

Summer 5-26-2017

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<http://aisel.aisnet.org/whiceb2017/33>

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Coexistence mode of electronic and traditional paper bills of lading to regulate goods delivery without bill of lading in China

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Abstract: Delivery of goods without bill of lading is a very difficult problem in maritime law field. It can not only shake the foundation of the bill of lading system, but also affect the function of bill of lading. Some scholars have theoretically put their discussion emphasis on the transport document innovation, and tried to regulate delivery of goods without bill of lading by the adoption of sea waybill and introducing electronic bills of lading. Paper bill of lading, sea waybill and electronic bill of lading have different effect on regulation delivery of goods without bill of lading, which are mainly reflected in five aspects, that is, security, transfer speed, economy, legal support and scope. To regulate delivery of goods without bill of lading, three transport documents are quantitatively analyzed, and achieved the superior or inferior rank by the construction of judgment matrix in analytic hierarchy process. The final conclusion of the study can guide legislators to choose the best mode to legally regulate delivery of goods without bill of lading. China should adopt coexistence mode of traditional paper bill of lading and electronic bill of lading in order to regulate goods delivery without bill of lading.

Keywords: electronic bill of lading, delivery of goods without B/L, analytic hierarchy process, legal regulation

1. INTRODUCTION

International conventions and most domestic laws have treated delivering goods with production of bill of Lading (bill of lading) as the fundamental principle of carriage of goods by sea. However, in practice, delivery of goods without bill of lading is a long-existing and thorny problem in China which has become the chronic disease of bill of lading. Even though, delivery of goods without a bill of lading can clear the port congestion to some extent, promote the rapid flow of goods and protect the transaction convenient, the side effects cannot be ignored. It may not only bring carrier huge risks, threat transaction security, increase judicial burden, even shake the foundations of the bill of lading system.

Delivery of goods without B/L is an abbreviation, which is customary appellation in shipping practice and judicial practice. The full name is delivery of goods without original bill of lading, in English literature it is described as “delivery of cargo without presentation of the original bills of lading”. Delivery of goods without B/L means “the actual delivery of goods without presentation of original bills of lading. Delivery of goods by the carrier, taking delivery of goods by the consignee, they are the two aspects of the same process. Therefore, delivery of goods without B/L refers to taking carriage of goods without original bill of lading.”^[1] The core vocabulary is “bill” in delivery of goods without B/L. Study on legal regulation to goods delivery without B/L must start from “bill”. In addition, the sea waybill and the electronic bill of lading have very important effects on solving the problem of delivery of goods without B/L.

In order to avoid this phenomenon, the Scholars mainly proposed two solutions. First, the law changes, that is, making minor repairs within the existing legal framework to ease the problem; second, innovations of the transport documents. As for the law changes, there are two theoretical viewpoints. One persists in delivering goods with production of bill of lading as the fundamental principle. How to regulate the responsibilities is the focus. The other advocates the reform, or even repeals the basic principle, so that the transaction convenient can be protected. Delivery of goods without bill of lading can also be alleviated. On 11 December 2008, the UN

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General Assembly adopted United Nations Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea (in short “the Rotterdam Rule”). Article 45, Article 46 and Article 47 together reflect the very core of the Convention regulating the delivery of goods without bill of lading. The Rotterdam Rule creates a complete and rigorous legal system within which carrier has legal rights to deliver goods without bill of lading. It thus subverts the traditional basic status of delivery goods with bill of lading. This series of innovative measures have sparked the intensive discussion of academic colleagues.^[2] As for the innovations of transport documents, scholars generally hold that the introduction of electronic bills of lading can fundamentally solve the problem, but also point out that there are lots of issues need to be handled in the application of this sort of transport document. For example, in “bill of lading and other shipping documents”, professor Liangyi Yang pointed that “in order to cure the death syndrome of delivery of goods without B/L, the electronic bill of lading must be adopted. Yet to replace ‘paper bill of lading’, some conditions must be met in the electronic bill of lading”.^[3]

Taking comprehensive view of the scholars about the problem of delivering goods without bill of lading, it can be found that any one kind of path have some problems to be solved. In summary, solutions about delivery of goods without bill of lading have been involved, but just stay at the level of two solutions. The specific solutions have not in-depth mined. In addition, the literature is also very rare that comparative study on the problem of delivery of goods without B/L in view of transport documents. A few papers broadly discussed it, did not touch the essence or put forward effective regulation opinions.

