

Assessing Import Channels for a Land-Locked Country: The Case of Lao PDR

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Abstract

Lao PDR, as the sole land-locked country in South East Asia, is dependent upon available infrastructure in neighbouring countries for fast and efficient import of goods. The validity of a cost model for multimodal transport, which was originally proposed by Beresford and Dubey (1990) and developed by Beresford (1999), is tested against a real case in international logistics, namely the import of wine from Marseilles in France to Vientiane in Lao PDR.

The main elements of the model are as follows: cost, time, distance, transport mode and intermodal transfer. The model is tested using real data over a series of alternative routes between Marseilles and Vientiane. The selection of appropriate international logistics system will have a direct impact on the efficiency of Lao PDR import channels. The research findings clearly demonstrate that the "sea-road" combination via Danang Port in Vietnam is the most competitive in terms of costs while the "sea-rail-road" option via port Klang in Malaysia and through Thailand offers the fastest transit time.

Keywords: Southeast Asia, Lao PDR, import channel, international logistics.

Introduction

Tougher international competition and the expansion of geographical markets have forced manufacturers, exporters and importers to focus on integrated production and logistics strategies in order to reduce costs, and at the same time, to obtain a higher service standard. The need to control the transport costs has become as important as the need to keep down other production costs.

Lao PDR is the only land-locked country in Southeast Asia and the movement of Lao import from Marseilles in France is chosen in this article as an illustrative case study. The country is surrounded by five states: the Peoples Republic of China, the Socialist Republic of Vietnam, the Kingdom of Cambodia, the Kingdom of Thailand and the Union of Myanmar.

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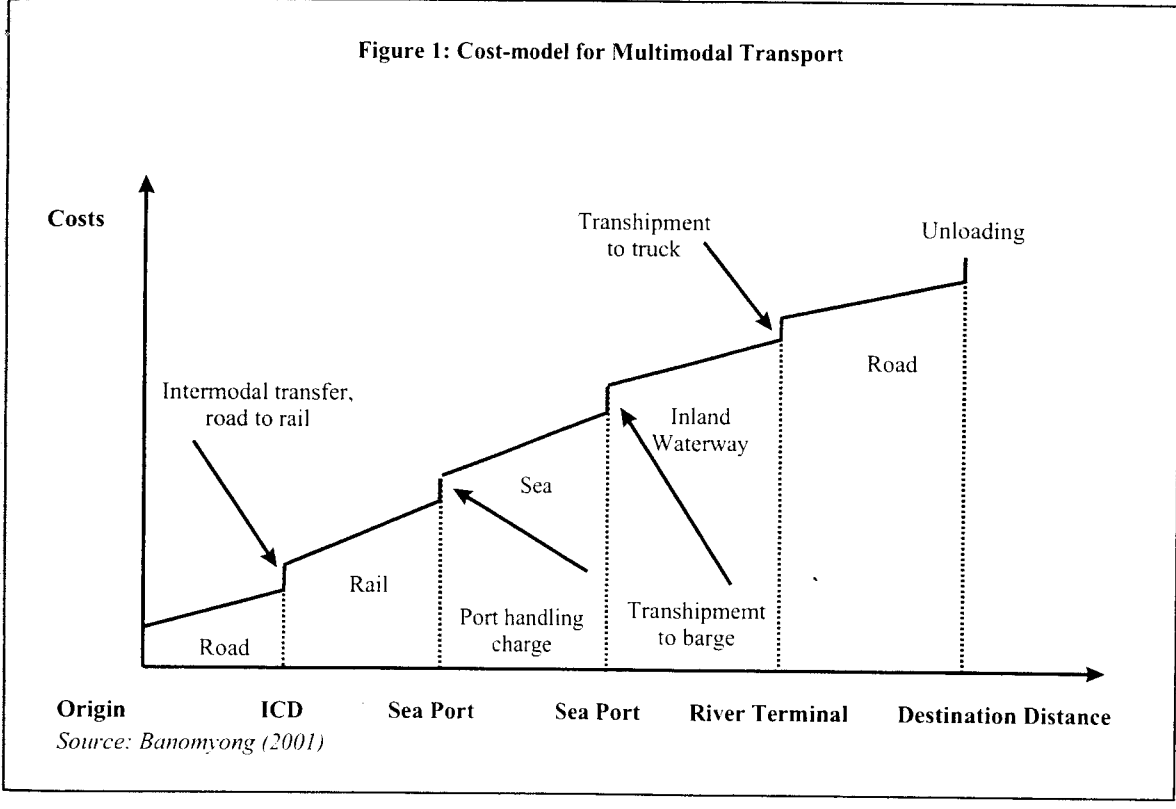
Methodology

