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DEPARTMENT OF MARITIME STUDIES

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**The use of electronic Bills of Lading in Shipping
and the Legal Issues Arising**

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ABSTRACT

This master thesis is a study on the continuous improvement and development of the B/L from the first time such document was used in international trade until the appearance of the electronic documentation and the need of e- B/L in the shipping industry. The aim of the dissertation is to identify the obstacles and difficulties arising from the use of the traditional paper B/L, the necessity of the e-B/L and the advantages of the said electronic documentation, as well as the legal issues arising by its use with emphasis on the signature and authenticity issues.

E- transactions are growing rapidly which leads to traditional documentation to be gradually replaced by electronics. Because of the many advantages of electronic documents, many current paper documents in the maritime industry, including Bs/L have been replaced by electronics. The attributes of the three main functions of traditional B/L, namely the functions of receipt of goods, the evidence of contract of carriage and the document of title, arising questions whether e-B/L replicates these functions, whether the negotiability is achieved when using electronic systems and how the transferability will be made. Moreover, issues arising regarding the legality, confidentiality and security of e- B/L should be examined. To deal with all legal issues arising, regulations around the world, such as UNCITRAL Model law on electronic commerce and the CMI Rules for E- B/L shall be investigated. Taking into account the analysis of the four approved official electronic bills of lading platforms, namely Bolero, essDocs, E-titleTM and EdoxOnline, the problems of negotiability and transferring process have been a major source of concern in the shipping industry.

Keywords: Electronic Bills of lading, Bills of lading, Contract of carriage, Transport document

Η παρούσα μεταπτυχιακή διατριβή είναι μια μελέτη για τη συνεχή βελτίωση και ανάπτυξη της φορτωτικής, από την πρώτη φορά που ένα τέτοιο έγγραφο χρησιμοποιήθηκε στο διεθνές εμπόριο μέχρι την εμφάνιση της ηλεκτρονικής φορτωτικής και την ανάγκη της στη ναυτιλία. Σκοπός της διπλωματικής εργασίας είναι να εντοπιστούν τα εμπόδια και οι δυσκολίες που προκύπτουν από τη χρήση της κλασσικής φορτωτικής, η αναγκαιότητα της ηλεκτρονικής φορτωτικής και τα πλεονεκτήματά της, καθώς και τα νομικά ζητήματα που προκύπτουν από τη χρήση της, με έμφαση στα ζητήματα υπογραφής και γνησιότητας.

Οι ηλεκτρονικές συναλλαγές αυξάνονται με ταχείς ρυθμούς, γεγονός που οδηγεί στη σταδιακή αντικατάσταση της κλασσικής φορτωτικής από την ηλεκτρονική. Λόγω των πολλών πλεονεκτημάτων των ηλεκτρονικών εγγράφων, πολλά έγγραφα στη ναυτιλιακή βιομηχανία, συμπεριλαμβανομένων των φορτωτικών, έχουν αντικατασταθεί από ηλεκτρονικά. Τα χαρακτηριστικά των τριών κύριων λειτουργιών της παραδοσιακής φορτωτικής, δηλαδή οι λειτουργίες της απόδειξης παραλαβής εμπορεύματος, η απόδειξη της σύμβασης μεταφοράς και η χρήση ως έγγραφο απόδειξης της κυριότητας, εγείρουν ερωτήματα σχετικά με το κατά πόσον η ηλεκτρονική φορτωτική αναπαράγει αυτές τις λειτουργίες, κατά πόσον η δυνατότητα διαπραγμάτευσης επιτυγχάνεται κατά τη χρήση ηλεκτρονικών συστημάτων και τον τρόπο με τον οποίο θα γίνει η δυνατότητα μεταφοράς. Επιπλέον, θα πρέπει να εξεταστούν ζητήματα που προκύπτουν σχετικά με τη νομιμότητα, την εμπιστευτικότητα και την ασφάλεια της ηλεκτρονικής φορτωτικής. Για την αντιμετώπιση όλων των νομικών ζητημάτων που προκύπτουν, θα εξεταστούν διεθνείς κανονισμοί, όπως ο κανονισμός της UNCITRAL για το ηλεκτρονικό εμπόριο και οι κανόνες της CMI για τις ηλεκτρονικές φορτωτικές. Λαμβάνοντας υπόψη την ανάλυση των τεσσάρων εγκεκριμένων επίσημων ηλεκτρονικών λογαριασμών των συστημάτων έκδοσης φορτωτικής, δηλαδή των Bolero, essDocs, E-titleTM και EdoxOnline, τα προβλήματα της δυνατότητας διαπραγμάτευσης και της διαδικασίας μεταφοράς αποτέλεσαν σημαντική πηγή ανησυχίας στον τομέα της ναυτιλίας.

Λέξεις κλειδιά: Ηλεκτρονικές φορτωτικές, Φορτωτικές, Σύμβαση μεταφοράς, Έγγραφο μεταφοράς

1. Introduction

The rapid changes in technology and the quick “tempo” of international transactions and international trade requires many modifications in the existing documentary procedures and are asking for a radical approach to many problems arising from the use of modern technology in shipping industry.

Shipping industry is a primary user of all the electronic means of communication which are used for the transmission of any kind of information, from vessel’s characteristics to B/L data. The main query arising is if the electronic means of communication could ever be used for the development of alternative uses to the traditional paper documentation used in shipping, and more specifically, for the transmission of the paper B/L to e- B/L. In order to achieve this, the new form of electronic documentation should be acceptable by the main parties dealing in shipping transactions, including the carriers, consignees, receivers, shippers, banks, underwriters and of course, Protection & Indemnity Clubs (P&I Clubs).

Surveys conducted by UNCTAD shown that the “players” in shipping industry, in order to accept the use of e- B/L in the shipping market wants same to satisfy two main requirements: on the one hand they believe that e- B/L should have the same functions as the paper B/L (receipt of goods, evidence of contract of carriage and document of title) and on the other hand, to enjoy the same legal recognition. Generally, the main wish is the e- B/L to be functional and legal equivalent to its predecessor, the paper B/L. Further to the above, even nowadays that the industry is more familiar with the use of electronic documentation, there are many legal issues arising from the use of e- B/L in shipping industry and international and national legislations are trying to create a regulatory regime which would keep up with the demand of the use of e- Bs/L.

1.1 Aims and objectives

The aims of this research are to:

- i. Examine the main types of B/L already existing before the use of e-B/L, their functions and disadvantages which make the transmission to e- B/L an even more urgent need;

- ii. Determine the extent to which e-Bills have become an alternative to the traditional B/L;
- iii. Discuss the historic journey of B/L and discover how the legal framework governing the e-B/L has been changed and amended throughout these years;
- iv. Analyze the main systems approved by the IG of P&I Clubs for the issuance of e- B/L and discuss the legal issues arising from such issuance;
- v. Identify the main legal issues regarding the authenticity of the e- B/L and the execution of same.

The objective of this master thesis is to demonstrate for the easy reference of the whole shipping industry the necessity of using e-Bs/L in a constantly technology-developed world.

Therefore, several questions will be trying to be answered. To begin with, what is a B/L, what an e- B/L and which are the differences between those two? How trading and the use of documentation are developed to reach today the use of e-B/L? What are the functional and legal problems arising in a paperless era and are e-Bs/L functional and legal equivalent to paper B/L?? The transmission from B/L to e- B/L is an easy procedure? What are the technology platforms for the issuance of such bills and how they work? Moreover, what is the legal framework governing e- Bs/L? After thorough examination of bibliography and scientific articles, all the above questions is expected to be sufficiently answered and the legal perspective of e-B/L to be clearly identified and analyzed.

1.2 Methodology

As mentioned hereinabove, the main objective of this master thesis is to demonstrate the necessity of the using of e-Bs/L in a shipping industry that is deeply involved with technology. This research is initiated with the introduction the basic information of B/L including the definition of the B/L, its historic journey, its types, main functions and the disadvantages of the traditional B/L and continues with an introduction in e-B/L, its issuance systems and the legislation governing its use which will refer the existing regulations of international conventions in this field. In the next part of e-Bills, the comparative and critical methods will be applied in order to examine the

pros and cons of them. The national and international regulations, laws and legislations are the main sources of study. In international level, the Hague Rules¹, Hague- Visby Rules², Hamburg Rules³, Rotterdam Rules, CMI Rules, UNCTRAL Model Law and Model Law on Electronic Transferable Records, as regards the use of e- B/L, will be thoroughly discussed.

1.3 Master Thesis Structure

Chapter 1 provides a general background of the chosen topic. It sets out the research questions and the aims of the thesis and describes the adopted methodology to achieve the objectives of the dissertation.

Chapter 2 examines the definitions of the B/L, the historic journey of the B/L and its functions in global trade. Various types of B/L, their common ground and different parts are also examined. This chapter emphasizes in the need of functional and legal equivalence between the traditional B/L and the e-B/L and indicates which functions of the paper B/L need to be reflected on the e- B/L.

Chapter 3 is dedicated to the analysis of the advantages and disadvantages of both traditional paper B/L and the e- B/L and indicates the various problems arising from the paper-based trade with emphasis to security and cyber problems arising. The emergence of e-Bills are also analyzed as an conclusion to the various severe problems of the paper B/L.

Chapter 4 is an introduction to the basis elements of the e- B/L. It is dedicated to the analysis of International Data Interchange System and to the systems for the issuance of e- Bs/L which are approved by the International Group of P&I Clubs, including the Bolero System, EssDocs, E-Title and EdoxOnline.

Chapter 5 discusses the criteria of the e- Bs/L, the legal framework of the e-bills and, in particular, the international legal instruments views against the criteria for e-Bills.

¹ The Hague Rules: International Convention for the Unification of Certain Rules of Law relating to Bills of Lading 1924

² The Hague-Visby Rules: Protocol to Amend the International Convention for the Unification of Certain Rules of Law relating to Bills of Lading 1968, 1979

³ The Hamburg Rules: United Nations International Convention on the Carriage of Goods by Sea 1978

Chapter 6 discusses the main legal issues arising from the use of the e- Bs/L and, in particular the questioning around the authenticity of the electronic documents used in the shipping industry and the way of execution of same so to avoid fraudulent acts.

Chapter 7 concludes the paper with the position that, though much attempts has been accomplished to replicate the traditional functions of the e-Bills, greater tasks lie ahead.

2. Introduction to the traditional paper B/L

2.1 Definition of B/L

In maritime industry, the simplest definition for the B/L is as a receipt of the loading (the lading) (Georgios, 1999).

Article 1 paragraph 7 of the Hamburg Rules provides that “*B/L is a document which evidences a contract of carriage by sea and the taking over or loading of the goods by the carrier, and by which the carrier undertakes to deliver the goods against surrender of the document. A provision in the document that the goods are to be delivered to the order of a named person, or to order, or to bearer, constitutes such an undertaking*”. Further to this definition provided by the law, in *B.M. Ltd. v. Woermann-line case*⁴, the court described the B/L as “*A written document signed on behalf of the owner of the ship, in which goods are embarked, acknowledging the receipt of the goods and undertaking to deliver them at the end of the voyage, subject to such conditions as may be mentioned in the bill of lading. The bill of lading is, therefore, a written contract between those who are expressed to be parties to it*”.

In simply words, a B/L is a legal document issued by the Master of the vessel on behalf of the carrier of the goods (usually a transportation company) to a shipper that contains information relating to the goods (description, quantity and apparent quality), to the shipper (name and address), to the vessel (name), to the port of loading and discharging (destination), to the consignee (name and address) and to the notify address (name and address). This bill acts as a receipt of goods, as an evidence of contract of carriage and as a document of title.

However, around the commercial world, the B/L is recognized as a document within the various national jurisdictions with a variety of names. For example, in Spanish

⁴ *B.M. Ltd. v. Woermann-Line* (2009) 13 NWLR (Pt.1157) 149 S.C

law it is described as *conocimiento de embarque*, in Italian law as *polizza di carico*, and in French law as *connaissance*. Despite the differentiation among the various jurisdictions, all national laws recognize the main features and functions of the B/L and B/L convey the same legal meaning to the courts, that is to say, a document evidencing loading of goods at ship (Jafari, 2015). But, as already mentioned above, the proper definition of a B/L has a much broader scope than that. The B/L may be functions as a receipt signed by or on behalf of the carrier and issued to the shipper acknowledging that goods, as described in it, have been shipped in a particular vessel to a specified destination or have been received in the ship-owner's custody for shipment. It is also described as a document issued by or on behalf of the carrier or master to the shipper or consignee in three originals with the specification of goods and the receiver at the port of discharging.