Do we need to be at the cost of abolishing paper bill of lading? Will the mere electronic bill of lading be able to solve our trouble? Which mode shall we select for the legal regulation in delivery of goods without bill of lading? The discussion of these issues is the foundation and the key to deal with delivery of goods without bill of lading. Here I comprehensively comment the effects of paper bill of lading, sea waybill and electronic bill of lading on delivery of goods without B/L. The future trend will be objectively predicted that traditional paper bill of lading and electronic bills of lading. Their effects on the legislative adjustment will be discussed for delivery of goods without B/L. This article commences by an analysis on the selection of research method. Then the critical discussion of the mode selection of legal regulation in delivery of goods without bill of lading by the Analytic Hierarchy Process forms the very foundation of the further discussions of the paper; furthermore, the implications will be revealed on the basis of the analysis above. Finally the paper ends with the conclusion.

2. CONSTRUCTION AND THEORETICAL ANALYSIS OF ANALYTIC HIERARCHY MODEL

Professor William M. Landes and Richard A. Posner have ever said: “I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely, in your thoughts, advanced to the stage of Science, whatever the matter may be.”^[4] The method of mathematical model analysis can be introduced into legal research, which can overcome too abstract and obscure drawbacks in the traditional law theory. It can also provide a relatively objective analysis, as well very intuitive conclusions.

Paper bill of lading, sea waybill and electronic bill of lading have different effects on regulation delivery of goods without B/L. In traditional analysis method, different possible effects of three transport documents on delivery of goods without B/L were obtained through comparisons. Such comparative analysis method is too empty and lack of persuasion. Therefore, this paper adopts the analytic hierarchy process. By this mathematical model, judgment matrix forms, the relative weights of important reference factors are determined by mathematical calculations, the advantages of transport documents are ranked. The best mode of delivery of goods without B/L is chosen and formed on the basis of these analyses.

The analytic hierarchy process is a structured technique for organizing and analyzing complex decisions. It provides a comprehensive and rational framework for structuring a decision problem. Users of analytic hierarchy process first decompose their decision problem into a hierarchy of more easily comprehended sub-problems, each of which can be analyzed independently. The analytic hierarchy process converts evaluations to numerical values that can be processed and compared over the entire range of the problem. This model is composed by goal layer, criterion layer and alternative layer. Each evaluation factor should be applicable to the alternatives, but the effects and importance are different.

2.1 Setting alternatives

In the 1980s, France, Germany, Sweden and many other countries have begun to apply sea waybill. The original intention for people to accept sea waybill is to eliminate the negative effects of delivery goods without bill of lading. Because there are huge differences for the characteristics between sea waybill and traditional paper bill of lading. With the traditional paper bill of lading, carrier bears obligations to deliver goods with the original bill of lading. Whereas, it is not the case for sea waybill with which, people can take delivery of goods without the production of the document. Therefore, it cannot cause problems.

With the rapid development of communications technology and computer, merchants gradually carry on a variety of cross-border transactions through network. People also target traditional paper bill of lading, trying to apply new technology into the field of transportation of goods by sea. People begin using electronic data interchange (EDI) technology which refers that parties transmit information via computer as a medium according to the agreement.^[5] Being efficiency, EDI was transplanted into the transforms of bill of lading. Electronic bills of lading were born with which, people expect to make up the defects of slow flow speed for traditional paper bill of lading.

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In summary, although there are a number of differences of these three transport documents in terms of time of birth, application situations and properties, they are always related to the discussions on delivery of goods with or without documents. Application of these transport documents may have impacts for the solution of delivery of goods without documents more or less. Therefore, in order to construct analytic hierarchy process model, this article designs traditional paper bill of lading, sea waybill and electronic bill of lading as three alternatives.