The choice of transport mode or combination of transport modes has a direct impact on the efficiency of logistics channels and system. Depending on the mode chosen (Liberatore & Miller, 1995), the overall performance of the logistics system will be affected. Simple cost-distance models of road versus rail are commonly found (Fowkes, *et al.*, 1989; Hayuth, 1992; Marlow & Boerne, 1992) for national movements or sea versus air (Hayuth, 1985; Jung, 1994) over longer, intercontinental routes. As the choice of logistics channels is of vital importance to the success of a country's international trade, various models have also been created (Beresford & Dubey, 1990; Min, 1991; Barnhart & Ratliff, 1993; Yan, *et al.*, 1995; Beresford, 1999) to aid logistics decision makers in choosing the most effective logistics channel that not only minimises cost and risk, but also satisfies various on-time service requirements.

The cost model, which is presented here, includes both transport (road, rail, inland waterway, sea) and intermodal transfer (ports, railfreight terminals, inland clearance depots) as cost components (see Figure 1). This model has been adapted from Beresford & Dubey (1990) and improved by Banomyong & Beresford (2001).

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Figure 1: Cost-model for Multimodal Transport



The model assumptions are based on the premise that unit costs of transport vary between modes, with the steepness of the cost curves reflecting the fact that, for volume movements, sea transport should be the cheapest per tonne-km, road transport should normally be the most expensive (at least over a certain distance), and waterway and rail costs should be intermediate. At ports and inland terminals, a freight handling charge is levied without any material progress being made along the supply chain; a vertical "step" in the cost curve therefore represents the costs incurred there.

The height of the step is proportionate to the level of the charge. Depending on the route chosen, the combination of modes and cost will be different. The purpose is to find the most competitive route cost wise. Although this approach in itself is not new (Levander, 1993; Christopher, 1998), the portrayal of the costs components as increments along import or export logistics channel is relatively novel.

A reliability index is used to assess 'risk' between international logistics channel in this study. This index is derived from the field of political science, especially political instability methodology. Political instability methodology focuses upon intuition, judgement and Delphi forecasting (Andriole & Hopple, 1983).

All respondents in this study were knowledgeable about international trade transactions, transit transport operations, documentary procedures, and rules and regulations in their respective countries or region. The respondents 'intuitively' assigned a rating for each transport mode, intermodal transfer charge and other nodal activities. This reliability index was based on a five point type scale: (1) = Almost no confidence; (2) = Not very confident; (3) = Fairly Confident; (4) = Confident; and (5) = Very confident.

This intuition was based on respondent immersion in the history, culture, politics, and experience, in trading practices, transit transport operations, and administrative procedures of their own country and up to a certain extent of their own region. The transport costs in this article were based on quotes that were obtained by interviewing importers, logistics service providers, and shipping lines, which operate between Marseilles in France and Vientiane, the capital of Lao PDR. Prices quotes concerned the shipment of 1 TEU (Twenty Foot Equivalent Unit) on a Freight All Kind (FAK) basis. Depending on the quantity of goods transported, lower quotes could be possible. The respondents provided a non-exhaustive selection of routes and combination of transport modes available between Marseilles in France and Vientiane in Lao PDR.

