



What are the multi modal transport and its uses to logistics development at the global context.

Service Logistics (M6X01294)

Bsc – Logistics and Supply Chain Management

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Introduction

Transport is a very dynamic activity that continues to grow over the years, along with our global economy, forming a self-sustaining process that serves our society. (Jerome VERNY, 2008)

As the years have passed, transport has developed along with international trade, and this has been achieved through multimodal transport. It is a concept that has greatly facilitated international trade, ensuring a smooth flow of goods and allowing better control of the logistics chain. It is of paramount importance for countries wishing to import or export goods at reduced costs.

Trade cannot take place without transport, and efficient transport systems are an insurance policy to ensure the competitiveness of goods. One of the most important inventions in this field has been the container, a standardised box capable of travelling around the world by road, rail or sea.

Moreover, we have seen in recent weeks that when there is a problem with transport, it is the world economy that can be impacted and it is at such times that we realise the importance of transport. Indeed, with the blockage of the ship "Ever Given" in the Suez Canal, more than 400 ships were blocked on both of the canal, causing a loss of several billion dollars for the world economy. (VALLET, F., 2021)

Last year, I had an experience with multimodal transport. Indeed, I was the treasurer of a student association whose aim was to send a container of school supplies from France to a school in Morocco. At the end of the year, after collecting enough supplies to fill the container, it was ready to leave. We organised the transport with service providers, first a road transport between our university and the port of Brest (France), then a sea transport Brest-Tangier. Through this experience, I was able to understand how multimodal transport works and I also realised how important it is for our current global economy.

In this essay, I will try to present multimodal transport and its uses for the development of logistics in the global context. To this end, I will first discuss multimodal transport, presenting and defining it in a clear manner. Secondly, I will talk about the different types of multimodal transport that exist and their infrastructures. Finally, I will show how multimodal transport serves the development of global logistics, and then I will end with a conclusion.

1 Multimodal transport

1.1 Definition

Multimodal transport, also known as combined transport, refers to a mode of transport in which goods (or passengers) are transported from one destination to another using at least two different modes in succession. For example, it involves exporting goods to a country on the other side of the world by road and sea. (Transport and Logistics of France, 2016)

1.2 Presentation

1.2.1 General

Multimodal transport and logistics are peer groups and include establishments primarily engaged in the transportation of passengers and goods, the warehousing and storage of goods and the provision of services to these establishments. The modes of transport involved are land transport (trucking, public transport and land passenger transport), rail, water, air and pipeline. (Statistics Canada, 2012)

The distance between production sites, sourcing from the four corners of the world or the massification of flows are sources of numerous logistical problems. Thus, when transporting goods, it is not uncommon for the organisation in place to use several successive modes of transport in order to respond to these problems. This is known as multimodal transport. (Thomas FOSSE, 2016)

Multimodal transport developed following the revolution created by the arrival of the container in the 1960's and is an adequate response to these problems. Indeed, any goods packed in a container can cross the whole world via road, ship, rail or barge, depending on the departure/destination points, while reducing the transshipment time between two means of transport. Nowadays, globalisation and the large production center in Asia have accelerated the development of maritime transport. But companies necessarily need an approach transport to reach the final consumer. Therefore, other modes of transport have developed in parallel, such as road transport with the new alternatives that exist today. (Thomas FOSSE, 2016)

While the container is the ideal tool for this concept, there are other forms of multimodality, such as the use of "Europe" pallets in Europe, which allow for multi-modal transport on a more local scale (e.g. with the delivery of small shops). Industrial companies are also implementing returnable packaging which, in addition to providing reverse logistics, standardises production, delivery and quality processes. (Guillaume D., ADSrayonnage, 2020)

Multimodal transport allows logisticians to put the different means of transport available in competition with each other. Depending on their objectives (deadlines, financial, ecological balance, etc.), several modes of transport meet the same demand. However, it should not be forgotten that load breaks between means of transport are costly and generate risks for the goods. Consequently, the use of different means of transport is an answer, but abusing it, as is often the case, can be harmful to the activity. In general, a multimodal transport includes 1 or 2 transshipments before reaching the final destination. (Thomas FOSSE, 2016)

1.2.2 Environmental and societal

From an environmental point of view, the energy efficiency of combined transport is 3 to 4 times higher than that of road transport. It helps to relieve road transport congestion, reduce CO2 emissions as well as nuisances in environmentally sensitive areas. It strongly supports the CSR approach of many companies.