2.2 Setting criteria

Traditional paper bill of lading has been successfully in operation for several hundred years which was praised as a “genius tool”.^[6] Legislation regulating traditional paper bill of lading has been perfect and national judicial authorities have accumulated a lot of precedents resources around bill of lading in maritime practice. Nevertheless, the inherent defects exist in traditional paper bill of lading. First, transfer speed is slow, which

often lead to the conflict of cargo arrival and absence of original bill of lading. This phenomenon not only causes huge economic losses but also leads to more risks for carriers. Second, traditional paper bill of lading can easily be forged so that a large number of fraud cases may arise. This is not beneficial to the development of maritime system. Third, production of traditional paper bill of lading always spends a lot of human and material resources.^[7] The production of paper documents occupies 7% of trade input. A series of paper documents which parties must submit occupy 10%-15% of the entire maritime cargo transportation costs.^{[8]-[11]}

Sea waybill has played an important role in a limited range so as to make up the intrinsic defects of traditional paper bill of lading. Some scholars regard sea waybill as good medicine to cure “delivery of goods without bill of lading disease. Is this really true? First, it cannot establish direct contact with the cargo and can not flow and be transferred, applications of sea waybill is limited within a very narrow range. Goods can not be achieved in transit sales which greatly limit the development of international trade. In international sales, buyers and sellers tend to use letters of credit for the payment of goods. Banks are reluctant to accept sea waybill. Second, sea waybill is regarded as safety document, and of course this is just for the comparison of traditional paper bill of lading. The consignee can take the goods from the carrier if he indicates his identity appropriately. Third, law supporting mechanism of sea waybill isn't perfect. International convention and other maritime law didn't make provisions and build perfect system on sea waybill.^[12]

With the progress of science and technology, the concept of “electronic bill of lading” appears. Bolero (of Lading Organization Bill Electronic Registry) operation of electronic bill of lading shows the current status of the development of electronic bill of lading. In 1994, carrier, traders, bankers, telecommunications companies and the European Commission jointly developed the Bolero bill of lading. In 1995 and 1996, they launched a technical test, and then began to slow down the development. In 1997, SWIFT (Society for Worldwide Interbank Financial Transactions) and TTC (through transport Mutual Insurance Association Ltd) began to join the research and development project of Bolero electronic bills of lading, which has further promoted the development of electronic bill of lading. Bolero electronic bill of lading started officially to be used on September 27, 1999 in the end.^{[13]-[15]}

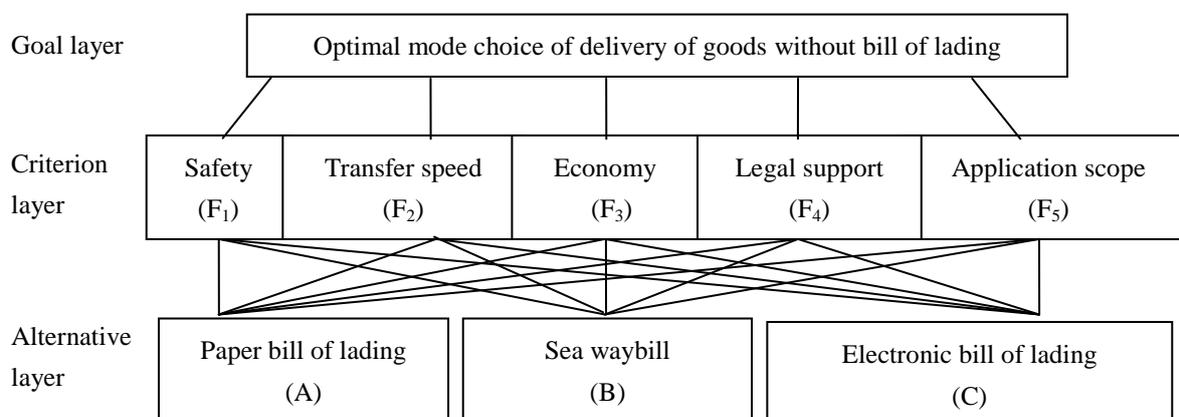
Compared with traditional paper bill of lading, electronic bill of lading is based on modern information technology, and the speed of the transfer is greatly improved. The advantage of electronic bill of lading is also reflected in the reduction of transport costs. Electronic bill of lading is based on the EDI technology, which makes paperless transactions possible. EDI technology can also handle information automatically; greatly reduce the resources occupation, save human resources. In terms of safety, Bolero electronic bills of lading take digital signature as the core of the security authentication mechanism, which can effectively prevent the fraud of bill of lading.^[16] The legal supporting mechanism of electronic bill of lading has not yet been established. In most countries, there are only few domestic regulations on electronic bill of lading.

