by blockchain technology, TradeLens is supported by major players across the global shipping industry. The platform facilitates the transparent, efficient, and secure exchange of information in order to promote greater collaboration and trust across the global supply chain. It is built on a foundation of its global supply chain ecosystem, freight forwarders, comprising shippers, ports and terminals, intermodal operators, ocean carriers, customs brokers, government authorities and more. Each entity shares information that can be tracked, stored, and actioned across the platform throughout a shipment's journey. The platform brings the ecosystem together through a set of open standards. Powered by Hyperledger Fabric blockchain technology and IBM Cloud, it enables the industry to share transportation documentation and collaborate securely.

The eB/L faces many of the weak points of the paper system, with a number of advantages: first it can be sent worldwide immediately, reducing the administrative burden of trade, second any possible corrections that are required can be made more efficient and cheaper and third the electronic system is more secured than the paper one due to new electronic payment systems and concerning advances in security. This is obviously subject to cyber issues. The above benefits will minimize the circumstances where carriers discharge the cargo against LOI and of course,

will reduce the administrative costs [13].

4. Current Legal Framework about Electronic Documents

First of all, the authors have to indicate that the Hague-Visby rules set, clarify and govern the B/Ls limits for merchant fleet and the liabilities of involved parties in the charter. In fact, Hague-Visby rules do not describe the issues of electronic transactions and do not mention anything of eB/L as a possible replacement of paper B/L.

The convention of Rotterdam Rules is the first international sea transport treaty to contain framework provisions for the use of electronic means to supersede or offer an alternative to paper documents by article 8 which states: “(a) Anything that is to be in or on a transport document under this Convention may be recorded in an electronic transport record, provided the issuance and subsequent use of an electronic transport record is with the consent of the carrier and the shipper and (b) The issuance, exclusive control, or transfer of an electronic transport record has the same effect as the issuance, possession, or transfer of a transport document” [14].

The requirement in its first paragraph of consent to use such procedures is a central one, but only applies between carrier and shipper and does not require the consent of the consignee. The second paragraph is important in following a so-called “concept of equivalence” or “functional equivalence”, under which reasoning must proceed on the basis that the electronic transport record is regarded as the electronic equivalent of a negotiable paper B/L or a non-negotiable sea waybill (or other documents) [15].

Furthermore, the UN Convention on the Carriage of Goods by Sea, 1978 (Hamburg Rules) in article 14(3) indicates the following: “The signature on the bill of lading may be in handwriting, printed in facsimile, perforated, stamped, in symbols, or made by any other mechanical or electronic means, if not inconsistent with the law of the country where the bill of lading is

issued”. This suggests that accommodating an electronic document would not be a major obstacle since electronic signatures are normally attached to electronic documents. The only restriction placed by the convention is that the law of the country where the B/L is issued must recognize electronic signatures [16].

As per [17], in addition to the above, the UNCITRAL (United Nations Commission on International Trade Law) adopted the MLEC (Model Law on Electronic Commerce) in 1996. The MLEC divides into two parts: chapter 1 of second part contains Article 16 (actions related to contracts of carriage of goods) and Article 17 (transport documents). It targets to set a legal framework in order to recognize the title and transfer of rights in an electronic application. However, only a few countries have ratified, approved, and accepted the specific provision [18].

On the other hand, the @GlobalTrade system also incorporates the e-UCP (Uniform Customs and Practice), a supplement, in force since 1.4.2002, to the most recent edition of the ICC (International Chamber of Commerce) for UCP 500 Documentary Credits (Uniform Customs and Practice), the standard set of rules applicable to documentary credits. The e-UCP enables parties to conduct letter of credit operations in an electronic environment in combination with paper documents. The documents are tendered via the internet and the system focuses on letter of credit operations and offers a mechanism whereby documentary credits may be negotiated.

As is pointed out by Ref. [15] to use of eB/L to carry out a part of the applications which are executed by paper B/L (under the current legislation) it is difficult in practice. The use of a paper B/L to perform what we have called its “conveyancing” function at common law involves the transfer of possession of the paper bill and the same is true under the *Carriage of Goods by Sea Act 1992* when a B/L is used as a mechanism for the transfer of contractual rights.