2.2 Historic journey of the B/L

B/L is the basic means to evidence the contract of affreightment. While the charter party is used when the charterer wants to hire the vessel for the transportation of cargo from one port (Port A) to another port (Port B) (voyage charter party) or for the carriage of goods during a specific period of time (time charter party) and it is the document which governs the relationship between the shipowner and the charterer, the B/L is used when the cargo that is going to be shipped is only a part of the total cargo the ship will carry during a particular voyage undertaken by the carrier/shipowner. B/L is issued by the Master representing the shipowner on board the vessel evidencing that the cargo is delivered and loaded on the vessel. B/L is issued in exchange of the Mate's Receipt, which is a document daily drafted by the Chief Officer or the Chief Mate acknowledging the quantity and the condition of the cargo received for transportation by sea. The individual in possession of the Mate's Receipt can claim the issuance of the B/L in exchange of the latter.

The first use of the B/L is dated back in the fourteenth century. During that time the B/L was considered as a non-negotiable receipt issued by a shipowner evidencing the for cargo received and it was addressed to a merchant who did not intend to carry his goods during his voyage. Similarly to nowadays, the B/L acted as a proof of the type and quantity of cargo shipped and the condition in which it was received. Shortly, the terms of the B/L were incorporated into the actual contract of carriage in order the

disputes arisen between the cargo owners and the carriers be resolved. By this time, B/L had two of its main functions: it acted as a receipt of goods and as evidence of the contract of carriage.

Four centuries later, during the eighteenth century, the B/L acquired its third characteristic, known today as the document of title. B/L began to act as a negotiable document which could be endorsed in order the ownership of the goods referred in the B/L to be transferred. In this way, the merchants could sell their cargo during transit, before the vessel reached the port of destination.

During all these years, the liability of the carrier under the B/L was strict, subject only to the common law exceptions, namely, act of God, public enemies, or inherent vice. In case of an excepted loss, the carrier was still liable if the loss incurred because of his negligence. Shortly, during the nineteenth century, some carriers tried to exempt themselves from liability for losses incurred from their own negligence in the duty of the care of cargo. Of course, shippers, bankers and underwriters were against this practice. This situation led many countries to produce model Bs/L to cover certain trades, while others introduced legislation designed to curb the excesses of an unbridled *laissez faire*⁵.

The first international legislation governing carrier's liability was the Hague Rules. Hague Rules were drafted by the Maritime Law Committee of the International Law Association during a conference held in Hague in 1921, upon initiative of many shipowners' representatives, shippers, underwriters and bankers coming from the major maritime nations. These rules, as amended during the next coming years, were incorporated in the international convention signed in Brussels on the 25th of August 1924. The goal of the said rules was to unify all rules governing the Bs/L and to establish a minimum protection degree of protection for the cargo owner who delivered his cargo to the carrier for transportation. Generally, Hague Rules were the main set of rules establishing carrier's liability and carriers' immunities of liability through the provision of a comprehensive legislation which defined carrier's main

⁵ For example, the Harter Act 1893 in the USA governs the regime of the exclusion of carrier's liability for loss resulting from fault in the care and custody of cargo. Similar legislation was passed in some Commonwealth countries. However, this kind of legislation was proven to be insufficient, but many shipowning countries feared that an abandonment of a policy of freedom of contract would inevitably lead to an increase in freight rates which would place their carriers at a disadvantage. The only solution to this problem would be an international agreement which would govern the carrier's liability regime.

obligations and his maximum protection deriving from the various exemption and limitation clauses inserted in the contract of carriage. It is an international convention imposing minimum standards upon commercial carriers of goods by sea. The United Kingdom ratified the Hague Rules and the Hague rules were brought into English law by the Carriage of Goods by Sea Act 1924 (Green et al, 2018).

Although Hague Rules were happily adopted by many shipowning countries (because of the beneficial provisions in the subject of carrier's liability), they were criticized by many other countries for their narrow area of operation and because the rules were biased in favor of the carrier. This criticism led to many amendments of the rules which were incorporated into a document known as the Brussels Protocol, the text of which was agreed at an international conference held in Brussels in February 1968. The revised rules incorporating the amendments contained in the Brussels Protocol are known as the 'Hague/ Visby Rules'. In the United Kingdom, Hague- Visby Rules were brought into force by the Carriage of Goods by Sea Act 1971, an updated version of Carriage of Goods by Sea Act 1924. By the incorporation of the Hague-Visby Rules into the B/L a fair system was ensured as both the rights and liabilities of the carrier and the cargo owner and the specified maximum exclusions of liability were defined.

Some years later, in March 1978, Hamburg Rules were introduced and came into force on 1 November 1998. The Hamburg Rules is a set of rules governing the international shipment of goods, resulting from the United Nations International Convention on the Carriage of Goods by Sea adopted in Hamburg on 31 March 1978. The Convention was an attempt to form a uniform legal base for the transportation of goods on oceangoing ships. As of March 2021, these rules have been ratified by 35 countries⁶. However, Hamburg Rules was quite unpopular among the shipowners as they extend carrier's period of responsibility and therefore, the carrier under the Hamburg Rules is "*responsible while in "charge" of the goods at the port of loading, during the carriage, and at the port of discharge*", i.e. normally from time taken over from shipper to time delivered to consignee. Moreover, Hamburg Rules expanded the meaning of the carrier to "*any person by whom or in whose name a contract of*

⁶ Albania, Austria, Barbados, Botswana, Burkina Faso, Burundi, Cameroon, Chile, Czech Republic, Dominican Republic, Egypt, Gambia, Georgia, Guinea, Hungary, Jordan, Kazakhstan, Kenya, Lebanon, Lesotho, Liberia, Malawi, Morocco, Nigeria, Paraguay, Peru, Romania, Saint Vincent and the Grenadines, Senegal, Sierra Leone, Syria, Tunisia, Uganda, Tanzania, Zambia

carriage has been concluded with a shipper”, covering both the “actual” and “contractual” carrier.

The most recent form of legislation covering Bs/L is the Rotterdam Rules, which is a treaty proposing new international rules to revise the legal framework for maritime affreightment and carriage of goods by sea. The Rules primarily address the legal relationship between carriers and cargo-owners and covers the contract of carriage “from one place to another” not only by sea and, possibly, any other modes of transport. These rules are not actually used as of today, only four countries have ratified them⁷.

Over the years, there has been effort to displace the traditional paper Bs/L with the electronic ones. More specifically, there have been attempts since the 1980s to replace traditional paper B/L by introducing the E-Bs/L. This process is relatively slow, but over the past few years BOLERO and ESS (two E-Bs/L providers approved by the International Group of P&I Clubs) have reported substantial growth in the use of their platforms (Winter, 2018).

2.3 Types of Bs/L

B/L has not a standard type around the world and it bears local and functional variation from country to country as far as the negotiability and the parties taking part in the transaction, are concerned. To better understand the functions of this document and its legal importance, the different types and forms should be examined. The list of types of B/L is indicative, the forms of B/L vary from place to place and its country recognizes regional and local variations in the names, types and characteristics of B/L.

2.3.1 *Straight/ Non – Negotiable B/L*

A B/L is considered to be a straight or non- negotiable when it cannot be transferred to a third party, it is a non- transferable bill. This means that the Article 1 paragraph 7 of the Hamburg Rules is not include in its definition this kind of B/L. However, a definition of this type of bill is included in the Act of 1916 stating that a straight B/L is a bill in which goods are consigned or destined to a specified person named under the bill. The cargo referred in a straight B/L is going to be delivered only to the name consignee of this particular bill as same cannot be endorsed to a third party. So,

⁷ Spain, Cameroon, Congo and Togo.

irrespective of any kind of negotiation between the parties or endorsement of the document, the goods cannot be delivered to anyone else other than the named receiver. However, in this type of B/L, a clause can be added stating that the shipper/ carrier may have the choice or the right to redirect the cargo on board to any other vessel under this non-negotiable bill. This type of bill seems that it provides the shipper with possessory rights over the cargo through constructive possession of the cargo while in transit. But this is far from the truth. Instead, at least once, this B/L makes possible the transfer of possessory rights to a person who should present the B/L at the port of delivery and claim delivery of the cargo. This is the reason why some scholars have argued about the establishment of constructive possession over the cargo under a straight bill provided that the shipper has no right to transfer the possession of goods and the constructive possession for more than one time, when he claims delivery at the port of discharge.

2.3.2 *Order B/L*

The Order B/L is exactly the opposite of the straight B/L as analyzed hereinabove. The Order B/L is a negotiable bill which provides the obligation to deliver the cargo on board to the named receiver stated in the bill or to any other assigned representative⁸. It is common for the person mentioned on the face of the B/L to be the shipper who further endorses the B/L in favor of the new buyer of the cargo once the shipper secures the payment against the initial contract of sale. Since possession rights over the cargo are transferred by the endorsement of the B/L, all the parties involved, from the shipper to the last endorsee and the carrier, are obliged to rely on the information provided in the initial B/L as the quantity of the cargo, the dates of shipment and delivery and the order of negotiability are concerned. Especially in the case of blank endorsement⁹, where the holder of the B/L shall claim the delivery of the goods pursuant to the same legal statute as of the bearer bill in the banking industry.

2.3.3 *Blank/ Bearer B/L*

Under a blank or bearer B/L, the unnamed bearer of the B/L is entitled to claim the delivery of the cargo. When this type of bill is issued, no mention is made in the name of the

⁸ Section 3, Federal Bill of Lading Act, 1916 USA

⁹ A blank endorsement is a signature on a financial instrument such as a check. No payee is specified, so any holder of the instrument could claim payment. The signature essentially turns the instrument into a bearer security. That is, it is not registered to any individual but is payable to the person who possesses it.

receiver are included and therefore, the carrier of the goods is obliged to deliver same to the holder of the B/L or to its endorsee as evidenced by in the document. This type of B/L can change holders without the endorsement procedure or shall be endorsed in ink if this is what the endorsee desires. In any case, the initial B/L remains blank and so it is considered to be a bearer bill. The wording “to the bearer of the document” on the face of this B/L indicates that the bill is a bearer one. Any name or the wording “as to the order thereof” should not be mentioned in the text of the bill.

However, as any other type of B/L, the bearer B/L functions as a document of title over the goods and the holder of the bill have possessory rights over the cargo as any other named consignee/ receiver. The bill of lading is thus the evidence of the transfer of title it is holding.

2.3.4 Clean and Claused/ Unclean B/L

B/L has three main functions: it is a receipt of goods, an evidence of the actual contract of carriage and a document of title. As an evidence of the contract of carriage, the B/L contains all the information relevant to the cargo such as the quality, quantity, description, characteristics and apparent good condition and order together with information regarding the receiver and the port of discharge. Therefore, B/L is a document of trade that contains important information about the cargo and reflects the terms and conditions of the contract of carriage, which means that if a party go against its rights and duties, will have to face the consequences of the law. B/L is also an important document in the banking sector as it enables the shipper to secure credit from a bank for the cargo shipped to delivery. To do that, the B/L must be free from any kind of clauses and defects (Mulligan, 1999). Based on what it is the condition of cargo at the time of loading, two different bills can be issued: the clean B/L or the cloused/unclean B/L.

A clean B/L is issued and signed by the Master of the vessel in favor of the shipper if during the loading of the cargo and after an inspection from the Master, the cargo is found to be in “apparent good order and condition” which means that it is properly packed and the clerk of the vessel is satisfied with the condition of the goods. Master’s inspection ensures that the cargo is free from physical defects. Not only the cargo but also the documents of carriage are examined to ensure that the cargo is free from any charge, such as a lien or bail upon them. The issuance of a clean B/L

enables the shipper to sell the cargo to a third party while in transit as this clean bill provides confirmation to the future buyer as to the good condition of the cargo he buys. Moreover, in order the banks to proceed with the Letter of Credit procedure, they are require a clean B/L.

On the other hand, if during the Master's inspection, the Master finds out that there are deficiencies on the cargo loaded, meaning that the cargo is not properly packed or the condition of the goods does not go along with the condition stating in the documents presented, the Master will signed a claused B/L. So, in claused B/L there are remarks showing deficiencies and the goods are not described to be in "apparent good order and condition".