In 1995, Utah Digital Signature Act confirmed the legitimacy of the digital signature technology for the first time in the world. In addition, in 1996, Australia promulgated the “maritime law”, and legally confirmed the equivalent function between electronic bill of lading and traditional paper bill of lading.^[17] Although in 1990, International Maritime Commission (CMI) passed electronic bill of lading rules. Section 1 clearly stipulates that “this rule applies merely when all parties are in agreement.^[18] This greatly limits the application scope and legal influence of the rules. In 1996, UNCITRAL (the United Nations Commission on International Trade Law) formulated “UNCITRAL Model law on Electronic Commerce”. This law mainly prescribes the provisions of electric data interchange (EDI) and develops related electronic communication means.^[19]

Based on the analysis and comparison of traditional paper bill of lading, sea waybill and electronic bill of lading, we can find that they are different from transfer speed, operation safety, cost consumption, scope of application, and legal supporting mechanism. These factors are closely related to the best mode choice of

delivery of goods without bill of lading. The factors, such as the transfer delay and fraud of bill of lading, will lead to the problems of delivery of goods without B/L. Therefore, the analytic hierarchy model criterion layer should be set to the transfer speed criterion, operation safety criterion, economic criterion, application scope criterion, and the legal supporting criterion.

2.3 Constructing analytic hierarchy model



In this model, the goal layer is optimal mode choice of delivery of goods without bill of lading. The alternatives are: traditional paper bills of lading, sea waybill and electronic bill of lading. Criterion layer is: safety, transfer speed, economy, legal support, and application scope. The specific content of these evaluation criteria are:

- Safety: The use of transport documents will not bring security problems to the parties, will not harm the interests of the subject of rights;
- Transfer speed: The different effects that the transport documents eliminate the later goods arrival than original bill of lading, rather than the transfer speed of transport documents in every transportation link.
- Economy: It mainly refers to the factors that affect the price of marine cargo transportation, such as the cost of production and the cost of technology;
- Legal support: legal regulation of domestic law and international legislation for transport documents;
- Application scope: applicable situation of transport documents in different aspects of the transfer process, and adaptive ability to various specific transaction activities in dealing with practice of actual performance.

2.4 Construct judgment matrix and assign value

The hierarchy has been constructed. It can be analyzed through a series of pair-wise comparisons that derive numerical scales of estimation for the nodes. The criteria are pair-wise compared against the goal for importance. The alternatives are pair-wise compared against each of the criteria for preference. To make comparisons, we need a scale of numbers that indicates how many times more important or dominant one element is over another element. Nine scales can be valued with the intensity of importance. Comparisons are processed mathematically, and priorities are derived for each node. An important task is to determine the weight to be given each criterion in making the choice of optimal mode choice of goods delivery without B/L. Another important task is to determine the weight of each alternative with regard to each of the criteria. In analytic hierarchy process, meaningful and objective numerical value should be put on each of the five criteria. Table 1 exhibits judgment matrix of criterion layer with respect to solutions to goods delivery of without B/L. Criterion layer judgment matrices of alternatives are shown respectively in table 2, table 3, table 4, table 5 and table 6, which includes security (F_1), transfer speed (F_2), economy (F_3), legal support (F_4) and application scope (F_5).

Table 1 Criteria layer judgment matrix and hierarchical single ranking

Weight comparison of evaluation criteria	F ₁	F ₂	F ₃	F ₄	F ₅	Value of importance ranking
F ₁	1	1	9	1	1	0.2432
F ₂	1	1	9	1	1	0.2432
F ₃	1/9	1/9	1	1/9	1/9	0.0270
F ₄	1	1	9	1	1	0.2432
F ₅	1	1	9	1	1	0.2432
$\lambda_{\max}=5$	CI=0			CR=0		

2.5 Hierarchical single ranking (priority vector computation) and test

Hierarchical single ranking is the criterion of evaluating the relative weight of each factor according to the relative weight of the criterion layer. According to matrix theory, the characteristic vector of the judgment matrix is obtained through mathematical calculation. The feature vector represents the influence degree of some elements (or all) in this layer on the elements in upper layer, that is, the weight value. In this way, the results of the single ranking of this layer form. Therefore, the matrix feature vector determination is very critical in hierarchical single ranking.