Multimodal transport is widely supported by many European and national institutions, through several aid programmes aimed at players in the sector, such as the Marco Polo II programme, which helps to start up a new combined transport service.

From a social point of view, combined transport minimises the risk of infringements and facilitates compliance with the relevant professional and social regulations. While the goods are travelling by train or ship, the driver can perform other tasks. This means that the truck driver no longer has to travel long distances or work at night. Personnel management is improved, as is road safety. (Alain BAGNAUD, SupplychainInfo, 2019)

Many companies have decided to use this solution to optimise the performance of their supply chain and to participate in the construction of a socially and ecologically responsible trade.

2 Different types of transport

2.1 Road transportation

Road transport is a multi-lane transport system in which vehicles (cars, buses, trucks, etc.) travel on roads and carry goods. The advantages of road transport are flexibility, it is an easy way of transporting goods as there are roads all over the world and it is possible to reach remote areas. It is ideal for transporting perishable goods and short distances and does not require a high capital investment. As for the disadvantages, this means of transport is not suitable for long distances, is slow compared to railways, and is highly polluting. In addition, damage to goods is frequent, as are road accidents. (SubjectQuery, 2019)

2.2 Rail transportation

Rail transport is known for its high speed due to the fact that trains run on rails and not on roads. Rail transport is ideal for long distances because it is economical, fast and has very low environmental impact. It is suitable for transporting large quantities of goods, and ensures the safety of goods, as it is a reliable means of transport. However, it also has disadvantages: it requires expensive infrastructure and maintenance, it is not suitable for mountainous regions, compared to road transport, loading and unloading times are longer and more expensive. (SubjectQuery, 2019)

2.3 Pipelines

Pipeline transport is used to send liquids and gases from one point to another. It is suitable for transporting chemicals, biofuels and natural gases. Pipelines consume little energy, require a limited maintenance area and accidents are very rare. However, this means of transport is not very flexible and is restricted to one area. (know-net, 2019)

2.4 Water transportation

Maritime transport refers to the movement of goods and people across the seas and oceans of the world. It is the ideal means of transport for international trade and globalisation, as it is cheap and simple and goods can travel around the globe. It is possible to transport bulk and huge quantities of goods. However, sea transport is very time-consuming and it takes several weeks to receive the goods. In addition, rates are only interesting for large cargoes, and it is difficult for small companies to export and import with small cargoes. (Timar, 2019)

Air transportation

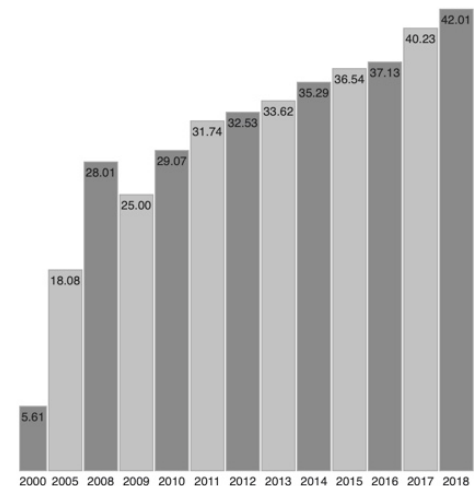
Air transport is the transportation of goods and people by air. It is known to be the most reliable and fastest means of transport available. It provides a regular and fast efficient service and is very suitable for emergency services. However, even though it is efficient and fast, transporting goods by air is expensive. It is therefore cost-effective to use this mode only with goods that have a high added value. In addition, it requires expensive infrastructure and skilled labour, and is extremely dependent on the weather. (Locallux, 2017)

3 Infrastructure and technology

The containerisation of general cargo has played a major role in the emergence of multimodal transport and logistics services in developed regions. Infrastructure, and in particular port infrastructure, has expanded and developed in line with containers. However, for some country, development has been slow because it was a capital-intensive service not suitable for territories where the level of remuneration was low and the initial investment required was high.