2.3.5 Combined Transport and Through B/L

When a B/L is issued as a Combined Transport B/L, it involves multiple modes of transport from the place of receipt of the goods to the place of delivery of same and all these movements are carried out as a single contract by multiple service providers under the employment of the carrier. More that one carrier undertakes to carry the cargo by using different modes of transportation. Carrier takes responsibility for any loss or damage for the entire transport including the sea and other mode of transport

On the other hand, the through B/L covers more than one stage of the voyage and usually involves more transportation types combining the sea, air and rail transport. However, the sea transport remains the main mode. Or, otherwise, through B/L is issued when one mode of transportation is used but from two or more different carriers/subcarriers (Jafari, 2015).

2.4 The Functions of B/L

The bill of lading is a legally binding document containing all necessary information to accurately process a shipment. It has three main functions. First, it acts as a receipt of the goods received by the carrier. Secondly, it is a document of title to the goods described in the bill of lading. Finally, the B/L is the evidence of the contract of carriage as it represents the agreed terms and conditions for the transportation of the goods.

2.4.1 Receipt of cargo

The B/L acts as a receipt of the goods received as it states the date on which the quantity of goods mentioned in the B/L were received by the carrier. It is also evidence of the apparent (good) order and condition of the goods including any marks of deficiencies. The Master examines the daily- issued Mate's Receipts and performs draught survey, in order to be sure that the cargo is in good order and condition, in accordance with the information provided by the Mate's Receipt. If the Master finds that the cargo is in apparent good order and condition, then he signs a "Clean" B/L, which means that the cargo loaded on board the vessel is clean of remarks as to the condition of the cargo showing any deficiencies. Letter of Credit transactions call for clean Bs/L where the goods are described to be in "apparent good order and condition". Otherwise, the Master could issue "Unclean"/"Foul"/"Dirty"/"Claused" B/L showing that there are remarks and deficiencies on the goods which are not described to be in apparent good order and condition.

Pursuant to Article III Rule IV of the HVR "*Such a bill of lading shall be prima facie evidence of the receipt by the carrier of the goods [...] However, proof to the contrary shall not be admissible when the bill of lading has been transferred to a third party acting in good faith*". On the other hand, B/L is conclusive evidence between the carrier and a third-party receiver once the document is endorsed and the ownership of goods is transferred to a third party who has been transferred the bill of lading in good faith (Anderson, 2018). For this reason, the Master should accurately describe the goods received on board.

2.4.2 Document of Title

A "negotiable" B/L functions as a document of title, evidencing the legal owner of the cargo during the transit of same. The B/L is a representation of merely the goods transported and possession of the B/L is treated as equivalent to possession of the goods covered by it¹⁰ (Wilson, 2010). The rightful holder of a B/L is the owner of the

¹⁰ As per Bowen L.J.'s reference in the *Sanders v Maclean*: "*A cargo at sea while in the hands of the carrier is necessarily incapable of physical delivery. During this period of transit and voyage the B/L, by the law merchant, is universally recognized as its symbol and the indorsement and delivery of the bill of lading operates as a symbolic delivery of the cargo. Property in the goods passes by such indorsement and delivery of the bill of lading whenever it is the intention of the parties that the property should pass, just as under similar circumstances the property would pass by an actual delivery of the goods . . . it is the key which, in the hands of the rightful owner, is intended to unlock the door of the warehouse, floating or fixed, in which the goods may chance to be*".

goods and therefore, he has the right to take possession and delivery of the goods upon surrender of an original B/L (Anderson, 2018). Moreover, the lawful holder of original B/L, has the right to sue under the contract of carriage and upon demanding the delivery of the goods, he undertakes all liabilities under the contract as if he had been an original party to it.

The lawful holder of the B/L can be defined as the person in possession of the B/L in good faith. This person can be either the one who is identified in the B/L as “consignee”, or the endorsee of the B/L.

The possession of the B/L is considered as equivalent to the possession of the goods in transit when the holder of the B/L is entitled to deliver the goods at the discharging port, when he can transfer the ownership of the goods referred in the B/L to a third-party during transit¹¹ by the endorsement of the document (in case that the B/L in “negotiable”. Otherwise, in case of a “non-negotiable” B/L where the goods are to be delivered only to a specific person, the B/L cannot act as a document of title as it cannot be endorsed) and when the B/L is used as security for a debt or as a financial credit (Wilson, 2010).

The endorsement of the B/L assigns the right to the endorsee to receive the cargo when it arrives at the discharging port, and it be discharged by the carrier. In order to claim the cargo at the port of discharge, the endorsee should present the original B/L bearing the endorsement towards him.

The function of B/L as a document of title plays also an important role in financial transactions. The seller and buyer of the cargo agrees on a sale contract specifies price, quantity, time, and place of delivery. In order to pay for the goods, the buyer has to liaise with his bank for the issuance of a letter of credit with the seller as beneficial, which is usually funded by a loan or by buyer’s account balance if sufficient funding is available. This letter of credit enabled the seller to have liquidity available at his bank and he can easily proceed with the settlement of any amount due because of the contract of sale immediately when the delivery conditions of the contract are satisfied.

¹¹ This does not mean that the cargo need be at sea, but just in carrier’s possession carrier not yet be handed over to the party entitled to delivery at the destination port.

Once the conditions of the contract are satisfied, the Seller present the B/L to the bank in order to proceed with the withdrawal of his last payment. As, the buyer is deemed to be the owner of the goods once he confirms that the shipment meets the requirements stated in the contract of sale, the B/L should be forwarded to the buyer's bank in exchange for payment and afterward to the buyer to claim the goods once delivered.

When the goods arrive at the discharging port, the buyer exchanges the B/L in return with his cargo. Then, the seller can claim final payment from its bank though the letter of credit.

2.4.3 Evidence of contract of carriage

Although on the reverse side of any B/L, a whole set of contractual terms is printed, these terms do not form an actual contract of carriage. B/L is not a contract of carriage itself but it acts as evidence of the actual contract of carriage agreed orally between the carrier and the shipper long before the issuance of the B/L. The terms are inferred from the carrier's sailing announcements and from any negotiations with loading brokers before the goods are shipped (Wilson, 2010).

The fact that the B/L functions as the evidence of the contract of carriage, prevents the parties of the original contract to alter the terms and conditions of the carriage when the B/L is transferred from the shipper, such allocation of liability or limiting liability further.

If the cargo was damaged before the issuance of the B/L, the shipper will be able to claim under the contract of carriage as if the B/L had been issued (Anderson, 2018). The abovementioned fact it is clearly indicated also by case law as in the *Pyrene v Scindia Navigation Co [1954]* case¹², the judgement stated that “*damaged or lost goods prior to the issue of the bill of lading will not deprive the shipper from*

¹² Based on the facts of this case, the plaintiff delivered a fire tender which was sold by a contract of sale. As the tender was being lifted onto the ship, before it crossed the rail on the ship, it was dropped and damaged. As per the contract of sale, the possession of the property had not passed at this stage. A B/L had been drawn up but was not issued. The sellers sued the owners of the ship for the cost to repair the tender and claimed that as the goods had not crossed the rail of the ship, the incident had occurred off of the ship and therefore outside the scope of the **Hague Rules**. On the other hand, the owners of the ship admitted liability but argued their liability would be limited by the **Hague Rules, Article 4 (5)**. It was held that limited liability under the **Hague Rules** did extend to the loading of the cargo on to the ship and that the B/L was irrelevant and the contract could be regarded as the incomplete bill of lading on the basis that all three parties were deemed to have a benefit from the agreement.

remedies for breach of contract". However, if the relationship between the carrier and the consignee is concerned, this relationship is governed by the B/L as, in this case, it is the contract of carriage between these two parties.

2.4.4 Which functions of the B/L need to be reflected on the e- B/L?

As mentioned above, the B/L has three functions: it is a receipt of goods received, it is an evidence of the actual contract of carriage and it acts as a documents of title. This last function is the most difficult one to be reflected on the electronic form of this kind of document. However, in order an e- B/L to be an acceptable transport documents, all the abovementioned functions should be reflected on the e- B/L. Otherwise, the e- B/L will not be an equivalent substitute of the traditional bill. If the three function of the paper B/L can be reflected on electronic forms depends on the law of the country where the e- B/L is issued given the fact that the law of this country regulates the transaction. For instance, electronic forms of documentation are not govern by Carriage of Goods By Sea Act (COGSA) which is the law recognizing the transport documents in the USA. The functions of evidence of contract of carriage and receipt of the goods delivered for transportation can easily be reflected on electronic documentation as they are essentially the transfer of information. Pursuant to the provisions of COGSA, the carrier is required to deliver to the shipper a B/L which states "[e]ither the number of packages or pieces, or the quantity or weight, as the case may be, as furnished in writing by the shipper". Any kind of information may appear in e- Bs/L in order the latter to satisfy the function of receipt of the goods.

But, the function of the B/L as a documents of title is of utmost importance and must be reflected in the electronic form of the document as it signifies three main uses of the B/L: it declares that the possession of the B/L constitutes constructive possession and control over the cargo it represents, it shoes that the B/L can be used to transfer the ownership of the cargo while in transit and lastly, it denotes that the B/L shall be used to provide security over the cargo it represents (Dubovec, 2006). Even though the fact that one of the most significant functions of the B/L is the provision of acceptable security over the cargo it represents, little attentions is devoted to this element. Most jurisdictions regulate the first analyzed functions but the security provision is usually covered by secured transaction laws. It is common secured transaction laws not to provide sufficient provisions that could lead the bank or other

lenders throughout the process or creation and provision of a security interest in an e-B/L and therefore, the electronic replication of traditional documents of possession would not be possible. So, it is of utmost importance the e – B/L to comply with the legal requirements of traditional transport documents, and in particular, with the creation of collateral security for banks (Dubovec, 2006).

The ultimate business function of e- B/L, negotiability, can be performed only after the recognition that all the traditional functions of the traditional B/L can be performed by electronic transmission of information.

3. Advantages VS Disadvantages

3.1.The problems arising from the “paper-based” trade

Although the shipping industry is constantly developed and technological achievements are introduced mainly in the ship building sector, in terms of speed, navigation and loading methods, the way of handling the documentation needed in international trade remains obsolete. The use of paper documentation in international trades bears many risks and have disadvantages as far as money, arrivals, security and environment are concerned. More specifically, traditional-paper B/L has to deal with various problems like delayed arrivals and high costs, insufficient and inaccurate information incorporated in the document and fraudulent issuance.

3.1.1. Time/ Money Consuming

The main disadvantage of the paper B/L is that it cannot keep up with the fast-paced global trade. The reasons for delays are plenty, mainly arising from the carrier’s side. One main reason of delay is the actual speed of the carriers which is swifter than the communication of the B/L after completion of all its legal formalities. Furthermore, if the carrier is not in possession of the original B/L to be given to the receiver in order the latter to be able to claim delivery of the cargo, the receiver/ buyer will be forced to claim delivery without having a valid B/L, which fact creates liability to the carrier. Delivery of goods to someone who is not the holder of a valid B/L means that the carrier is liable both on the basis of tort and on the basis of breach of contract.

In view of the above, the most important disadvantage of the use of the traditional B/L is that the transfer of the hardcopy of the B/L between two points takes time, which often results in late arrival of the B/L at the discharging port, where it is used by the individual in possession of the B/L to receive his cargo.

While the receiver is not in possession of the B/L because of the delay of its arrival, carrier cannot deliver the cargo. Waiting at the discharging port for the B/L to arrive, may impose to the carrier demurrage fees, storage costs and further delays. The B/L is the document of title of the goods and therefore, the carrier should deliver the cargo to the legal holder of the B/L. Otherwise, he bears the risk of mis- delivery and he will be liable against the actual and legal receiver of the cargo. A “preventive measure” against the risk of mis-delivery is the issuance of a Letter of Indemnity (LOI), by which the apparent rightful receiver guaranties that he will cover any loss that a wrongful delivery might cause the carrier. However, the issuance of a LOI is risky, as it may not be possible to be used as an enforceable title, but it still remains the only way to deliver the cargo to a receiver who does not hold a B/L. Of course, if the traditional- paper B/L was replaced by an E-B/L, the problem of its late arrival to the legal receiver will disappear, and consequently, also the use of LOIs will be seized and the risk of their use will be extinguished.