Consistency should be checked in judgment matrix. The consistency check can be carried out according to the following three steps. The first step is to calculate the maximum eigen-value of the judgment matrix, and then get the consistency index $CI=(I_{\max}-n)/(n-1)$. If $CI=0$, judgment matrix has complete consistency, and the test is over. If $CI \neq 0$, the random consistency ratio ($CR=CI/RI$) should be calculated. The second step is to determine the average consistency random index (RI). For 3 order judgment matrix, $RI=0.5149$; for 5 order matrix, $RI=1.1185$. Third step is to calculate the consistency ratio $CR=CI/RI$. If $CR < 0.1$, it is acceptable that the consistency of judgment matrix and single ranking results. Otherwise, if $CR > 0.1$, element values need to adjust. Single ranking and consistency test were carried on criteria layer and 3 alternatives which include traditional paper bill of lading (A), sea waybill (B) and electronic bill of lading (C). The results are shown in table 2, table 3, table 4, table 5, table 6 and table 7. Evaluation results show that they all pass consistency test.

Table 2 Judgment matrix and hierarchical single ranking of security (F₁) in criterion layer

Weight ratio of alternatives to F ₁	A	B	C	Ranking result
A	1	1/7	1/5	0.0719
B	7	1	3	0.6491
C	5	1/3	1	0.2790
$\lambda_{\max}=3.065$	CI=0.0325		CR=0.0631 < 0.1	

Table 3 Judgment matrix and hierarchical single ranking of transfer speed (F₂) in criterion layer

Weight ratio of alternatives to F ₂	A	B	C	Ranking result
A	1	1/5	1/9	0.0629
B	5	1	1/3	0.2654
C	9	3	1	0.6716
$\lambda_{\max}=3.029$	CI=0.0145		CR=0.0282 < 0.1	

Table 4 Judgment matrix and hierarchical single ranking of economy (F₃) in criterion layer

Weight ratio of alternatives to F ₃	A	B	C	Ranking result
A	1	1	1/9	0.0909
B	1	1	1/9	0.0909
C	9	9	1	0.8182
$\lambda_{\max}=3$	CI=0		CR=0	

Table 5 Judgment matrix and hierarchical single ranking of legal support (F₄) in criterion layer

Weight ratio of alternatives to F ₄	A	B	C	Ranking result
A	1	9	7	0.7854
B	1/9	1	1/3	0.0658
C	1/7	3	1	0.1488
$\lambda_{\max}=3.080$	CI=0.04		CR=0.0777<0.1	

Table 6 Judgment matrix and hierarchical single ranking of application scope (F₅) in criterion layer

Weight ratio of alternatives to F ₅	A	B	C	Ranking result
A	1	9	5	0.7514
B	1/9	1	1/3	0.0704
C	1/5	3	1	0.1782
$\lambda_{\max}=3.029$	CI=0.0145		CR=0.0282<0.1	

2.6 Hierarchical total ranking and testing

Total ranking is the relative weight of each element in every judgment matrix, which aims at the goal layer (top layer). The weight is calculated by the top-down approach, layer by layer synthesis. Calculating total ranking of certain layer, it must be used that total ranking of the higher layer and single ranking of this layer. Yet the single ranking of second layer to first layer is total ranking of the second layer. In this way, the total ranking is obtained layer by layer from the highest to the lowest one. In addition, consistency test should be carried on the hierarchical total ranking, the process of which is also obtained layer by layer from the higher to lower one.

Table 7 gives the results of the hierarchical total ranking. It can be seen that the comprehensive evaluation of the traditional paper bill of lading is the best, the value is 0.4091, electronic bill of lading is slightly lower, and both are higher than the sea waybill. Therefore, the traditional paper bill of lading is the best choice.

Table 7 Hierarchical total ranking

Criteria	F ₁	F ₂	F ₃	F ₄	F ₅	Evaluation of total ranking
Weight	0.2432	0.2432	0.0270	0.2432	0.2432	
A	0.0719	0.0629	0.0909	0.7854	0.7514	0.4091
B	0.6491	0.2654	0.0909	0.0658	0.0704	0.2580
C	0.2790	0.6716	0.8182	0.1488	0.1782	0.3329
CI=0.0247			CR=0.0479<0.1			

2.7 Ranking result analysis

Some scholars believe that traditional paper bill of lading which will lead to a variety of problems has been unable to adapt to present situation of shipping development. In this paper, the pros and cons ranking of paper bill of lading, sea waybill, and electronic bill of lading was studied by analytical hierarchy process. It believes that traditional paper bill of lading will still exist for a long time. Obviously, this conclusion has overthrown the view of these scholars. Although the transfer speed of traditional paper bill of lading is relatively slow. Comparing sea waybill and electronic bill of lading, considering various factors, we have to admit that the traditional paper bills of lading will continue to play an important role. It is not objective to eliminate the paper bill of lading. So far, there is no any transport document that can completely replace the paper bill of lading.