The use of containers requires qualified personnel in the ports and quality port, rail and road infrastructure, as well as appropriate regulations and labour regimes. These key elements create differences between developed and developing countries, as their inland networks are often incomplete and poorly maintained.

The port of Shanghai reflects this evolution over the years. This port on the Asian continent has developed at great speed, making it the world's largest trading port, with the majority of its activity based on containers with more than 42 million TEU in 2018. This graph shows the evolution of TEU transported (in millions) between 2000 and 2018. It shows an 8-fold increase over the 18 years. (World Shipping Council, 2019)



As with containerisation in recent decades, information and communication technologies (ICT) are now radically changing the way international trade and transport is managed. Electronic means of communication (ICT) are being used to exchange information, conclude contracts and track goods. Transport service providers and users use such tools internally as well as to exchange information with each other. As with containerisation, developing countries are lagging behind in the introduction of these new technologies, which require a very large investment. (CNUCED, 2010)

The distribution of investments is between the private and public sectors. The private sector participates in investment in infrastructure and new technologies in the ports, while the public

sector maintains a role in public investment, such as access to the ports (roads) or national telecommunication systems. (A. Estache, Privatization and Regulation of Transport Infrastructure, 2000)

4 Multimodal transport for global logistic

The global transport business has experienced a remarkable boom in recent years due to the globalisation of trade. Consumers have become accustomed to travelling and receiving their goods more quickly, all over the world. Supply chain actors therefore have to meet the needs and desires of consumers, while respecting current regulations and environmental issues. In this situation, multimodal transport responds to the current problems of accelerating flows by finding innovative solutions. (DECONNINCK J-C, Generix, 2020)

Today, whatever the type of transport used, carriers are facing problems of network saturation. As far as maritime transport is concerned, it represents more than 85% of world trade (La Montagne, 2021), but it faces capacity shortages despite the increase in the number and size of container ships. Moreover, some ports are no longer able to accommodate such vessels. As for rail transport, the infrastructures are too heterogeneous depending on the different countries, which complicates trade.

Globally, there is a growing urbanisation phenomenon. According to a UN study, the world's population in cities was 55% in 2018, and is expected to rise to 70% by 2050. This phenomenon means that logistics and transport players will have to adapt to this change, with, for example, an increase in home delivery services or click and collect, and the increase in small shops in city centres with very little storage space. This is becoming a challenge for transporters, who will have to manage tighter delivery times. (DECONNINCK J-C, Generix, 2020)

Multimodal transport has a role to play in the face of urbanisation, by proposing adapted solutions with shared logistics platforms. For example, for cities with developed rail networks (underground), it would be possible to transport goods from warehouses located in urban areas by rail, then collected by (electric) rolling stock, with delivery to shops or to consumers.

All these problems linked to transport can be avoided thanks to multimodal transport, because it allows to improve delivery times, to ensure the safety of the goods, because there is no break in the load, as the same packaging is kept. In addition, there is an optimisation of the costs linked to the transport of consumer goods and a greater respect for the environment.

Conclusion

In this essay, we have seen the history of multimodal transport, with a definition and a general presentation. Then, we have seen the different types of transport, with their advantages and disadvantages, as well as the infrastructures and technologies put in place for their proper functioning. Finally, we have seen the role of multimodal transport in global logistics.

Through these different parts, we have seen that world trade and international exchanges revolve around transport, and today, it is impossible to do without it.

Faced with the many challenges posed by the globalisation of trade, and the new problems linked to the environment and the new desires of consumers, multimodal transport now appears to be a solution of choice. It is a system that makes it possible to adapt, and logistics players are constantly finding innovative solutions in this field in order to respond to the problems and be efficient.

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