Cargo description: 1 x 20 foot container (1 TEU) stuffed with 23 pallets containing 600 bottles of wine each (or 13,800 bottles), weighing 16,560 kg. The container was consolidated at the port of Marseilles. It was

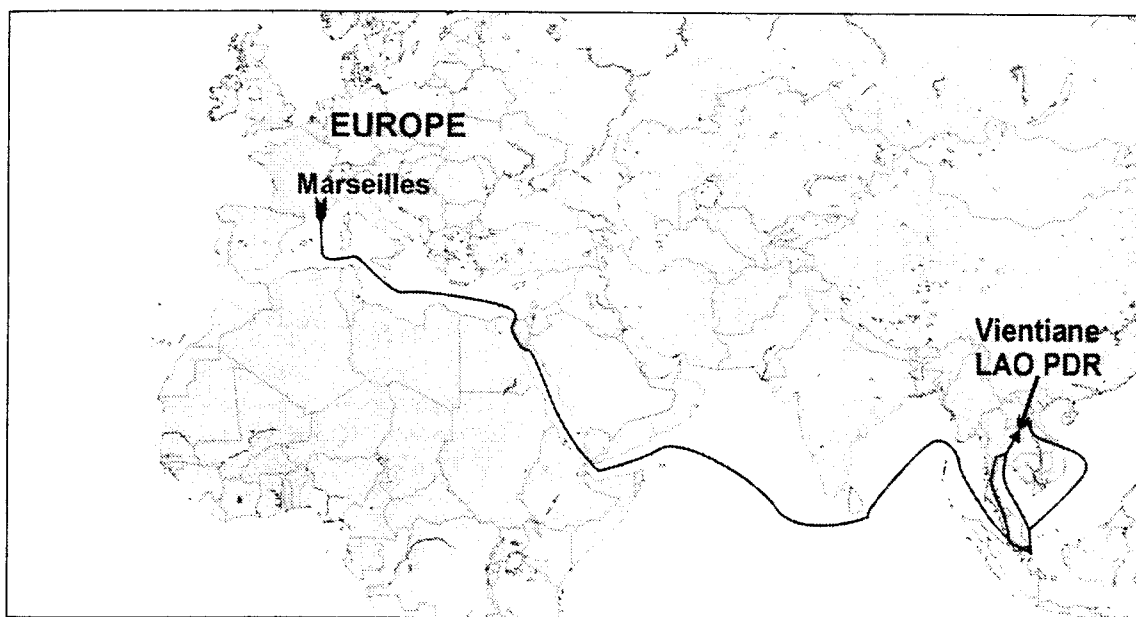
assumed that the wine was bought FOB Marseilles at USD 39,000 per TEU or USD 2.83 per bottle (this is an average value per bottle).

Table 1: Freight routing alternatives, Marseilles (France) – Lao PDR

Route	Origin: France	Mode	Tranship	Mode	Transshipment /Intermodal transfer	Mode	Destination Lao PDR
1	Marseilles	Sea	Singapore	Sea	Danang (Vietnam)	Road	Vientiane
2	Marseilles	Sea	Singapore	Sea	Bangkok (Thailand)	Road	Vientiane
3	Marseilles	Sea	Port Klang (Malaysia)	Rail	Lad Krabang (Thailand)	Road	Vientiane

Source: Compiled from industry sources

Figure 2: Main import channels from Marseilles (France) to Vientiane (Lao PDR)



Source: The Author

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Findings

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Route No. 1 Import via Danang (Vietnam)

Table 2: Marseilles-Singapore-Danang-Vientiane cost per TEU						
Day	Leg	Mode	Transit time	Distance (km)	Cost (USD)	Reliability Index
1	Marseilles-Singapore	Sea	18 days	12,092	600	4
	Singapore charges			0	59	4
19	Singapore tranship		2 to 3 days	0	-	5
22	Singapore-Danang	Sea	4 days	1,910	400	3
	Danang charges			0	20	3
	Storage charges			0	5	
	Lao Bao-Houey Khaki Customs		2-3 hours	0	220	1***
26	Danang-Thanaleng	Road	3 days	1,047	750	1
29	Thanaleng Customs post		3 to 5 days			2.5***
	Thanaleng-Vientiane		1 hour	13	47	3
	Other Handling Charges**			0	700	2
	TOTAL		32/34 days	15,062	2,801	2.75
<p>* Assuming no delays ** Include profit and Thanaleng customs per charges *** This reliability rating may improve with the offer of financial incentives Source: Compiled from industry sources</p>						