Delayed arrival comes always together with high costs. Paper B/L could be characterized as *“a task of issuing multiple set of original papers and which fails to ensure the arrival of the goods at the destination as the goods are still being verified for documentary purposes, to which the consignee fails to receive the goods rightfully and the carrier fails to release the goods from the vessel and in addition high fees are to be paid”* (Lohar, 2015). According to a report of the commission of the European Communities dated in 1989, the 10-15% of the transportation costs in the transport industry are constituted by the cost of raising paper-based documentation and by the attendant delays involved in such issuance of documents (Athanasios et al, 1995).

Moreover, just the issuance and the managing of the paper Bs/L and LOIs have a tremendous cost. According to researches on the costs of the use of documents in the international trade, the cost of Bs/Ls, LOIs and other paper documentation used in the shipping industry is estimated to be upwards of 15 % of the physical transportation cost (Walters, 2004)

Time and money consuming problems in the use of paper B/L arise also during the endorsement. The endorsement of the documents is essential in order to sell and transfer the ownership of the cargo while it is in transit. The endorser transfers his legal ownership rights upon the cargo to the endorsee just by the endorsement of the

back side of the B/L. The endorsee receives the paper B/L by post (which of course can cause a delay) and at the same time, the endorser should ensure that the endorsee will not receive the original B/L before the purchase price of the cargo is paid. Of course, this situation can be controlled and secured by documentary credits in the form of Letter of Credit (L/C), which is commonly used in the shipping industry when the parties in transaction do not know each other, but the issuance of such L/C is also a time and money consuming process.

3.1.2. *Security Problems*

Maybe the most important problem with the use of paper documents is the various security issues arising. Documentary fraud and fraudulent conduct are usual problems that the shipping industry deals with. B/L is a document exposed to fraud for various reasons and as a risk, fraud, leads to forged and switched B/L. Under the English Maritime Law, delivery against a forged bill of lading is a mis-delivery and it is no defence that it was done innocently (Winter, 2018).

The fact of non-surrendering the B/L when the cargo is received by the consignee rises the chances for fraud against the person who holds the original B/L. Of course, this is not happening each time when the cargo is delivered on the basis of a LOI and it is not given that the holder of the B/L will commit fraud, if he is the fraudster, he may transfer the B/L for a price and an innocent party may be cheated (Jafari, 2015). As the Secretariat of UNCTAD argued in his essay called *“Maritime Fraud: Prevention of documentary fraud associated with bills of lading, Use of sea waybills”* in 1986, this position of fraud is not inbuilt in the functioning of the bill of lading but this position has arisen due to the change in the nature of this document and its sluggishness to respond the quickening pace of global trade.

Especially in the case of Bs/L, the fact that many parties are involved, makes it even easier to counterfeit the document and it is more prone to forgery by making fake documents which are delivered to the receiver before the real and original B/L. Given the fact that B/L is used in transactions and is connected to the issuance of letters of credit, a forged bill could lead to the interchange of goods or to the obtaining of a bank credit based on unreal collateral (Lohar, 2015). Moreover, a forged B/L may lead the seller/ consignor to sell goods to a different person than the actual buyers who are the legal holders of the original and non-forged bill.

Another common problem is the changing of the content and details of the B/L in order to seem as a Clean on Board B/L although the master has signed a Claused B/L because of cargo's marks and deficiencies.

On the other hand, electronic documents and the use of electronic documentation in shipping industry is also a main concern. Many carriers believe that paper B/L guarantees more security from fraud and fraudulent conduct than an e- B/L. But with the technology nowadays, this is not a legitimate fear as the technical solutions available today, the shipping industry is better protected against these fraudulent conducts. Fraudulent actions will never be fully excluded but they can be eliminated by the use of electronic documents. However, carriers' fears are totally understandable as the technology involved in the electronic document trade needs special information technologies skills in order to be understood (Brunner, 2007).

3.1.3. Identification of the contractual carrier

Another problem which is encountered in the carriage of goods by sea is the process of identification of the contractual carrier under the B/L, usually when a legal dispute arises regarding to damages or enforcement of a court decision (Lee, 2006). This problem arises from the fact that the legal relations between the parties are so compiled due to the subletting of vessels or voyage charters more than once per charter or due to the privity o contract under law of contract in the prevailing jurisdiction. The carrier is usually identified in a B/L by the printed signatures, logos or official stamp on bill's face or reverse side, which help the courts decide and identify the actual contractual carrier who is bounded under the clauses of the B/L. When the B/L is issued by the shipowner, the carrier and the shipowner is actually the same person and when the B/L is issued by the bareboat charterer to the line, the bareboat charterer and, in his absence, the shipowner, may be pleaded as party of the contract of carriage. However, if the owner as the shipper, there hardly arises any legal question as to the identification of the carrier, but this might arise in cases where the charterer shares obligations of the carriage of goods solely or in conjunction with the owner of the ship (Troy- Davies, 1999).

3.1.4. Environmental Hazard

Unfortunately, the shipping industry is blamed for many environmental problems. Operation of vessels may be the reason of severe pollution and waste. The extensive

use of paper documentation leaves huge paper trails every year and contributes to deforestation. The transition to electronic documents could have a positive impact to the environment. Not only it could make the transactions quicker and in real-time, it will be easier to keep records of them and will reduce the environmental impact.

Even if the extinction of paper documents in shipping seems to be a long-term dream, more and more countries and companies aim at reducing the use of paper documentation and switching to electronic documents and systems which will lead to the reduction of the costly, heavy, and increasingly outdated burden of paper transactions and to the better facilitation of the international trade.

3.1.5. Advantages of a e- documentation trade

As already analyzed and discussed, paper transport documents and especially traditional B/L, have served the shipping communities for years. But this kind of paper documentation has many disadvantages as it is the root of serious problems in the shipping industry. The issuing and handling of traditional Bs/L is high and given the fact that the increasing vessels' size over the years and the huge volume of cargo carried with this vessels, the situation will shortly be hundreds of paper Bs/L being issued just for only one voyage. The speed of the documents transportation is causing problems as Bs/L reach to the final consignee usually after the delivery of the goods at the port of discharge, which forces the carrier to deliver the cargo without any transport documents, discharge it to a warehouse and sometime just wait for the B/L to arrive. This phenomenon leads of course to additional administration and warehousing costs as well as high demurrage rates.

All the abovementioned problems could be issued by the uses of e- documentation. If all the functions of the traditional B/L could be incorporated in an e- B/L and such a document could be sent to the receiver of the goods in electronic form, substantial costs and time – and as a result freight – could be saved (Brunner, 2007). Of course, in order e- documents to resolve successfully all these problems, they have to be functional and legal equivalent to the traditional B/L. Without a doubt, an e- B/L is faster, more flexible and easier to handle.

B/L are more secure as they can be analysed and verified on the same electronic system where the bill arrived. Amended or checked e- Bs/L could be sent to a next receiver/ consignee without postal or courier shipment. E- documents are easier to be

stored and kept records thereof, are much easier in handling and require less space and administrative efforts than traditional documents.

3.2. **Disadvantages of a e- documentation trade**

3.2.1. Cyber Risks

It goes without saying that although the benefits of e- B/L are multiple, there are many risks as well. The main risk that has to do with the paperless trade is by far the cyber risks involved.

The definition of the maritime cyber risk is “*a measure of the extent to which a technology asset could be threatened by a potential circumstance or event, which may result in shipping-related operational, safety or security failures as a consequence of information or systems being corrupted, lost or compromised*”¹³.

In order to deal with the abovementioned problem, IMO introduced in 2017 the “Guidelines on Maritime Cyber Risks Management”¹⁴ (the “Guidelines”). With this move, IMO aimed to “*provide high-level recommendations on maritime cyber risk management to safeguard shipping from current and emerging cyberthreats and vulnerabilities. The Guidelines also include functional elements that support effective cyber risk management*”. The Guidelines introduced also the definition of the term “Cyber risk management” that reads as follows:

“Cyber risk management is the process of identifying, analysing, assessing and communicating a cyber-related risk and accepting, avoiding, transferring or mitigating it to an acceptable level, considering costs and benefits of actions taken to stakeholders”

In order a cyber risk management to be considered as effective, it should implement the functional elements provided by the Guidelines, which, pursuant to the wording of the Guidelines, are:

“1. To identify: Define personnel roles and responsibilities for cyber risk management and identify the systems, assets, data and capabilities that, when disrupted, pose risks to ship operations.

¹³ IMO, “Maritime Cyber Risk” accessed on 08.09.2022 at <https://www.imo.org/en/OurWork/Security/Pages/Cyber-security.aspx>

¹⁴ IMO Guidelines on Maritime Cyber Risk Management, Documents

2. *To protect: Implement risk control processes and measures, and contingency planning to protect against a cyber-event and ensure continuity of shipping operations.*

3. *To detect: Develop and implement activities necessary to detect a cyber-event in a timely manner.*

4. *To respond: Develop and implement activities and plans to provide resilience and to restore systems necessary for shipping operations or services impaired due to a cyber-event.*

5. *To recover: Identify measures to back-up and restore cyber systems necessary for shipping operations impacted by a cyber-event”.*

The abovementioned functional elements enclose all the acts and the desired outcomes of an effective cyber risk management system. Further to the Guidelines, IMO introduced resolutions on the Maritime Cyber Risks Management in Safety Management Systems.

The European Union tried to deal with the problem of cyber risks as well by introducing in 2002 a Directive on privacy and electronic communications, called the ePrivacy Directive¹⁵. The goal of this particular Directive was to “*Harmonise[...] the provisions of the Member States required to ensure an equivalent level of protection of fundamental rights and freedoms, and in particular the right to privacy, with respect to the processing of personal data in the electronic communication sector and to ensure the free movement of such data and of electronic communication equipment and services in the Community*”.

Further to the Directive of 2002, European Union introduced in 2014 the Electronic Identification and Trust Services Regulation (eIDAS) by which the European Union achieved the creation of a system that secures electronic interactions across the EU between businesses, citizens and public authorities. The electronic signatures and seals, the electronic time stamps and documents, the electronic registered delivery services and the certificate services for website authentication were regulated through this system.

¹⁵ Directive 2002/58/EC of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications) [2006] OJ L201/37

Another protection scheme against the cyber risks was introduced in 2016, and it was the Regulation on the “*General Data Protection Regulation (GDPR)*”, which incorporated rules that dealt with the protection of natural persons as far as the processing of personal data and rules relating to the free movement of personal data are concerned. Fundamental rights of natural persons and specifically the right to the protection of personal data is protected by the GDPR.

In addition, in 2016, European Union adopted another Directive on Security of Network and Information Systems by which the Union tried to achieve a common level of network security and information systems among the Member States. The aim was the improvement of the functioning of the internal market. Under this Directive, all Member States were obliged towards the adoption of a national strategy concerning their security networks and information systems. Member States were also obliged to create “a computer security incident response teams network (‘CSIRTs network’)” in order to contribute to the development of trust and confidence between the States and to the promotion of swift and effective operational cooperation.

4. An introduction to the Electronic B/L

As the years go by, the shipping industry involves and approaches the international transactions in a more technological way. The use of E-B/L is trending and commercial electronic is advancing certainty. Modern technologies make the electronic commerce and international transactions quicker, more efficient and safer. The basic system used in electronic trade as a processing system is the Electronic Data Interchange (EDI).

4.1. Electronic Data Interchange (EDI)

Companies nowadays are using a system called electronic data interchange (EDI) (Livermore, 2015). Sieg Eiselen defines EDI as: "*The electronic interchange of machine process able, structured data, which has been formatted according to agreed standards and which can be transmitted directly between different computer systems with the aid of telecommunication interfaces.*"

EDI has led to the creation of an online platform of transmission and a safe network in which multi-users are connected, namely the shippers, carriers, forwarding companies, banks, etc. Through this platform, a fully interpreted electronic process of forwarding an electronic and paper-free international trading is accomplished and

information is transmitted accurately and correctly between computers and parties all around the world by using a mutually agreed format of communication. This transmission to be achieved requires that all parties involved in a transaction use the same standard, thus the “message” is able to be transmitted and received without corruption and in the same unaltered condition. Otherwise, a third party as service provider plays a translator role to ensure smoothly transferred (Sy, 1999).

The process undertaken through EDI begins with a message sent from one computer to another by using (usually) a telephone line. The system’s objective is to ensure that the data is transmitted correctly and accurately. In order parties to ensure that the correct software is utilized for the transmission of the information to an acceptable EDI format, they usually take advantage of third party networks. It is of utmost importance the two computers to use the same standard as no problems will arise and the message will be sent from the first computer to the second in the same condition as at the time it was initially sent. Otherwise, in order the condition to remain the same, the parties have to use a Value-Added Network (VAN) Service Provider which acts as a translator between the different standards so that the message is not influenced or amended the moment it reaches its destination (Pagonis et al, 2019).

