

New Avenues of Logistics and Transportation Laws in Supply Chain Management: Issues and Challenges

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Abstract--- While dealing with trade, either at domestic or international market, legal considerations involve in logistics and transportation in supply chain has played their significant role. The field of laws and regulations has been emerged over time with some serious issues at global market. Present study has reviewed the opportunities with the issues and trends involved in logistics and transportation. For this purpose, a comprehensive review is developed with some meaningful suggestions to develop a comprehensive understanding as well. In this regard, the field of Operational research (OR), its historical trends, legal issues for the transportation of goods, international commercial terms, and finally the shipped documents are very much important. Although the complexity level has been increased while dealing with the legal formalities, the compliance of shipped documents can provide the firm with better outcome and better delivery of the products in recent time.

Keywords--- legal considerations, supply chain, operational research, international commercial terms, shipped documents

1. Introduction

In the present competitive environment at world economy, serious research attention has been paid towards the supply chain and related fields. With the reasonable cost structure, firms at global context searching for the new opportunities to satisfy consumer needs and expectations. The idea of supply chain management not only used to cover the theme of logistic activities, but also to address and to control the material and information flows within and outside the business firm [1], [2], [3, 4]. The same term is under observation by the variety of studies to express the organizational issues in a controlled environment [5], [6]. In addition, it also covers the idea of vertical integration regarding the association, develop with the suppliers for the long run partnership [7], [8].

The theme of SCM is the reverse of traditional business practices where the manufacturer was supplying the core products to ultimate consumers. However, in the present environment in the world economy, customers are dealing the suppliers, how to deliver them the true product they want [9], [10]. However, the success or failure of supply chain management purely depends on the logistics and related functions. The concept of logistic management is the part of SCM with the proper planning, implementation and finally the controlling activities with the effective way to store the goods and services with information from the starting point to the ending point (Consumption) [11], [12], [13]. For the logistics, the key functional areas include the network design, transportation, information technology, storage and inventory management, where housing, handling of the material, unloading and its loading, and finally the packaging and key steps involve in packaging as well [14].

The idea of SCM covers the hard side and soft aspect as well. The key hard side in SCM include the technical and related factors, while the soft side for the SCM covers the people and other items. In addition, the key discipline like marketing, management, procurement, operational research and logistics also covers under its title [15].

In today's world where the purchasing decision is not a big deal because of the convenient opportunities to buy the goods/services at doors step, the concept of logistics and transport sectors are playing their significant role. Those companies which are dealing with such services are not only providing and facilitating the raw material sources and supplies on time, but also playing their role in increasing the value for the products and services [4]. However, the role of logistic management is very much crucial when it deals with the assembly and warehousing of the products and getting the finish goods to the market. With the increasing competition the role of logistics become very much complex as is connecting

the people and market in a physical way like the In its traditional approach, SCM has significant influence from the logistics and transportations including distribution and marketing as well. however, the focus on the idea of logistics and transportations laws with opportunities and latest trend is not under accurate discussion in existing studies. To under the concept of new opportunities in logistics and transportations laws, there is strong need to get the true meaning of key era in the evaluation of SCM. [16] has explained these era in a significant approach. These include the creation era in which supply chain management and related terms has been used in the American industry by some consultant back in the year 1980s. however, the term SCM was of great interest before the start of 20th century specifically at the time of start of assembly line. The 2nd time duration for the supply chain is known as the integration era where SCM, were numerous studies have been highlighted and developed during the time of electronic data interchange or EDI and enterprise resource planning (ERP) and related system as well. The third-time period is categorized at the globalization with the global idea of SCM in the business organization with the core focus on competitive advantage, creation of more values for the customers, and finally the reduction of cost. The fourth phase is captured under the title of specialization phase one in which industries and business firms started to focus on core competencies with the adoption of specialization model. However, the specialization phase two has

virtual network over the internet.

covered the supply starting of transportation, brokerages, management of warehouse. This field also cover the logistics aspects of supply planning and performance. Figure 1.1 explains the trends in logistics and transportation in Indonesian market.