The main sea leg from Marseilles to Singapore represents around 51% of the total transit time while at the same time representing 80% of the total distance from Marseilles to Vientiane. This import transit time of 32 to 34 days is only valid if no delays occur while transiting through Vietnam. If

there are delays, then the inland leg from Danang to Vientiane can represent up to 35% of the new transit time of 46/48 days.¹ According to industry sources, these delays are usually between 10 days to two weeks but a delay of up to a month is not uncommon. Due to the nature of the imported goods, after crossing the Lao Bao border, the goods must first go to Thanaleng Custom's post (near Vientiane) where it will take usually three to five days for the process of import clearance if all the documents are in order. While waiting for the import clearance, the owner of the goods is charged around USD 10/TEU per day for storage. He will also be charged for the un-stuffing of the container in the compound at USD 30 per container. This fee includes the transfer of the goods on local trucks for the final journey to the importer's warehouse in Vientiane. More than USD 60 is also paid to facilitate the routing of documents while processing import clearance to Customs offices, stevedores, etc.² After customs clearance, a gift is also expected from the owner of the goods, such as a few bottles of wine to Customs officers in charge of checking and valuating the goods.

The main sea leg from Marseilles to Singapore and the feeder connection is considered as quite reliable by respondents with an average reliability index of 3.75. This means that the respondents are quite confident that the wine will arrive at Danang usually within 24 days. The delays will most probably occur when the goods arrive at Danang port, as before the goods can move out of the port of arrival, all the documents and transit permit must be in order. When all the documents are in order, the goods can then move out of Danang port. The border crossing at Lao Bao is not seen as a problem as most of the transit formalities will have been completed in Danang port for transit cargo. Vietnamese customs officers will usually escort the cargo up to the border. The reliability index for the inland leg is felt as very low at 1; this is considered the main problem area when transiting via Vietnam due to poor infrastructure, high level of bureaucracy and pilferage identified as the main sources of this low level of confidence.

Many Lao traders and logistics service providers do not trust the Vietnamese and Lao bureaucratic administration. This is a general feeling that has been reflected when these two countries were given a D rating for anti-corruption by *Asiaweek*.³ The reliability index for this import channel is 2.75 but this index must be used carefully as there was a very strong difference in perception between the sea-leg and the inland part.

The total transport cost from Marseilles to Vientiane is USD 2,801 per TEU. The main sea leg from Marseilles to Singapore is very competitive at around USD 600 per container. This is because during the period of the research, there was a strong imbalance of containers' movement out of the Far East. All the shipping lines had to reposition their containers' movement out of the Far East to service the surge in exports due to the regional currency depreciation that followed the regional economic crisis in 1997. Another effect of the Asian economic crisis was that many countries almost stopped import-

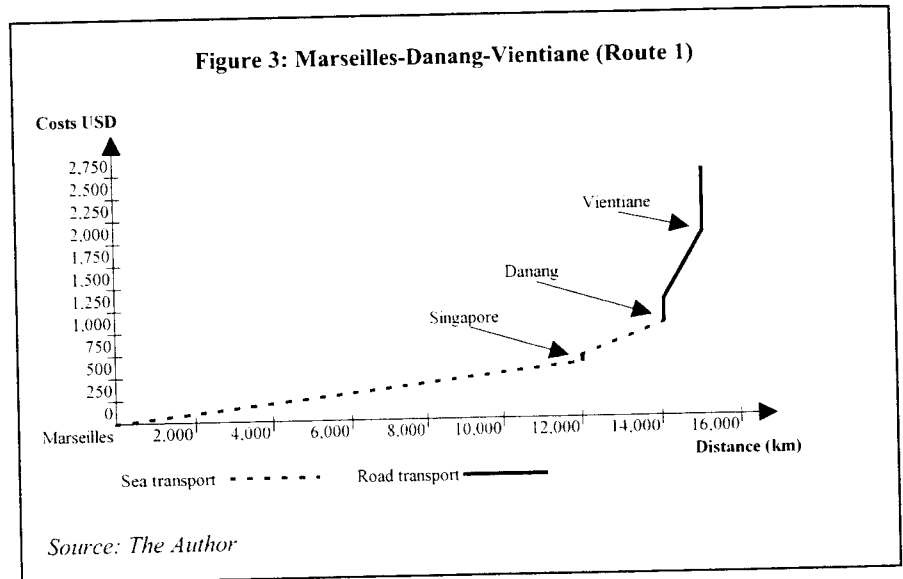
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ing goods from Europe and North America thus hindering the movement of containers to the Far East. When taken into consideration, these two factors contributed to the very low freight rates offered by shipping lines.