EDI is also the system that enables the production and transmission of the e-B/L. The process begins with the creation of the e- B/L by the carrier containing all the information traditionally contained in the traditional B/L (condition, quantity of the cargo, etc.) which is further transmitted by him to the shipper. The shipper is provided with a “private key” enabling him to make subsequent transmissions and acts as an agreed code ensuring the integrity and authenticity of the transmission (Senekal, 2016). In this way, information is transferred electronically, effectively and legally between the parties involved in international transactions. However, in order EDI to operate right, it must be governed by effective international and national legal framework and legislation (Doan, 2018).

4.2. E-B/L Systems approved by International Group (IG) of P&I Clubs

Despite the slow progression towards the use of electronic documents, there are four systems which enable the issuance and the usage of e- B/L that have been developed successfully and approved by IG P&I Clubs. IG of P&I Clubs gave approval to those electronic systems in order to ensure the capability of performance of the three basic

functions of the paper B/L – the receipt of cargo, the document of title and the evidence of contract of carriage incorporated in the Hague/ Hague-Visby Rules (Tan et al, 2017).

The IG of P&I Clubs approved the Bolero International Ltd Rulebook/Operating Procedures (“Bolero”) which was first introduced in 1999, the essDOCS Exchange Ltd DSUA 2009.3 and 2013.1 (“essDOCS systems”) in 2010, the and - E-Title Authority Pte Ltd –The Electronic Title User Agreement version 1.2 (“E-titleTM”) in 2015 and the last solution adopted was edoxOnline by GlobalShare.

4.2.1. *Bolero System*

The oldest existing e- B/L system is the *Bill Of Lading Electronic Registry Organization* or *Bolero*. Bolero is used not only for the issuance of e-Bs/L but it also plays an important role in supply chain documentation replacements, like purchase orders, invoices, letters of credit and insurance certificates.

The Rulebook – as part of the Bolero- is a legal framework that gives the system extreme credibility as it guarantees the legality and safety of all documents issued because it ensures that the documents produced and exchanged through this system are valid. Bolero also provides the function of encrypted signatures which also raise its credibility. The communication is also encrypted and Bolero is regularly audited to SSAE16 standards and its security management is certified to ISO 27001:2013.

The Rulebook is actually the legal part of the Bolero system. The B/L issued through this system (Bolero B/L or BBL) is slightly different from the traditional B/L as defined in the legal language. Although it is considered to be functionally equivalent to the paper B/L, the fact that it is in an electronic form leads the BBL not to rely on the statutes and conventions prevailing for these traditional Bs/L (Chuah, 2000).

The Rulebook is actually a code of conduct for Bolero Operations. Given the fact that there was not an established international legal framework to govern the transactions made through EDI and the negotiability of such documents, Bolero, as a new entry system, should define all the important parts of the international transactions and trade and introduce an appropriate regulation framework. From a legal perspective, Bolero Rulebook is of a huge importance in the daily transactions as it provides detailed definitions of the parties involved and their roles in the operation of the system. Rule 2.5 paragraphs 2 and 3 of Bolero Rulebook provides that English law an English

jurisdiction in final¹⁶. By this way, the uniform interpretation of these rules is achieved. Hague- Visby Rules are also incorporated into the Bolero Rulebook but the parties shall freely agree their own terms and conditions to be included in the BBL.

In order the negotiability of the BBL to be ensured, any kind of form of EDI communication is accepted by means of attornment¹⁷. As far as the B/L is concerned, attornment means the B/L is being accepted and the change of ownership is incurred by the carrier through negotiation and it is the mean of securing the rights and liabilities of the new lawful holder of the BBL against the shipper who is actually the bailee of the cargo onboard the vessel pursuant to the original contract of carriage agreed between the shipper and the carrier. The carrier, by means of attornment, agrees to pass the possession of the cargo on board to the new lawful holder as he was otherwise obliged to do to the original holder in the case of a negotiable paper B/L or BBL (Jafari, 2015). For the identity of the new holder to be established it is necessary a private key to be produced by the system, which is the B/L in paper format, but for the creation of a BBL the message should be generated by the carrier by means of attornment.

Further to attornment, in order the negotiability of the BBL to be ensured, any kind of form of EDI communication is accepted by means of novation¹⁸ too. This means that the new holder of the consignee accepts to order any of the changes made to the B/L upon the expiry of the time allowed for the refusal of the transfer of the bill, originally allowed under the B/L, meaning that the changes ordered by the holder or the consignee leads to the altering of the contracting parties and hence to novation. Consequently, a new contract of carriage of goods is created. The new parties shall keep the terms incorporated in the original contract contained in the original EDI message or they can agree on their own, new terms and incorporate same in the BBL message¹⁹. Part of this procedure is the Core Messaging Platform which operates as a

¹⁶ Rule 2.5 (2) “*Applicable Law. This Rulebook is governed by and shall be interpreted in accordance with English Law*”.

Rule 2.5 (3) “*English Jurisdiction. Where the sole matter at issue between the parties is a claim for noncompliance with or breach of this Rulebook, all proceedings in respect of such claim shall be subject to the exclusive jurisdiction of the English courts*”.

¹⁷ Attornment is the act of granting authority or jurisdiction to a party even though no legal rights exist. It applies mainly to real estate transactions and may occur when a tenant acknowledges a new owner of the property as their new landlord.

¹⁸ Novation means the substitution by mutual agreement of one obligation for another with or without a change of parties and with the intent to extinguish the old obligation.

¹⁹ Pursuant to Rule 3.2.5 of the Bolero Rulebook.

third party agent of the carrier, ensuring that the information of the messages and BBLs is secured. This is the way how the legal holder of the BBL is only one person and only that person can claim the cargo at the discharging port of delivery. Thus, the singularity of the claim is achieved.

Another important part of the Bolero Rulebook is the emphasizing in the privity of contract between the contractual parties. Rule 3.4.1. of the Rulebook refers to the procedure of transfer of possession. The way to pass the possession by the use of a BBL is “*designation*”. Particularly, Rule 3.4.1. provides that “*The transfer of constructive possession of the goods, after the creation of a transferable BBL, shall be effected by the Designation of: (a) a new Holder-to-order, (b) a new Pledgee Holder, (c) a new Bearer Holder, or; (d) a Consignee Holder.*” When the new contract of carriage is agreed, the transferer is obliged to notify the carrier that the ownership has been changed but he shall not give details about the new holder of the BBL. Simultaneously, the transferee obtains his rights and liabilities as part of a new contractual relationship with the carrier by means of novation, while the information is transferred and retained in the Title Registry (Jafari, 2015). This situation results in the creation of a different contract between the carrier and the transferee and hence the need for exception of privity of contract under English Law or as provided in COGSA (UK) in section 2 (1) and section 3 (1)²⁰.

Bolero Operations contains also a central registry consisting of the Core Messaging Platform and the Title Registry. The aim of the Core Messaging Platform is the communication of the parties and the goal of the Title Registry is the maintenance of a collective database which is consisting of all the transactions made between the holders of BBLs. It also keep a record of the subsequent changes in the BBLs holders with accruing rights and liabilities. The Title Registry was established for the provision of functional equivalence with the traditional paper B/L as a document of title. Pursuant to the provisions of the Bolero Rulebook, in the BBLs the documents of title is considered to be the private key, bearing the form of an electronic message and in case that someone is not in possession of such key, then the carrier is not obliged to deliver the cargo on board at the destination port of discharge.

²⁰ Section 2 (1) and section 3 (1), of the COGSA (UK) 1992 provides that “*the statutory framework to circumvent the problems of privity of contract to enable an assignee to stand in the shoes of the shipper and to sue the carrier for any damage to the goods as if he had all the rights of the original contracting party*’

BBL aims to help the promotion of the use of the e-B/L but it is not an easy procedure. Pursuant to the provisions of Bolero Rulebook, the legal holder, holder-to-order, Pledge Holder or Bearer Holder may ask for a traditional paper B/L while the cargo is still in transit, namely after the loading and prior to the delivery of the goods at the port of destination. This is evidenced by the Rule 3.7 of the Bolero Rulebook which provides that *“At any time before the goods to which the Bolero Bill of Lading relates have been delivered by the Carrier, a current Holder, Holder-to-order, Pledge Holder or Bearer Holder shall be entitled to demand that the Carrier issue a paper bill of lading in accordance with the Operational Rules”*. This paper B/L must contain of the information, terms and conditions provided by the original BBL text message²¹. However, in case of conflict between the information and terms stating in the paper form and the ones stating in the original text message, the information of the latter prevails.

Bolero Operations have achieved in a satisfying way to deal with the legal and operational gaps during the transition of the paper to the e-B/L. As a system, Bolero Rules are more reliable and secure than other similar systems. Some considered Bolero Rules as even more efficient than CMI (as defined below). This is the reason why many countries have already embody the Bolero Rules in their national legislation (for example, Australia) and other regulative frameworks, like the Sea-Carriage Document Act 1996 (SCOGA 1996) are similar to the Bolero Rulebook, which means that the countries that comply with SCOGA 1996, in actual fact, they are in compliance with the Bolero Rulebook too. However, the system has received severe criticism and many disadvantages have arose. For example, court have not yet a common approach in the matters arising form the use of the Bolero System as only the English law and jurisdiction has conjure up some cases. So, it is yet to be found if other jurisdictions would upheld the rules. Another disadvantage is the high cost of operating the system which does not enable smaller organizations and carriers to make use of the system. Furthermore, creditors have reservations about the securities provided by the Bolero system, while in some countries, because of their customs and

²¹ Rule 3.7.2 of the Bolero Rulebook *“The Carrier shall, immediately upon receipt of such a demand, issue a paper bill of lading which sets out: (a) all the data contained in and all of the terms and conditions contained in or evidenced by the original BBL Text; (b) a statement to the effect that it originated as a Bolero Bill of Lading, (c) the date upon which it was issued in paper form; and (d) a record issued by Bolero International of the chain of Users which have been parties to contracts of carriage with the Carrier, from the date of the creation of the Bolero Bill of Lading until the date on which its switch to paper demand was sent by Bolero International”*.

legal requirements, BBL is not considered as a valid documents to be used in international transactions (Wilson, 2010). Moreover, the fact that the Bolero Rulebooks provides the option of switching to the traditional paper B/L before the delivery of the cargo at the discharging port, makes many people raise reservations of the legal applicability of the conventions related to the Bolero Rules. Last but not least, many users of the systems believe that the operation of the system is complicated and its conditions and terms are unconventional. This fact discourages many of the users to continue the usage of the system. There are concerns that the system will be abandoned by the small organizations because of the tendency towards monopolization. The monopolization tendency is evidenced by the categorization of the system's members will force the members to enter into mergers in order to occupy the most privileged slots and therefore, cartelisation is on the cards (Jafari, 2015).

Through Bolero, only the carrier has the authority to issue an e-B/L which states the description of the cargo, the port of loading, the port of discharging, the chartered vessel and, in general, all the details and information mentioned in a paper B/L. The e-B/L is created either from scratch by using the app or by a more traditional way – by scanning the paper B/L. The next step is the uploading of the B/L in the Bolero online platform along with an attached Title Registry Instruction (TRI) which is the record of the e-BL ensuring that the data can't be changed or copied. TRI is actually the central registry for B/L which records all kinds of changes in the cargo interests. All e- Bs/L in Bolero are exchanged and delivered through TRI. More specifically, upon creation of the e-B/L, the carrier instructs TRI where the shipper is logged as holder of the e-B/L. If the holder wishes to transfer the right of control of the goods to a subsequent holder, he can carry out this transfer by attornment by sending instructions to the registry and receiving a confirmation of the new holder from the system (Doan, 2018). When all the above-mentioned documents are electronically executed and they are forwarded to the shipper for review. When an e-BL is surrendered, a carrier receives an email from Bolero, allowing them to release the cargo at the discharge port immediately upon receipt.

4.2.2. *EssDocs*

EssDOCS was the second platform introduced and approved by IG of P&I Clubs after Bolero. This system also provides an online registry for the storage of e- B/L. It mainly deals with B/L but also enables users to create waybills, barge receipts,

inspectors' documents, cargo manifests and invoices. As the company's goal is to make the trade total paperless, all original documents required for the exportation, shipping, trading, finance and importation of goods can easily be executed and exchanged through "DoxEx" module, which is incorporated in the essDocs system (Pagonis et al, 2019).