Although the electronic bill of lading is still in its infancy, it represents the future development trend. Bolero system is based on EDI technology. It establishes a closed system between service registry and the user.^[19] The users are usually carriers, shippers and banks. These users take the computer network as working platform. In this way, they send and receive information to complete the function of the traditional paper bill of lading. In this manner, the developers of Bolero bill of lading tried to overcome the shortcomings of traditional paper bills of lading.

Three transport documents were ranked by analytic hierarchy process, Electronic bill of lading ranks second. Compared the comprehensive evaluation of electronic bill of lading and traditional paper bill of lading, the result of electronic bill of lading is 0.3329. The traditional paper bill of lading is 0.4091, the difference between the two is very little. In view of the evaluation criteria of five types above and the corresponding judgment matrices, we will find that the electronic bill of lading is disadvantaged at the legal support and the application scope. In response to the problem of goods delivery without bill of lading, the electronic bill of lading is slightly behind the traditional paper bill of lading.^[20]

So, we can do such a hypothesis, countries start to recognize and promote the electronic bills of lading, gradually establish legal support system, improve the technical level step by step, expand the application scope of the electronic bill of lading, accept electronic bill of lading in various industry bodies. Then electronic bill of lading will become the best way to deal with the problem of delivery of goods without bill of lading. Using the development perspective to examine the relationship between traditional paper bill of lading and electronic bill of lading, the promotion of electronic bill of lading reflects the future development trend; In the case of electronic bill of lading is not yet mature, traditional paper bill of lading will continue to exist. The traditional paper bill of lading and electronic bills of lading will coexist for a period of time.

Sea waybill can be extended to a certain range. The sea waybill ranks third, comparing traditional paper bill of lading, sea waybill, and electronic bill of lading by analytical hierarchy process. After comprehensive evaluation, sea waybill is the most unsuitable transport document to deal with goods delivery without B/L. Nevertheless, we should dialectically treat the conclusion of this study and can not accordingly deny the inherent advantages of sea waybill. In the sea waybill mechanism, the goods delivery is not based on the submission of the shipping documents, which greatly facilitates the carrier and consignees to improve the goods delivery efficiency by sea. It can avoid goods delivery without B/L in a certain extent. Therefore, in practice, traders may also use sea waybill under the premise of no need to issue negotiable transport documents. In this way, ensuring the transactions safety, the transaction efficiency can also be accommodated.

3. MODE CHOICE OF LEGAL REGULATION FOR GOODS DELIVERY WITHOUT B/L

3.1 Comparative analysis of three modes for goods delivery without B/L

As mentioned above, three types of transport documents can be adopted which are, traditional paper bill of lading, sea waybill, and electronic bill of lading. These documents can be divided into three modes in terms of dealing with the problem of goods delivery without bill of lading.

1. Mode of traditional paper bill of lading

For this mode, paper bill of lading should still be adopted in order to effectively operate the international trade and shipping industry. The focus of legal regulation should be put on the improvement of the efficiency, while ensuring the safety of transactions.

2. Coexistent model

The coexistent mode refers to the equal operation and mutual transformation of traditional paper documents and electronic bill of lading. In this mode, the electronic bill of lading should obtain the equivalent legal status to the traditional paper documents. Although traditional paper bill of lading is facing challenge, the legal support system is very perfect. The legal reform can take the coexistent mode. Keeping original paper documents mode, at the same time, the mechanism of electronic bill of lading can be transformed into each other, and coexist side by side. The electronic bill of lading can be quickly transferred. It can fundamentally solve the problems that “goods wait for documents”, to ensure the transaction convenience. Under the coexistent mode, legal reform should try to ensure and improve transaction efficiency, and guarantee transaction safety. After all, transaction safety is the premise and foundation of transaction efficiency.