2. Logistics and Transportation

The concept of logistics management can be explained as the part of overall SCM activities, which focus on the planning, implementation and finally the controlling phases for the efficient and effective storage of products and services with the relevant information. This information and other activities start from the starting point to the ending point while satisfying the customer needs and wants [17]. On the other hand, the idea of transportation covers the physical movement of goods and services with some good mean and it is the process to create a link between the supplies and consumer supply chain. Numerous means to transportation has been discussed in existing literature with the meaningful advantages and drawbacks as well.... To measure the performance in transportation, availability of the product, time to prepare the product, transit time with their delivery on time and finally the accurate billing of the products and services. The idea of logistic capture getting the items where they need with their optimal prices, while transportation covers the delivery or movement of goods and services in a best way [18], [3], [19].



Figure 1. Trends for the transportation and logistics market

Long before the invention of computer, the field of transportation and logistics management has been entitled under operational research with the aim to support the key decision making as well. After the development of optimization models, the field of operational research has significantly contributed towards the transportation in making it more efficient. To improve the decision-making process OR has contributed in a significant way while capturing the complexities of the problem [20], [21], [22], [23].

3. Historical Review for the trends in Transportation and Logistic

The history of logistics and transportation is considered as old as the human being. However, significant milestones have been achieved in this regard. The invention of railroad has been done during the start of 19th century and airplane of 1903 and sea container back in 1956 which has impacted on the sea transportation significantly [14]. In the recent time, both logistic and supply chain management has been entitled as the key functional areas in the business firms with the focus on the delivery of goods when and where they are in need

by the consumers and other users [3, 4, 24, 25]. The idea of transportation management can be viewed as the part of logistics while talking about the business process and related models. In the older time, the concept of freight transportation has been separated from the people transportation problem. The idea of freight transportation captures the issues in the private sector while OR has provided significant ways for the solution of these issues [26], [27].

The problem of logistics and transportation has been examined since long by the researchers in the field of SCM and OR. As reported by [28], it is found that the very first contribution in this regard was done by Tolsto, back in the year 1930, in which his major focus was on the issues related to the transportation. He has studied the problems, issues and trend in transportation and related laws with the significant solutions and probably the very first contributor in the idea of optimal solution to the problem of transportation and logistics. However, the historical review of operational research in the field of transportation and logistics is followed by the development of communication technologies. The overall historical trends in the field of logistics and transportation can be viewed in the study of [29].

Table 1: Historical Trends in Operational Research

Time Duration	Key trends
1960-1970	Emergence of Transportation Science
1980s	common carriers and private fleets
1990s	passenger and freight transportation
2000/2010	Transportation and logistics (Growing Application)

As discussed earlier, the idea of transportation covers the traffic and public transportation while the logistic is known as a very young field which focuses on the inventory management with the physical distribution as well. During the time of 1960-1970, various programmed languages were developed to properly integrate the idea of transportation and logistics as well. However, after this time, the period of common carries and private fleets have been emerged in which rails and sea transportation has been emerged with the air transportation as well. During the time of 1980s, home computer system was developed with the personal productivity as well. after the period of 1980s, transportation include the passenger and freight has been emerged with the development of logistics and considerable level of focus is made on the logistic and supply chain management. Since the

time of 1990s, the idea of internet has its significant impression on the commerce and industry with the online shopping concept. After the 1990s, the era of 2000/2010 has been started with the primary focus on the logistics and transportation with minimizing the gap for the traditional freight and passenger transportation as well.

4. Legal issues in Transporting the Goods in Recent Time

Various legal issues are involved while dealing with the shipment of goods through some transportation means at international context. However, success applications of legal requirements can save the business firm from the legal complications regarding punishment and fines which are critical component in

the success of any industry. The idea of legal issues arises for the business firm when dealing with the varying laws at global market. Followings are the key potential legal areas which are under consideration as explained by while dealing with international transportation of goods [30].