Figure 3 shows the application of the multimodal transport cost model from Marseilles to Vientiane. It is interesting to note that the freight charges from Marseilles to Singapore only represent 21% of the total transport cost with a cost of USD 0.05 per TEU/km. The freight charge by feeder vessel represents up to 15% of the total transport cost with a cost of USD 0.21 per TEU/km, while the distance from Singapore port to Danang port is only 12% of the total distance. The inland leg cost takes up more than 61% of the total transport cost. These ratios are well represented in the model, especially when assessing the steepness of the curve for each mode and means of transport.



The inland leg from Danang port to Vientiane is represented geographically in Figure 4. The y-axis begins at USD 1,000 because when the goods arrive in Danang port, the transport cost already adds up to USD 1,059 per container. Due to the various uncertainties from Danang to Vientiane, the other handling charges (which includes profit) comprise 41% of the inland transport cost. Compared to the distance, the inland leg is the most expensive leg of the whole journey at a cost of USD 1,738 for 1,060 km or USD 1.63 per TEU/km.

According to Lao importers, this import channel is almost never used. It is mostly used for government cargo or certain project cargo to the South of Lao PDR near Savannakhet province. Private importers are afraid of pilferage and the uncertainties of transiting through Vietnam. In practice,

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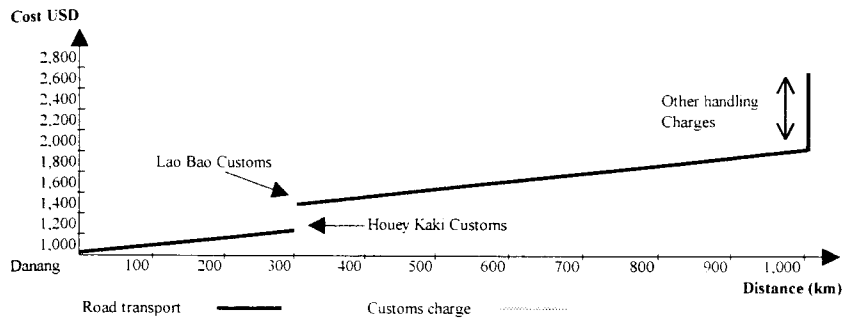
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Figure 4: Danang-Lao Bao-Vientiane



Source: The Author

when wine is imported in Lao PDR, this route is never taken. If this route is chosen, the transport cost will represent around 7% of the value of the wine "delivered" to Vientiane.

Route No. 2 via Bangkok (Thailand)

Table 3: Marseilles-Singapore-Bangkok-Vientiane cost per TEU

Day	Leg	Mode	Transit time	Distance (km)	Cost (USD)	Reliability Index
1	Marseilles-Singapore	Sea	18 days	12,092	600	4
	Singapore charges			0	59	4
19	Singapore transship		1 day	0	-	4
20	Singapore-Bangkok	Sea	3 to 4 days	1,540	200	4
24	Bangkok charges				148.8**	2.3***
	B/L charge				13	3
	Lao transit documents		2 to 3 days		12.5	2
	Bangkok-Nongkhai	Road	1 day	633	1,500	3
28	Nongkhai-Thanaleng	Bridge	0.5 hour	4	8	4
	Transit Customs charge***				39	2

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	Thanaleng Customs post		3 to 5 days			2.5***
	Thanaleng-Nongkhai	Road	1 hour	13	47	3
	Other Handling charges				300	3
	TOTAL		31/33 days	14,282	2,927.3	3.13
<p>* Assuming no delays ** Including tea-money to Customs and port officers *** Personal connection and financial incentives can increase confidence index **** Include profit and Thanaleng customs post charges Source: Compiled from industry sources</p>						

Route 2, via Bangkok (Thailand), is the preferred transit route for import cargo into Lao PDR with a perceived total reliability index of 3.13. Upon vessel arrival in Bangkok port, the goods will be transferred to a dedicated warehouse for transit cargo destined for Lao PDR. Import procedures must be cleared before the goods are moved to the dedicated warehouse. In Thailand, import procedures are relatively cumbersome, even for cargo destined for the local Thai market. Table 4 summarises the average amount of time required for the release of imported goods (be it for transit cargo or local consumption).

