



A Primary Study on Making the Decision of the Selection of Multimodal Transport

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Abstract

When you drink a bottle of Australian wine, probably you will never ask yourself the question how it travels from Australia to your country? The simple answer is that the international supply chain makes it happen. There are several factors are very important when multinational enterprises make the decision to select multimodal transport.

Keywords: International supply chain, Multimodal transport, Finished-products

International supply chains involve the physical distribution between countries or continents. To provide door-to-door service, most finished-product international supply chains choose the multimodal transport. Why they make the decision in selection of multimodal transport? There are 7 main factors to be considered, they are 'the character of goods, geographical location, length of haul, value density, transit time, reliability and cost.'

When we talk about the transportation, we have to start from the goods. For most finished-products, compare to the raw material, they are usually high value, standard package, and they need to be on the worldwide retailer's shelf every day. They are high value, so they need a safe transport mode; they are regular packed, they can be filled in a container; they are selling every day, they need a short transmit time or delivery on time. As to the above feature, the best way for finished-product is to transport them in a container that ensures door-to-door transport of containerized cargo from its origin to its final destination with efficiency and least possible risk. 'Containerization facilitates multimodal transfer and removes the need for enclosed storage space at ports and other freight terminals. It also reduces the risk of the goods being damaged or stolen while in transit.' One of the characters of international multimodal transport is using container, so multimodal transport is applied to most of finished-product.

The geographical factor of origin and destination decides the mode of transport. If you transport goods from some island countries, for example Australia, British or Japan, sometime you have to use at least two different modes of transport. If the origin or the destination or the intermediate countries of transportation have different terrains and transport system, for example British has a very good road transport system, China has an excellent rail transport system, some south American countries have inland water-way advantage, you need to combined two or more than two modes of transport by using these developed transport system. From the above, we could know that the transportation between countries and continents inevitably involves two or more than two different modes of transport in the whole transit.

The global transportation is always long distance transit. Long-haul modes such as rail, ship and air play really important role in long distance transport. Road mode is usually taken in the short distance transport, so just the road transport mode cannot satisfy the requirement of global logistics chain. How about any other single mode? Can rail, air or ship transport undertake the whole task of international supply chain? The answer is no. Because the rail transport is limited in one continent, the ship transport just links the continents and the air transport cannot carry too many goods at one time. None of them can reach everywhere of the world. If we combine them together, we will find that the multimodal transport can really get to any point you need to get in the world.

For high-value density products, which derive great benefit from rapid delivery, traditionally are carried by airline. 'For these products, high air-freight rates are more than offset by savings in inventory costs, yielding lower total distribution costs than movement by slower modes.' This kind of products also could be delivered by road transport. For example TNT and Federal Express, the trucks link the airport and the customer. For low-value density products, which benefit from the mass quantity of the products, the best way is rail or ship transport. This kind of products doesn't need a quick delivery, but a large quantity in one transit. The international supply chain system includes transporting both the high-value density products and the low-value density products. As to this situation, multimodal transport is necessary in an international supply chain.

The time and cost factor are the most important two of all the factors. When we talk about them we consider time and cost together. In making modal choices, we usually trade off one against another. The ship mode is cheap, but it takes too long. The air mode is the fastest one, but it costs too much. As to road and rail mode, you will find it is really difficult to balance the time and cost. The multimodal transport is the solution to the problem; it can trade off time and cost. Even for the multimodal transport itself, choosing different routes you will get different results. A good case is the UK-Greece corridor. In this case, if you combine the right modes of transport and choose the right route you will find a pleasant solution to transit the whisky from UK to Greece.

There is another case to show how the multimodal transport affects the time and cost and why the international supply chain depends on the multimodal transport. 'Carpet is exported from Nepal to European markets via Calcutta port. The carpets are containerized at Birganj, which is 165 kilometers from Kathmandu. The container trucks are cleared by Nepalese customs and, after an overnight wait at the Nepal-India border, enter Raxaul for clearance on the Indian side. The entire trip by road from Kathmandu to Calcutta port, plus the time in port averages eight days. This includes a two-day wait to enter the port. It takes an additional four days for clearing customs and loading the cargo on the vessel. The cargo is then shipped east to Singapore for transshipment to a larger ocean vessel heading west to Europe. The freight forwarders in Nepal are proposing the use of the port at Nhava Sheva (Jawaharlal Nehru Port Trust, or JNPT) on the western coast of India as an alternative to Calcutta once the Bhairawa ICD becomes operational (Map 8 at the end of this report). This would allow direct shipments to Europe instead of feeding through Singapore. The new route would be by truck from Kathmandu through Bhairawa to Nautanwa, India, where the cargo would be packed into containers. The containers would be transported to the ICD at Moradabad and placed on rail cars for shipment to Mumbai and the JNPT container terminal. Although the land transport distance is three to four times as far as the distance to Calcutta port, the ocean portion offers considerable savings in freight rates and shipping times.'

The following is the table for the comparison between the two different routs of multimodal transport.

Table 1.

Commodity: carpet ShipmentSize:1TEU Value: \$90,000	Route: Kathmandu-Birgunj/Raxaul-Calcutta Port-Bremen		Route: Kathmandu-Bhairawa-Nautanwa- Moradabad-Mumbai-Bremen	
	Cost (US\$)	Time (Hours)	Cost (US\$)	Time (Hours)
Transport and handling				
Inland transport	480	117	740	88
Cargo Handling	260	74	463	155
Ocean Freight	1200	528	750	336
Cross-border Processing				
Cargo Transfer	261	164	125	37
Custom Inspection	405	20	202.33	7
Trade-related logistics				
Time cost	1252.45		864.09	
Insurance	675		675	
Documentation	450		450	
Bank fees	360		360	
Transport Cost	5343		4629	
Transport Time	903		623	

'It has the additional advantage of better productivity and fewer delays at Nhava Sheva than at Calcutta port. Table shows the cost and time comparison of the two routes. Although there is about a 14 percent reduction in cost for the route via the JNPT, the more substantial benefit is a 30 percent reduction in travel time from nearly 38 days to 26 days. The land route to the JNPT is more costly because of the longer distance, but the travel time is reduced by more than one day because of the higher speed on the rail connection between Moradabad and the JNPT. The three-day time for transferring cargo from truck to rail at the Moradabad ICD and 1.5 days in Nhava Sheva port is comparable to the six days spent at Calcutta port. The reduction in ocean transport time is substantial because the route from Calcutta is assumed to include a three-day voyage to Singapore and a five-day wait at Singapore for connection to the mother ship. The JNPT route time could be reduced by one day through tighter coordination in the packing of containers and loading on the rail cars. Further efficiencies could be

obtained if the transshipment from road to rail could be avoided altogether at Moradabad. With the operationalization of the rail ICD at Birganj, it would be feasible to ship containerized carpets all the way by rail from Birganj across India to the JNPT. Although the new route through Nhava Sheva offers substantial savings in time and cost for cargoes shipped to Europe, the same does not apply for shipments to Asia. The latter would require shipping the cargo from Nhava Sheva back through Singapore. Surprisingly, the difference in costs and time with this doubling back would not be that much greater than the route through Calcutta.'

From the discussion above and the case study, it is easy to know that when a company selecting the transport mode for an international supply chain, it should compare various modes and modal combinations, consider different routes and circumstances. Undoubtedly the multimodal transport is best choice for international supply chain, it could provide a successful door-to-door service and trade off the transit time and the transportation cost.

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