4.1 Transporting the perilous Goods

The shipment of risky, hazardous or perilous items is highly regulated with the due cause. Back in the year 2004, the administration under the title of pipeline and hazardous material safety administration or PHMSA has been developed to deal with the oversee shipment and delivery of risky materials either in land, sea or air. Those who will fail to comply with the regulations as explained by PHMSA will be fined up to \$500,000 amount with the jail of up to five years as decided by the international court for law and justice. The key issues related to the hazardous material and its international transportation covers that material is assumed to be not in the category of risky or hazardous. In addition, non-consideration of regulatory compliance between the various mode of transportation like air and sea or highway and finally mistakes conducted by the employees while sending some material to international market.

4.2 Dealing and Management of Heightened Security

With the increasing number of transactions, illegal run of these activities, security measures have been increased day by day. However, with the usage of latest technology and some safety measures can help to watch and control the suspicious activities in the shipping container. Meanwhile the delay in the inspection of such items can also create the problem and it is very time consuming, but at the same time very much significant from the perspective of security. The delayed in the shipment of the goods can cause to face a legal issue for the business firms which also affects the just in time delivery system.

4.3 Inappropriate Documents and Insurance

While exporting the material to international market, it is very much important to consider the legal documents involved in the transaction. The team of expert legal individuals can play their role in this regard regarding the preparation of bill lading, certificates, license to export the goods at international market. However, the maintained of legal documents regarding the transporting of the goods is up to the obligation of the exporter and falling the keep this will create serious issues..... In

addition, the security of exported goods with the purchase of insurance is also very much necessary. Such security can help to secure the goods from common hazards and rough handling of the material goods. In addition, various legal issues also arise when there is no compliance of international commercial terms which are very much clear to deal with international transportation of goods and services. Besides, another issue in incoterms is the not dealing with the details of terminal handling charges or THC.

4.4 Transporting Logistics and the Law

[31] have also expressed the various legal risk, costs and other issues which can restrict the smooth working of the supply chain. Meanwhile, it also explains the key ways which can score the business firm from such issues. various laws and regulations have been demonstrated which cover the aspect of transportation. These laws and regulations include the jurisdictions, regulations dealing with the railroads, carriers, oceans and airlines, regulations regarding, brokers and other agents, shipping, laws for the contract of transportation, main liabilities for the damages and the losses, insurance of the cargo, duties and obligations of the carriers and the shippers, terms of sales, export and import rules & regulations, international laws and dealing of hazardous material as well [32].

In the recent time, United Nations procurement in the system of organizations has also focused on the logistics requirements for the goods, ethics in procurements, and other terms. To cover the overall scenario following key points have been taken into consideration.

4.4.1 Logistic process and planning

The idea of logistic planning starts from the need assessment phase. In addition, it also covers the understanding the operational context of the required products and focusing & evaluating the procurement activities with the financial resources, present to determine the urgent requirement of the business. Besides, it also focuses on the key types of the sourcing and determination of the market where the product will be offered for the final sale.

4.4.2 Logistic requirement for the products

After the planning process the next step involves in the logistic requirements for the products is addressed. For the legal consideration, following points should be considered for the shipment of items from one region to another one.

- Proper packing and containerization
- Packing and related shipment with proper instructions
- Proper labelling with shipping marks etc.
- Transportation modes and means
- Agents in the importing country
- Key terms involved in the transactions; International commercial terms
- Documents for the shipment
- Insurance during the time of transaction and transportation
- Final receipt of the items

For the proper storage of the goods and its transportation, below table 2 explains the dimensions

and sizes of the container which can reduce the risk of loss, future indemnification of the losses. However, among these points, international commercial terms play their significant role while dealing with the logistics and transportation law at international level. The clear and concise understanding of these terms can provide the opportunity to lower the risk and finally shipment in an appropriate way. It is very much necessary for the procurement officer to familiar with these terms. Table 2 explains the term with its applicability while dealing with the logistics and transportation at international level.