Many of the problems and obstacles against the widespread use of eB/L are commercial and technical but not legal. In case the concerning parties in the transportation have the capability to use an eB/L, there is a possibility that the bankers or the insurers disagree with the whole procedure due to security issues or when local/national rules demand the traditional paper B/L. As a consequence, it is easy to understand that a commercial hesitancy exists to include the paperless transactions into the paper world of insurance and financial groups [2].

In the previous context, the authors described some attempts of previous decades which aimed through their different methods to establish the new electronic type of B/L. Specifically, we mentioned the Bolero system that under his rules sets the control of the transactions between the parties governing always by the English law [2].

The international group of P&I clubs has approved the following systems: Bolero, E-title and essDocs. It means that the involved people or companies using the approved systems will have the cover of the Club for P&I liabilities in case of incidents and they will also avoid the risks and dangers of non-approved systems [7].

Then, the South Korean Government rules and controls the private company which is called KNET. The legal structure of that country ensures that all the procedures will be followed according to their standards of eB/L [17].

Moreover, in line with Ref. [18] another framework that can support electronic commerce is the e-UCP Code because it “enables parties to conduct letter of credit operations in an electronic environment”.

Then again, the most recent adoption of a treaty related to electronic commerce is the “United Nations Convention on the Use of Electronic Communications in International Contracts” which entered into force on 1st March 2013 and aims to verify that contracts in an electronic environment are “are as valid and enforceable as their traditional paper-based

equivalents” [19]. Additionally, as per [19], this Convention “is particularly recommended for those jurisdictions that have not yet adopted any legislation on electronic commerce”.

Because of the absence of harmonised statutory related to electronic documents of title, numerous methods have been established in order to generate eB/Ls by formatting specific contracts with precise provisions requiring all parties to treat the electronic document exactly the same way with the paper one [20]. As per [1] an eB/L which is produced in the form of a multi-party contract is B/L in the eyes of the parties who sign the contract and it is not a B/L in the view of the law. These parties constitute particular contractual systems which are also known as “closed systems”.

5. Conclusion

In order to excess the created problems due to paper B/L it is of vital importance to replace the traditional B/Ls with the new electronic type of it. Of course, the existing legal framework needs to be revised or add the new parameters that the technology brings to us.

As we described in the previous chapters the first steps have already been executed and eB/L have been used in some cases. These steps could affect the procedures in the initial stages of widespread use of eB/L. The advances of eB/L are many: reducing costs, better security measures, faster discharging of cargo at the end of the trip, and higher efficiency. But, the truth is that eB/Ls are not used in most countries at the moment and the main obstacle is what has been termed “traditional inertia” [5].

Indeed, the legal issues relating to the eB/Ls are few such as the need for legislative authorization attributing to electronic communication of the function of traditional writing and signature requirements, determining the probative effect of electronically generated prints, and establishing the negotiability of eB/Ls. The eB/L is essentially a business rather than a legal decision. The international

and domestic law will supply the legal framework for the electronic documents as for the traditional paper documents in order to be operational and useful. Even though, business interests will eventually determine the use of eB/L outweigh concerns for privacy and the safeguarding of trade secrets, for accurate information and safe transactions and acquisition.

The future belongs to eB/L and all the participants have to work in that direction. A co-operation of involved parties (e.g. ship-owners, shippers, masters, agents, charterers etc.) is very important in order to achieve our target.

In the current shipping and trading world, it is clear that the potential benefits from eB/Ls are enormous and that this is the most accurate solution for delivering goods without the production of paper B/Ls. Obviously, it is also clear that many stakeholders are not confident to use eB/Ls because the legal framework of electronic documentation is still ambiguous. Apparently, the Rotterdam Rules were not adopted widely, and the other international treaties do not thoroughly cover the subject of electronic documentation.

However, it is evident that there are other options if the shipping business desires to use eB/Ls. It is not necessary for the industry to wait for a new convention to commence electronic transactions. The existence of clear international legal frameworks in many jurisdictions which allow e-commerce and the closed systems which have been developed these years indicates that the trading market is moving towards electronic solutions about the B/Ls.

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