Likewise Bolero, essDocs provide also a legal framework that governs the use of the system and the data transfer procedure. As e- B/L replaces the traditional B/L, the users have to consent that they face the e-B/L as functional and legal equivalent to paper B/L and undertake not to challenge the validity of any transaction or communication made on the ground that the same was made in e-form, instead of in paper form and/or that it is not signed or sealed (Tan et al, 2017). The legal framework governs essDocs is the ess-DatabridgeTM Services & Users Agreement (DSUA).

EssDOCS is user- friendly as the carrier who creates the e- B/L can choose between over 50 templates the one most similar to what he has been using when he issued a paper B/L. Like Bolero, the user can create initially an e-B/L scan the paper B/L and it's supporting documents and further convert them into PDFs which are further executed electronically. Whichever of the above-mentioned methods the creator chooses, an e-B/L is created and sent in draft form for review and approval to the shipper. Once agreed, the carrier issues the e-BL just by clicking a button. Through the platform, the e- B/L is send back and forth between the parties at no time, enabling quick amendments and approvals of such amendment between the carriers and shippers.

EssDocs also provides an easy transfer of ownership of the good during shipment as whenever the e-B/L is transferred to a third party, the system generates an automatic notice from the carrier to the new holder of the e-BL confirming that the goods are now held to the new holder's order (Tan et al, 2017).

4.2.3. *E-title*TM

E- title could be considered as the sequel of Bolero as it was developed by ex-members of the later. However, it operates differently from its predecessor. E-title is considered to be a peer-to-peer network operating in a hybrid environment which enables to be used both by users persisting in the use the traditional paper B/L and

from those working with e-B/L. Thus, a smooth transition to the paperless trade is achieved as the system enables also the e-B/L to be converted again into a paper B/L at any stage of the trade. Whatever type of B/L can be uploaded in this system and the latter creates their electronic duplicates. Other kind of documents, like warehouse receipts and bills of exchange are also supported by this system. By this way, the legislative gap among many countries which do not prefer the use of electronic documents and they do not have laws and legislation for this kind of trade is filled, as a private agreement defining the rights and obligations of all the parties involved is provided by E-Title (Pagonis et al, 2019).

The legal framework that surrounds this system is the “Electronic Title User Agreement” which was drafted pursuant to the provisions of UNCITRAL Model Law. By becoming a party to the abovementioned Agreement, the user agrees that he accepts the e-B/L (and documentation in generally) as functionally and legally equivalent to paper B/L and undertake not to challenge the validity of the system’s transactions (Tan et al, 2017). This agreement among the parties is multilateral which means that all the parties involved execute the agreement and are signatories of same. To become a signatory, the “Electronic Title User Group” must be joined beach individual. The registration into this Group is performed online through the Group itself or through the ASP which provides e- Title services (Pagonis et al, 2019). A unique identifier is provided to each user upon registration and upon consent of each user to with the terms and conditions of the Group. A database and record of all the registered users is kept by the Group. The users of the systems acquire a digital signature which enable the secure transfer of electronic titles between all users of the system. The Group provides certification of all the signatures to ensure the authenticity of the users’ signatures.

COGSA 1992 is also incorporated into the abovementioned Agreement which means that each user executing the agreement agree that COGSA 1992 applies also to e-Bs/L generated under the system (Tan et al, 2017).

The goal of the system is to enable the transfer of the B/L and the conservation of the contract of carriage in force as if the traditional paper B/L was used. These two goals are achieved by the way the systems operates. A traditional paper B/L is created by the carrier through the system or by using his own document creation software and

then forwards the document created to E-title. E-title transforms the paper B/L into an e-B/L which is then executed and registered in E-title's Hardware Security Modules – which is a computer system containing logs and records of all the transaction that can be pulled out to resolve disputes. The e-B/L is then forwarded by the system to the carrier and from him, it is directed to the shipper's system where the signature of the latter is verified and it is confirmed that to changes in the e-B/L have been performed. Furthermore, E- Title actually provides a workflow for the creation of an e- B/L. In case the parties wish to transfer the ownership of the goods for which the e- B/L is create, the endorsement record id endorsed by the endorsing party, authentication, non-repudiation and data integrity are ensured in the same way all these functions are protected in the case of paper B/L.

4.2.4. *EdoxOnline*

EdoxOnline is the more recent system approved by the IG of P&I Clubs. The developer of this system is a transportation software provider from Argentina, named GlobalShare. This system enables the automated issuance and management of e-Bs/L together with all supply chain parties and is the first time that blockchain technology is used in such a platform. As the Company states, EdoxOnline is *“the leading platform for the digitalization of International Trade processes and documents. EdoxOnline enables real time collaboration between Shippers, Buyers and Vendors for the issuance of key documents in a reliable, efficient, interconnected and secure manner”* (Edox Online official web site, accessed in September 2022).

EdoxOnline is basically a web platform. It provides instructions for the creation and uploading of electronic documents from the destination point which are further sent to the exporter's origin country. By this way, the exporter has control over of the supply chain process, which means that he can control when maritime agents, surveyors, fumigation companies, custom agents, chambers and shipowners log into the platform system directly to add the corresponding information using two-factor authentication. When the e- B/L is created and completed, it can be saved as a PDF document so to be easily printed and executed. The user can choose either to issue an electronic document, using the eDocuments future of the platform²², or print-outs.

²² It concerns both e-Bs/L and e- Certificates.

The main benefit of such a platform is that it is easily accessible to all member who they have to use only a singly page which provides them with all the necessary information for the creation of the electronic document. Bolero and CargoDocs via API are integrated in EdoxOnline.

5. The legal framework/ Laws governing the e-B/L

5.1. Introduction

The technology nowadays is constantly be improved and it is a part of the everyday life. Law and legislation should follow this technological development in order to be up-to-date and can keep up with this progress. Law and technology interfere all the time. There are many supporters of the view that the reason of legal reformation is actually the continuous introduction of new technologies that are currently inadequately covered by existing laws (Van Bien, 2015).

A milestone achieved nowadays is the development and use of electronic contracts which are created by the using electronic means. Despite the innovations in technology, the nature of contracts remains the same. Until recently, in order the parties to create a contract, there would be the expression of willingness and intention from one party taking the form of an oral or written engagement. Nowadays, because of technology, the procedure is quite simple as the parties rely on electronic communication which automatically apply the basic principles of contracts - mutual consent expressed by a valid offer and acceptance. This is the reason why the legislation and law are still important in the regulation of e- contractual agreements.

Of course, the existing contract law and current legislations cannot keep up with the complex mature of electronic transactions. Determination of the subjectivity of the parties involves, the protection of consumer interests, the time and place where the contracts enter into force, originality matters of the contracts, the certification of the contracts are only some of the issues arising by the use of electronic documentation. However, the most important issues remain the execution and performance of e-contracts. This is why many national legislations have been amended in the last years to solve and reduce the severance of this kind of problems. What national legislations trying to achieve is the recognition of electronic transactions concluded by the use of electronic means, the recognition of the digital signatures to ensuring the safety and security of information systems and the implementation of laws which will deal with

the rights and obligations of the service providers, the online payment, online consumer protection, online privacy, online crime and online dispute resolution (Doan, 2018)

5.2. Criteria of e- B/L

It is usually argued that the development and use of EDI is not equivalent to the paper documentation nor in its nature or in its legal aspects. This is the reason behind the adoption by the UNICTRAL of the Model Law on Electronic Commerce (MLEC) back in 1996. The goal of this model is the recognition of the validity of electronic transaction though the using of EDI. To overcome the above mention non-equivalence, MLEC established a new approach called as “functional equivalence” which based on the requirements of paper B/L and determines how those functions can be performed via EDI. For a e-B/L to have the same functions as a paper B/L it should be determined, first of all, if it can be easily used in transportation industry. This is why regulations, like MLEC and CMI Rules (as defined below) try to measure in which extent the legislation can approve the usage of electronic documentation in order to enable the effective use of e- B/L.

In order the e- B/L to be considered as equivalent to the paper B/L, the first must met the following criteria: The e-B/L should act as a receipt of good received for shipment, as an evidence of the actual contract of carriage and as a document of title. Basically, in order to be equivalent to the paper B/L, e- B/L must have exactly the same functions as the traditional B/L used in the shipping industry.

First of all, the e-B/L should act as a receipt of the goods received for shipment. In general, B/L is an acknowledgement document evidencing that the goods have been received by the carrier and it also indicates the apparent external condition of the goods received. Then, the consignee can claim cargo at the delivery port at the same quantity and quality as mentioned in the B/L. Therefore, B/L is a proof of the cargo shipments. As a result, in order this function to be performed, a B/L, whether electronic or other form, must have the form of a receipt or document which is provided to the shipper by the carrier and this receipt should enables the consignee/receiver to determine the quantity and apparent external condition of the goods in order to exercise their possession over the cargo.

Secondly, a B/L whether in paper or electronic form, should act as evidence of the actual contract of carriage agreed between the shipper and the carrier. The B/L is issued by the Master as the representative of the carrier onboard the vessel to the shipper which is the person with whom the carrier has agreed on the contract of carriage. This bill reflects all the terms and conditions of the actual contract of carriage. The contract terms and conditions are contained in the paper B/L or the latter makes a reference to them. Thus, no matter whether in paper or electronic form, such terms and conditions, or reference thereto, must be visible on the actual receipt (Doan, 2018). Under this function, an e- B/L is equivalent to the paper one if the bill is provided somehow to the shipper by the carrier and if it contains visible evidence of the contract of carriage, or a reference thereto.

Last but not least, an e- B/L is equivalent to the traditional paper B/L is it acts as a document of title evidencing who is the legal owner of the cargo during transit and, most importantly, during the delivery of the goods at the discharging port. The main advantage given to the holder of the B/L is the right to transfer the possession of the goods to a third party by endorsing the bill. By this way, the possession of the cargo is transferred to the endorsee. The House of Lords in the *Lickbarrow* case²³ argued that the B/L indeed acts as a documents of title of the goods. This argument is strengthened by the fact that the B/L is in commercial practice a negotiable document which may change hands several times during the transit of the goods. Therefore, in order a e- B/L to be equivalent to the paper B/L, should again be provided to the shipper by the carrier, to be endorsed/ transferred in a “safe” environment and the transfer process must be established and accepted as a mercantile usage of trader.

In conclusion, in order an e- B/L to be equal with a paper B/L it should met all the above mention criteria: It should be provided to the shipper by the carrier, the consignee/ receiver to be able by having in possession such receipt to determine the quantity and the apparent good condition and order of the goods and to be able to exercise possession over the cargo by showing the receipt at the port of discharge in order to claim the goods,, it must contain visible evidence of the contract of carriage, or a reference thereto, the endorsement/transfer to the third party to be performed in a

²³ *Lickbarrow v Mason* (1787)

“safe” environment and the transfer process must be established and accepted as a mercantile usage of trader.

Despite the above, there is case law that for many people indicates that courts are suspicious against the use of electronic formats as they usually do not treat them as legally equivalent to the paper documentation. The most famous case is the *Glencore International AG v MSC Mediterranean Shipping Company SA (MSC)*. The High Court of Justice, Queen’s Bench Division Commercial Court first decided on that particular case in the 10th of July 2015. The shipper, Glencore International AG, a multinational commodity trading and mining company was the claimant against the MSC Mediterranean Shipping Company SA (MSC) as the carrier and defendant. Pursuant to the facts of the case, the carrier “*shipped three containers of cobalt briquettes from Fremantle to Antwerp under a bill of lading on May 21, 2012*”. The bill of lading stated that it had to “*be surrendered by the Merchant to the Carrier ... in exchange for the Goods or a Delivery Order*”. During the discharge in Antwerp, two out of the three containers were misappropriated and thus, Glencore claimed damages against MSC for breach of contract, bailment and conversion. During that time, the Antwerp port was using an “electronic release system (ERS) and thus when the cargo arrived at the port, it was handled under ERS, as provided on the issued B/L. The ERS enables carriers not to issue paper delivery orders but to use computer generated electronic numbers (PIN codes) which legal holders of Bs/L may present at the discharging port and so took delivery of their cargo. ERS is a way of replacement of the carrier’s need to proceed with the issuance of paper documentation of to deliver cargo in return of original paper B/L. Pursuant to the case’s facts, MSC’s agents gave orders to ‘release note’ for the three containers, with a PIN code for each of them but during that time two of the containers had already been collected. As a third party had compromised the PIN code Therefore, ‘Glencore brought an action against MSC, claiming damages for breach of contract, bailment and conversion’.¹²³³ The claimant ‘submitted that the MSC - the defendant - should have delivered the cargo only on presentation of the paper bill of lading or a Delivery Order in exchange for it’.¹²³⁴ The defendant ‘contended that it handled the cargo in accordance with the express terms of the traditional paper B/L, or an implied term, based on the previous course of dealings, that permitted use of the ERS.