3. Mode of electronic bill of lading

This mode completely abandons traditional paper bill of lading. Correspondingly, electronic bill of lading will fully play function of paper bill of lading; play an important role in international trade, shipping and other fields. Goods delivery without bill of lading highlights inherent drawbacks of the mechanism of paper bill of lading. A valid path to deal with goods delivery without bill of lading is abolition of paper bill of lading, using the electronic bill of lading with scientific and technological content. In this mode, although the “goods wait for documents” phenomenon no longer exists, it is an extremely complex systematic project to build electronic bill of lading system. In this mode, electronic bill of lading should successfully “copy” the function of the traditional paper bill of lading, as a real alternative to paper bills of lading. Therefore, the disadvantages of paper bill of lading could be eliminated radically, and the problems in goods delivery without bill of lading could be eradicated completely. The project is a new starting point of legal regulation for goods delivery without B/L.

3.2 Application and Legal Support of electronic bill of lading in China

The birth of electronic bill of lading is based on the rapid development of modern information technology. Electronic data interchange (EDI) is the core technology of electronic bill of lading. The technology was developed in Europe and the United States as early as the end of 1960s, and it has been developing rapidly. Until the 1990's, China began to fully expand the application of EDI. Therefore, from the initial stage, the application of electronic bill of lading in our country lagged behind the advanced countries in the world.

EDI technology also started up in China developed by Ministry of Foreign Trade and Economic Cooperation and other relevant agencies. In March 2000, China Ocean Shipping (Group) Company (COSCO) cooperated with Bolero.net, and tried to operate electronic bill of lading mechanism. Bank of China (Hong Kong) Limited, China International Electronic Commerce Center (CIECC), as well other related agencies have started to cooperate with Bolero.net, tried to introduce the electronic bill of lading mechanism.

In China, legal provisions on electronic bill of lading are mainly included in the “Contract Law” and “Electronic Signature Law”. In “Contract law”, the 11th, 16th, 26th and 34th item, respectively, adjust the legitimacy of the data message, the arrival time and the established place of electronic contract. “Electronic Signature Law” has made the corresponding provisions on the legal validity of data message and electronic signature, the condition of reliable electronic signature, identification conditions taking the data message as the original, as well other issues. China's law on electronic bill of lading is mainly realized by electronic commerce legislation, “Maritime Law” did not admit the legal status of electronic bill of lading. This means that from a technical perspective, electronic bill of lading has been rooted in our country. However, examining from a legal perspective, the legal supporting mechanism has not yet been established that takes electronic bill of lading as core. It has still a long way to go that the electronic bill of lading really replaces the traditional paper documents.

3.3 Legal regulation mode selection in China

Comprehensively studying different characteristics of three kinds of modes, combining with the practical application and legal support system of the electronic bill of lading in our country, this paper argues that China should adopt the coexistent mode to regulate goods delivery without bill of lading. That is, the operation mechanism should be established that the equal coexistence and mutual transformation of the traditional paper documents and electronic bill of lading.

The potential of the traditional paper bill of lading has been excavated to the extreme, and its important role has been far more than people's expectations. With the rapid development of science and technology, the paper bills constantly exposed many malpractices. Thus, the problem of goods delivery without bill of lading became chronic illness. In order to deal with this problem, scholars and practitioners have tried a variety of methods. Unfortunately, the phenomenon of goods delivery without bill of lading was not cured but intensified. The reason is that these previous attempts are mostly limited to minor repairs in the existing legal framework. The

small modification can alleviate merely the problem. Goods delivery without bill of lading is an inner defect reaction of traditional paper bill of lading. Just taking the conservative path to deal with this problem, it will be powerless. In China, legal regulation of goods delivery without bill of lading should not take the conservative way. The mode of traditional paper bill of lading is not suitable.

There are also some scholars believe that radical elimination of goods delivery without bill of lading must carry out drastic reform, that is, abandoning the traditional paper bill of lading, and adopting the electronic bill of lading. This is indeed the future direction. However, considering current application of electronic bill of lading and the relevant legislative situation, taking this path is too radical. Western developed countries even do not have perfect conditions to take this mode, neither does China. Moreover, nowadays paper bill of lading is still widely used in international communities. Although electronic bill of lading represents the future trend, it is not the right time to adopt this model with the current situation.

ACKNOWLEDGEMENT

This research was supported by National Social Science Foundation of China (Granted Number 13BFX093), and Major Project of National Social Science Foundation of China (Granted Number 15ZDB178).

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