Table 2. International Commercial Terms

Terms and Abbreviations	Key Usage and Implications
FCA (Free Carrier)	International procurement where the supplier of the goods does not arrange transportation.
CPT (Carriage Paid To)	International procurement where the supplier arranges transportation.
DDU	Local procurement use.
(Delivery Duty Unpaid)	International procurement where the UN organization elects the supplier to bear all risks and costs associated with the transport of goods to the country of destination. However, considering the very good all-risk insurance coverage offered under the insurance programme negotiated globally by various UN organizations, it is highly recommended to purchase CPT for all international procurement and have the goods insured under the global insurance programme of the organization.
	Note: DDU for international procurement is justified in very few countries where the insurance programme does not provide full coverage (e.g. it excludes war risk).

For the timely delivery of the products, shipping documents are playing their crucial role and have significant importance. For both suppliers and buyers, shipping documents are very important. The exact length of the shipping documents depends upon the goods and their shipment with the means of transportation. However, from the legal perspective, with the passage of time,

For all the shipments in the world economy, following documents are common

following documents have been emerged over time and every shipment should contain the following:

- Shipment contents
- Weight and volume of the contents
- The point of origin of the products
- Proper pricing of the products
- Evidence for the transport of the goods

Table 3. Types of Documents involved in Logistic and Transportation for Legal consideration

Shipping document	Purpose
Bill of Lading (B/L)	The contract of carriage between the shipper and the carrier, indicating how goods are being shipped and when they will arrive.
(for sea shipment)	Evidences that the carrier has received the goods for shipment and is conclusive evidence that the goods were shipped as stated.
Waybill	Documents ownership to the goods specified (a document of title). It is recommended to specify that the B/L be marked 'clean on board and freight prepaid' (especially when using the CPT Incoterm).
(other modes of transport)	
Commercial Invoices and Pro Forma Invoices	Describes the goods and indicates their value.
	Proves the value of the goods.
Packing lists	Describes the content, total number of packing units, markings, weight and volume of each unit.
Certificates of Origin	Indicates the country of origin or manufacture of the goods and are always issued by a local Chamber of Commerce.
	Required for importation and used for statistical purposes.
Gift Certificate	Replaces the commercial invoice and certificate of origin in the case of goods from warehouse or in-kind donations.
	Proves the value of the goods.
Additional documents required when using a freight forwarder	
Forwarder's Certificate of Receipt	Proof that the supplier has handed over goods to the freight forwarder.
Freight Invoice	Indicates shipping details and charges.
Additional documents	
Certificates certifying quality	May be required to certify quality.
	Usually provided by the supplier.

5. Conclusions and Recommendations

In the recent years, the idea of supply chain and related fields has been emerged over time, due to the advancement of technology. To get the benefit from such advancement, market trends all time put pressure on the companies and the business firms to get better technology over time. However, various legal issues are involved in the field of logistics and transportation which are the core component in overall supply chain management. Meanwhile, business firms are legally bound to follow the latest trends and legal points involve in both logistics and transportation. For this purpose, the role of operational research is very much significant. In addition, the idea of logistics and transportation laws in the form of transporting the perilous goods, dealing and management of heightened security, and

inappropriate documents and insurance are core points to discuss. However, the idea of logistics and transportation laws as explained by UN procurement program are core to address which covers the title of logistic planning, international commercial terms and list of legal documents involved in this regard. However, besides the complexes and legal issues, following recommendations can be adopted. At first, the better and wider adoption of transportation management system. At second, usage of autonomous drones and vehicles can restrict the human interaction in the global market with the fast tracking of the products. Putting the minimum intervention of the humans can reduce the legal constraints in this regard.

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