The problem arose was if ERS constituted a legal equivalent to a delivery order. To that question the court answered that the defendant 'was in breach of contract and bailment, and gave judgment in favor of Glencore'. The decision was appealed by MSC at the Court of Appeal but the latter confirmed the decision of the Commercial Court.

5.3. Legal Framework governing e-Bs/L

5.3.1. Rules of Committee Maritime International for Electronic Bills of Lading (1990)

Committee Maritime International (CMI) introduced the CMI Rules in 1990. The goal of the said rules was the regulation of the transactions made by the use of e- Bs/L and the recognition of the functions of this kind of electronic document. These rules were not mandatory unless the parties incorporated them into their contract. The use of basic technological skills by the parties was a requirement in order data to be sent and received among the contracting parties (Senekal, 2016).

The CMI Rules received high appreciation of the shipping industry as they acknowledge the three basic functions of the B/L to the e-B/L: they recognized that an e- B/L, although it was an electronic document, acted as receipt of cargo, as document of title and as evidence of the actual contract of carriage. More specifically, Article 4²⁴ of the CMI Rules provides the obligation of the carrier to send a message as the receipt of the cargo to the shipper's electronic address. The descriptions of the cargo received should state that the goods received were "*in the same tenor as would be required if a paper B/L were issued*". The message sent to shipper's electronic address should contain the name of the shipper, the description of the cargo, the place where the cargo is received, the short description of the carrier's transportation terms and the conditions of carriage and the private key which would be used by the shipper in

²⁴ Article 4 of the CMI Rules: *a) The carrier, upon receiving the goods from the shipper, shall give notice of the receipt of the goods to the shipper by a message at the electronic address specified by the shipper. b) This receipt message shall include: (i) the name of the shipper; (ii) the description of the goods, with any representations and reservations, in the same tenor as would be required if a paper bill of lading were issued; (iii) the date and place of the receipt of the goods; (iv) a reference to the carrier's terms and conditions of carriage; and (v) the Private Key to be used in subsequent Transmissions. The shipper must confirm this receipt message to the carrier, upon which Confirmation the shipper shall be the Holder. c) Upon demand of the Holder, the receipt message shall be updated with the date and place of shipment as soon as the goods have been loaded on board. d) The information contained in (ii), (iii) and (iv) of paragraph (b) above including the date and place of shipment if updated in accordance with paragraph (c) of this Rule, shall have the same force and effect as if the receipt message were contained in a paper bill of lading.*

order to have access on the message (Delmedico, 2003). Article 4 paragraph d also provides that the message should also clearly states that the above information will have the same effect as paper receipts. So, by this way, the function of the receipt of cargo is recognized under the CMI Rules.

The abovementioned article, Article 4 paragraph 4 of the CMI Rules, recognizes also the fact that the e-B/L performs as an evidence of the contract of carriage. Particularly, Article 4 provides that the consignor should be notified by the carrier upon the receipt of the goods. This notice should be given with reference to the carrier's terms and conditions of carriage as mentioned in the contract of carriage. So, e-B/L functions as an evidence of contract under the CMI Rules as the latter clearly confirms that THERE IS actually a contract in which the obligation of the carrier to notify the consignor is stated.

Under the provision of these Rules, the contractual rights of the parties are transferred through the use of the Private Key. Pursuant to Article 2 of the CMI Rules, the Private Key is "*any technically appropriate form, such as a combination of numbers and/or letters, which the parties may agree for securing the authenticity and integrity of a Transmission*". This means that the rights of the contracting parties are transferred upon agreement between the shipper and the new owner of such key. In the same way that a B/L is a prima facie evidence of the quantity and quality of the cargo received for shipment, under the CMI Rules, the data message and the private key is the prima facie evidence of the quantity and quality of the cargo onboard, burdening the liability of the carrier (Costa, 1999).

CMI Rules provide also that the e-B/L acts as a document of title and therefore, all the three functions of the traditional paper B/L are recognized under these Rules. Under the said Rules, a direct communication mechanism is provided to the shipper and carrier who use a private registry system in order to communicate with each other. The parties make use of their unique and non-transferable private key²⁵ in order to negotiate and endorse the Bs/L. In this way, the traditional endorsement of the paper

²⁵ Article 8 of the CMI Rules: a) *The Private Key is unique to each successive Holder. It is not transferable by the Holder. The carrier and the Holder shall each maintain the security of the Private Key. b) The carrier shall only be obliged to send a Confirmation of an electronic message to the last Holder to whom it issued a Private Key, when such Holder secures the Transmission containing such electronic message by the use of the Private Key. c) The Private Key must be separate and distinct from any means used to identify the Contract of Carriage, and any security password or identification used to access the computer network.*

B/L is replaced by the endorsement of the e- B/L through the use of the private key. In order the possession of any kind of interest to be transferred, the carrier is notified by the shipper in order the private key to be cancelled and a new private key to be issued in the name of the new person who will be the new lawful holder of the e-B/L. In other words, under the cmi Rules, the lawful holder of the e-B/L who can claim the delivery of the cargo against the carrier is the holder of the last issued private key. The consignee or substitute of the consignee can also be nominated by the lawful holder of the private key/ e-B/L. Therefore, an effective transformative method for the right on the cargo is provided by CMI Ruled by electronic messages and the use of private keys (Doan, 2018).

5.3.2. A critical point of view towards CMI Rules

It is easily understood that the CMI Rules play an important role in the regulation of the functions of the e- Bs/L. However, the system suggested by the Rules has many disadvantages. To begin with, the use of private keys is not equivalent to the traditional paper B/L under the different laws and jurisdictions (Costa, 1999). Secondly, although the paper B/L is usually transferred between traders and never returns to the carrier until the delivery of the cargo to the lawful holder of the bill, pursuant to the provisions of CMI Rules, the e- B/L is returned to the carrier in every negotiation of the bill and each next trader receives a new document transmitted from the ship (UNCTAD, 2001).

CMI Rules are still in force and they are regulate may paperless transaction, but because of various gaps in the law established by these rules, the latter could never be used internationally as a legal framework which govern such universal transactions. The most important legal gap existing in CMI Rules has to do with the transfer of title of the goods while in transit. Although in the paper B/L, the transfer is easily made through the negotiation of the document and the handling of same to the last endorsee, under the CMI Rules, the transfer of ownership is completed only upon the notification of the carrier through the use of the Private Key and the following confirmation reply which cancels the previous key and creating the new one. But many times this process leads to undue delays and the legal owner of the goods remains exposed to the risk not to be able to claim delivery of its cargo. Regulations governing such transactions should provide a safe environment for all parties and not

to expose them to extra dangers arising from the kind of documentation chosen. CMI Rules must provide protective provisions in case of delays to achieve the protection of all parties involved in the transaction.

Moreover, from the abovementioned analysis it is easy to understand that the carrier is the weaker party in a transaction governed by CMI Rules as they are placing the biggest part of the responsibility on him. Carrier liable not only for the cancelling, issuing and reissuing of the e-B/L and the Private Keys but also for sending and re-sending of the latter while they are containing crucial information for all of e-B/L's holders – current and subsequent. This situation may not only lead to undue burden but also in errors made by the person itself and not the system. Provisions should be inserted to minimize such liabilities, as with the current regime, CMI Rules are not popular among carriers.

Lastly, the biggest legal gap in CMI Rules is the fact that they are not provide a way of how the contractual rights and liabilities are transferred by the endorsement of the B/L. The CMI Rules do not explicitly provide for how contractual rights and liabilities can be transferred with the endorsement of the bill. Contractual obligations of the carrier may be varied under these rules, which place the holder in due course in a disadvantageous position and open to unfair treatment. On the other hand, the carrier has the chance of the absence of prosecution in the case of any default (Jafari, 2015).

5.3.3. *The UNCITRAL Model Law for Electronic Commerce*

Before 26 years, in 12th of June UNCITRAL adopted the Model Law on Electronic Commerce (MLEC) offering a “*model for harmonized legal regimes that will facilitate communication and storage of digital information by ensuring functional equivalence, media neutrality and legal recognition and enforceability for electronic documentations and communications*” (UNCITRAL, 1996). The goal of MLEC is the facilitation of commerce through the use of electronic means and documents providing national legislators with a set of internationally acceptable rules aimed at removing legal obstacles and increasing legal predictability for electronic commerce (UNCITRAL, 1996). MLEC tries to equate the paper-based commerce with the e-commerce in order the paperless communication to be enabled.

The definition of “Data message” is provided in Article 2 of MLEC, stating that “*Data message means information generated, sent, received or stored by electronic, optical or similar means including, but no limited to, electronic data interchange (EDI), electronic mail, telegram, telex or telecopy*”. Further to Article 2, Article 5 grants data messages with legal effect as it states that the messages have legally effect, are valid and enforceable even if there are considered to be Data messages. This leads to the conclusion that when an e-B/L is created, pursuant to the MLEC, it is acceptable, bears recognition and have legal effect. Just like the traditional paper B/L, within the scope of MLEC, e-B/L acts as prima facie evidence of the fact that the goods were received by the carrier in the quantity and quality referred in the document.

MLEC also recognizes that a Data message is equal to the electronic one and has the same validity and thus the legal holder of an e-B/L can claim delivery of the goods at the port of discharge on the basis of the Data message. To conclude, MLEC recognizes to e-B/L the function of the receipt of cargo.

Maybe the most important part of MLEC is that it recognizes that the B/L acts as a document of title. Article 17(3) of the MLEC provides that “*If a right is to be granted to, or an obligation is to be acquired by, one person and no other person, and if the law requires that, in order to effect this, the right or obligation must be conveyed to that person by the transfer, or use of, a paper document, that requirement is met if the right or obligation is conveyed by using one 27 or more data messages, provided that a reliable method is used to render such data message or messages unique.*” In simple words, this article provides that in order a right or obligation to be transferred, their transfer should be made through a data message which is considered to be a reliable method for the uniqueness and reliability of the messages. However, the law does not provide a definition for the term “*reliable method*”. The fact that the transfer of rights and obligations can be made through data messages is the evidence that the law recognizes also the negotiability of the B/L as a document used in international transactions.

In conclusion, although MLEC is not a mandatory legislation, it is a model governing the use of all electronic documents and most specifically, of the e-Bs/L, recognizing the most functions of the latter.

However, the author's point of view is that although UNCITRAL tried to harmonize all legal regimes in order to have a common ground in the facilitation of communication and in the storage of digital information, it can not diminish the state sovereignty and impose its view to the Member States. Member States participate in UNCITRAL either as elected states of the Commission or as observers, in both cases voluntarily. Generally, all decisions of the Commission are made by consensus which lead to the individual Member States to have the choice in the use and implementation of a UNCITRAL legislative text. Thus, the abovementioned initiative from UNCITRAL cannot, as a matter of fact, harmonize the legal regimes of all the Member States. It totally depends on them if they will choose to implement Commission's suggestions.

5.3.4. *Model Law on Electronic Transferable Records 2017*

The Model Law on Electronic Transferable Records (MLETR) was introduced in 2017 aiming to clarify the term "electronic transport records" which is stated in the Rotterdam Rules, in Article 1 paragraph 18²⁶. Technology neutrality and functional equivalence are the main goals which MLETR is trying to achieve. Especially, MLETR goals the electronic transport records to be functional equivalent to the traditional documents and instruments. This is the reason why MLETR poses certain requirements that must be satisfied by the electronic records in order for them to fulfill the purposes and functions of this Model Law.

Pursuant to MLETR, documents and instruments are considered as transferable documents based on the provisions of substantive law.

MLETR tries to maintain and ensure the uniqueness of the electronic documents issued and tries to prevent copies of the data to be made through the electronic environments. To achieve this, Article 10 paragraph 1b (i), (ii) and (iii) provides that *"Where the law requires a transferable document or instrument, that requirement is met by an electronic record if: [...] (b) A reliable method is used: (i) To identify that electronic record as the electronic transferable record; (ii) To render that electronic*

²⁶*"Electronic transport record" means information in one or more messages issued by electronic communication under a contract of carriage by a carrier, including information logically associated with the electronic transport record by attachments or otherwise linked to the electronic transport record contemporaneously with or subsequent to its issue by the carrier, so as to become part of the electronic transport record, that: (a) Evidences the carrier's or a performing party's receipt of goods under a contract of carriage; and (b) Evidences or contains a contract of carriage.*

record capable of being subject to control from its creation until it ceases to have any effect or validity; and (iii) To retain the integrity of that electronic record". Furthermore, Article 11 paragraph 1a and b provides that *"Where the law requires or permits the possession of a transferable document or instrument, that requirement is met with respect to an electronic transferable record if a reliable method is used: (a) To establish exclusive control of that electronic transferable record by a person; (b) To identify that person as the person in control"*. The combination of the two above mentioned articles provides that the reliable method should be used to identify an electronic record as the electronic transferable record and establish "exclusive control" of an electronic transferable record as functionally equivalent to possession of a transport document.

Further to the above, paragraph 87 of the explanatory notes of MLETR states that: *"In line with the general approach and the scope of the Model Law, the definition of "electronic transferable record" is intended to apply to electronic transferable records that are functionally equivalent to transferable documents or instruments. Yet, the Model Law does not preclude the development and use of electronic transferable records that do not have a paper equivalent as those records are not governed by the Model Law"*. The MLETR through this note gives again rise to the notion of uniqueness of the documents issued. Challenges are posed because of this notion, mainly in respect to the transferability of documents and instruments, given the fact that paper documents do not provide an absolute guarantee of non-replicability. Furthermore, because paper-based documents are by their nature physical objects, and so, they are unique, and because paper documents are commonly used for many of years in business transactions, they are considered to provide sufficient information to commercial operators while assessing risks, On the other hand, transactions made by the use of electronic transferable records are not yet equally well established.

MLETR deals mostly with the transferability of the record and not much with the negotiability. Who the document is negotiated is a matter of substantive law and it is not part of MLETR scope.

5.4 BIMCO Clause regarding the E- B/L

Another important action was taken from the Baltic and International Maritime Council (BIMCO) and it was the creation of the Electronic Bills of Lading Clause, introduced in 2014. Initially, BIMCO issued its clause in the BIMCO Special Circular No. 3, 20 May 2014 - Electronic Bills of Lading Clause for Charter Parties. The aim of this clause was to keep up with the increasing use of electronic documents in the shipping industry, and especially in the dry cargo section, as it merely promoted there by many major charterers (Al- Naseri, 2020).

E-B/L Clause in by nature an expressed clause, which means that it has to be incorporated into the charter party to bind the contracting parties. The parties shall use this term when they wish the charterers to have the right to order to the owners the issuance of e-B/L. Such clause provides that *“(a)At the Charterers’ option, bills of lading, waybills and delivery orders referred to in this Charter Party shall be issued, signed and transmitted in electronic form with the same effect as their paper equivalent.*

(b) For the purpose of Sub-clause (a) the Owners shall subscribe to and use Electronic (Paperless) Trading Systems as directed by the Charterers, provided such systems are approved by the International Group of P&I Clubs. Any fees incurred in subscribing to or for using such systems shall be for the Charterers’ account.

(c) The Charterers agree to hold the Owners harmless in respect of any additional liability arising from the use of the systems referred to in Sub-clause (b), to the extent that such liability does not arise from Owners’ negligence.

BIMCO explains that the most important part with reference to the abovementioned clause, is that the charterers, the sub-charterers and any other party involved in the charter party to comprehend the need to sign-up through an approved system in order to gain all the benefit from paperless trading procedures. Otherwise, the parties do not have the right to participate in this electronic documentation exchange without registration. Given that there are paperless trading systems approved by the IG of P&I Clubs, which act as third parties that provide services aiming to the issuance and the transmission of the e- Bs/L, BIMCO argues that the owners are not obliged to notice their P&I Clubs for their intention to use a paperless form of B/L through an electronic paperless trading system, as P&I Clubs already know about their existence and they have approved them.

BIMCO Electronic Bills of Lading Clause is not only an expressed clause but also a contractual clause. BIMCO is not a kind of service provider like the approved systems by IG of P&I (Bolero, essDOCS, E-Title, edoxOnline, etc.). The use of e- B/L in shipping is enabled by all these approved providers if the parties decide to insert the BIMCO Clause for e- B/L into the charter party agreement. In any case, the development of the e-B/L and the demand of same in the international trade is reflected by the incorporation of this Clause.

As already discussed, an e-B/L is designed in such a way so to reflect the main functions and processes of their equivalent traditional paper B/L. By this way, e- B/L is concerned to be a “functional equivalence” of the paper B/L. Parties may choose to switch from the paper to electronic B/L at any point during the transit period of the goods. Although, e- B/L do not entirely eliminate the problem of goods arriving at the delivering ports before the document of title (namely, the B/L), their use should result in a significant reduction in the number, and associated risks, of LOIs voluntarily issued by owners (Al- Naseri, 2020).

6. Legal issues arising by the use of e-B/L

As already explained, the main functions of the traditional paper B/L is that it acts as a receipt of the goods received, as an evidence of the actual contract of carriage and as a document of title, which means that the holder of the B/L at the discharging port can claim the delivery of the cargo. The most important legal issue arising during the transition of the paper B/L towards the e- B/L is how the above mentioned functions are going to be fulfilled in the case the e- B/L used when normal formalities required by a contract should be fulfilled as well (Senekal, 2016). Therefore, issues arising in this regard is the determination of the authenticity of the electronic document used and, subsequently, the signature of this document.

6.1. Authenticity and Signature

In order for a system producing e- Bs/L to be successful, the users of this system should have confidence on the authenticity of the documents issued by the system. Therefore, users must be sure that the e-B/L produced in an authentic document which can be used in international trade and transactions.

In general, the authenticity of a document is proven by the signatures of the parties at the end on the documents which evidence that the contracting parties agree to be legally bound by the clauses and the provisions of the contract. Of course, this leads to many users to have concerns about the signatures incorporated in the electronic documents, to have concerns about the “electronic signatures”. Hamburg Rules tries to overcome all these concerns by incorporating article 14 paragraph 3 which provides that *“The signature on the bill of lading may be in handwriting, printed in facsimile, perforated, stamped, in symbols, or made by an other mechanical or electronic means, if not inconsistent with the law of the country where the bill of lading is issued”*. So, Hamburg Rules enables any kind of signatures to be made on the B/L provided that this mean of document execution is not inconsistent this the regulations and legislation of the country where the B/L is issued.

There are many methods for the utilization of the digital signatures, there are many quite simple and other more complicated methods. The procedure of obtaining a electronic (digital) signature is initiated by making an application for the issue of an electronic signature while the use thereof involves the use of both 'public' and 'private' keys (Pagonis et al, 2019). The correct and efficient functioning of e- B/L is based of the authenticity and the right use of digital signatures.

As mentioned hereinabove, during the use of EDI, the message created is most of times accompanied by a name and an access code or other means of identification, documenting the source's intent to authenticate the transmission (Pagonis et al, 2019). The digital signatures provided through EDI and with the use of means of cryptography²⁷ makes possible to confirm the identity of the sender of the message and the authenticity of the electronic documents issued because the access code and the name provided by EDI are unique to the sender and the message send. An electronic signature involves not only the use of cryptography but also an encryption and decryption process in order the author and the signer of the e-B/L to be identified and the finally issued documents (Newland et al, 2003) to be verified as not to be tampered during its transmission. In the case of a paper B/L, the signature provides evidence that the Master of the vessel confirms and authenticates the information stating in the B/L and confirms that the cargo has been loaded on the vessel he

²⁷ Cryptography is the science of converting data into apparent nonsense and later translating it back again into its original form, all in a controlled way.

masters, it provides approval that the Master has checked and approved the information stating in the B/L, it provides efficiency and logistics as the Master by putting his signature to the B/L concludes the transaction. Upon Master's execution, the B/L can be given to the consignee (and to the Banks to proceed with their further action as regards the Letter of Credit) in order the latter to can collect the cargo at the port of discharge. In case of e- B/L, further to the above, the signature of the bill should also provide authenticity (which means that it should be identified that the one signing the bill is who he declares to be) and integrity (which means that the information stating in the bill has not been tampered). The methods to provide authenticity and integrity is the public key cryptography (asymmetric cryptography)²⁸.

There are actually two processes involved with electronic signatures: the digital signature creation and the digital signature verification. As far as the first process (the digital signature creation) is concerned, the initial step for the creation of an electronic signature is apply for a hash function to the electronic message or document which is a unique mathematical value that transforms the actual message into a shrunken fixed length hash value called a message digest. The message digest is considered to be a digital fingerprint of the message that it is unique (Newland et al, 2003). The second step is the encrypting procedure by which the message digest by using a private key which is available only to the signer of the B/L.

As far as the second process is concerned, namely the digital signature verification part, it goes without saying that the receiver of the documents must be in the position to verify that the electronic signature actually comes from the person signed and that the information contained in the documents have not been tampered during the transmission of the document. To achieve this, a public key is used, which is actually the pair in connection with the private key, which is used for the decryption of the electronic signature into the message sent. The receiver should apply the same hash function as used by the signer of the document, to the initial message. If the message digest created by this hash function is the same as that decrypted from the electronic signature by the public key, the document is actually signed from the signer stated in the document and has not been tampered with (Mactaggart, 2001).

²⁸ Public key cryptography/ Asymmetric cryptography is the use of a pair of mathematically related keys, or digital codes, that verify the identity of the sender and the authenticity of that which is being sent.

7. Conclusion

The electronic- based trade is getting closer and closer to become an everyday routine in the shipping industry. It is worldwide accepted that the international trade would only have benefits from the paperless transactions and the need of modernizing the most important document in shipping, the bills of lading, has grown significantly. Merchants and stakeholders involved in the shipping business have set requirements for the use of e- Bs/L and this led to a gradual development process of the said document.

The paper B/L has three main functions that need to be reflected on the e- B/L: it acts as receipt of the goods received for shipment and the goods carrier on board, it evidences the actual contract of carriage of goods between the parties and it acts as the document of title of the cargo. Transferability and the exclusive control over the cargo are the most important functions of the B/L related to its function as a document of title.

Because of the three abovementioned function, B/L is so famous a document in the shipping world and it is used for so many years despite the fact that communications within the shipping industry have become increasingly digital and electronic. However, in the last years, there are a huge effort to replace the traditional paper B/L with the electronic one. But this process is not finished yet even if the use of e-Bs/L in the international transactions has grown a lot. To argue against the advantages of e-Bills in the international trade is a difficult task if someone considers the reduction in administrative cost, the time saved, and security, which all may translate into considerable cost savings. In order, however, for the development of e-Bills to continue, its use should widely accepted and all legal regimes around the world should successfully reflect through their legislation the essential functions of paper B/L when they are transferred electronically.

To achieve the worldwide use of e-bills, IG of P&I Clubs have approved various systems for the issuance and trading of electronic forms of B/L. It does therefore seem that more extensive use of e-Bills can certainly become reality. Further development in the near future will lead to E-Bills acquiring the same status of negotiability as paper B/L and they will eventually become the mercantile custom by acceptance, duration and intensity of usage.

This thesis indicated that although the two main functions of the traditional B/L, the receipt of the goods and the evidence of contract of carriage may easily be reflected on the e-B/L as well, same cannot be done in the function of acting as a document of title. In order to achieve the desired replication of these features, especially the third one, the legal frameworks, as well as commercial practices, need to recognize e-Bills as of equal value as their conventional counterparts.

Problems are arising not only in the case of the negotiability of the documents but also in the authentication and signature process of the electronic documentation and in the evidential value and admissibility of electronic documents. International regulations and instruments, such as CMI Rules, MLEC and many other provisions in the legislations governing e-B/L tried to address and overcome these problems and in some extent, they achieved to recognize the e-B/L as functionally and legally equivalent to the traditional paper B/L.

To summarize, the use of e-B/L is necessary nowadays due to the rapid growth of world trade and shipping market. Still, there are many risks around the e-B/L and many concerns and legal issues to be solved. EDI and IG try to improve the way the transactions are conducted and the security background to protect the main functions of B/L and equalize the paper B/Ls with the e-B/Ls, throughout the use of electronic systems and platforms. The future foreshadows a new paperless era as it is difficult to argue against all the advantages of e-B/L.

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