The time taken by document preparation has the highest ratio of the total time for the release of imported goods. After the goods are released from Bangkok port they can be moved to the dedicated warehouse for transit cargo. A major problem with going through Bangkok is that Thai Customs open all containers in transit to check if the goods are in conformity with the packing list. Many Lao importers have complained about this practice but to no avail as Thai Customs claim that they need to verify all Lao cargo. One interviewed Lao wine merchant, had a very strong suspicion that the real reason for these checks is to pilfer a few of his wine bottles, as the numbers are always short compared to the packing list when the container is finally opened in Lao PDR.

If there are no major delays, the usual total transit time for this route is around 31 to 33 days. According to Lao importers, the fastest transit time that has been done is 28 days, but it is not unusual to wait up to 45 days. The transit time will depend on the accuracy of information provided in invoices, packing lists, insurance certificates, etc. The main sea leg and feeder connection are perceived by respondents as the most reliable component of the import channel with a combined reliability index of four.

Table 4: Average time required for import clearance and release of goods

Day	Activities	Customs	Average Time (Hours)	Percentage
1	- Preparation of documents for import clearance		118.62	60.68
2				
3				
4				
5				
		- Customs formalities and duty assessment	1.6	0.87
6	- Preparation of document for payment of duty		40.65	20.80
		- Payment of duty	0.16	0.09
7	- Preparation for goods examination	- Manifest examination	20.25	10.36
			0.17	0.09
	- Port Authority release goods	- Release of goods	2.16	1.10
			0.5	0.26
8	- Preparing for goods to move out of port	- Check post	11.13	5.69
			0.09	0.06
	TOTAL		195.43*	100%

* Or 8.1 days

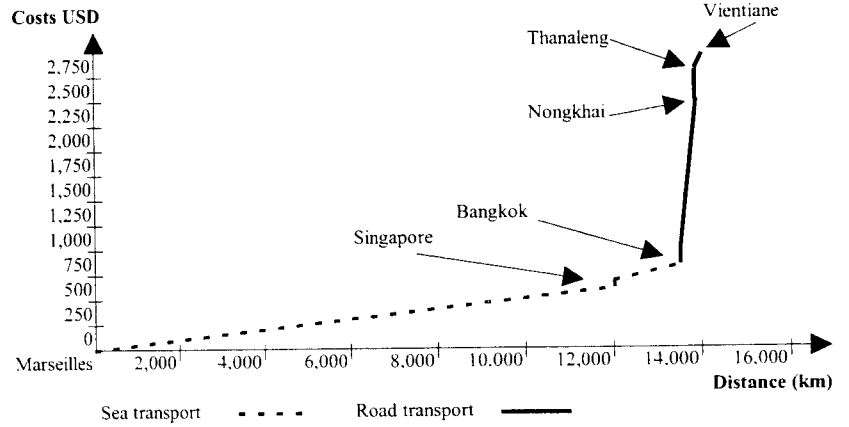
Source: Adapted from Thai Chamber of Commerce (1999)

The total transport cost via Bangkok is around a little more than USD 100 higher than via Danang at USD 2,927.3 per TEU. The most expensive transport cost is road transport at USD 1,500 from Bangkok to Thanaleng customs post in Lao PDR or USD 2.37/TEU per km. The rate is expensive because all the trucks going to Thanaleng must come back into Thailand empty.⁴ These trucks can wait in Nongkhai, on the Thai side, but with such low export volumes from Lao PDR the majority of trucks go back immediately. Many Lao government officials believe that the freight rate between Bangkok and Thanaleng is artificially inflated because there is no real competition. The problem lies more with the extreme imbalance of Lao PDR foreign trade, as trucking companies when servicing Lao trade have to include the freight charges for an empty return. Other types of charges can take up to 20% of the total transport cost with charges at Bangkok port representing around 5% of the total transport cost.

Figure 5 illustrates the transport cost from Marseilles to Vientiane via Bangkok where the road transport curve is almost vertical due to the very high inland freight rate. Figure 6 represents the cost increase during the inland leg from Bangkok to Vientiane.

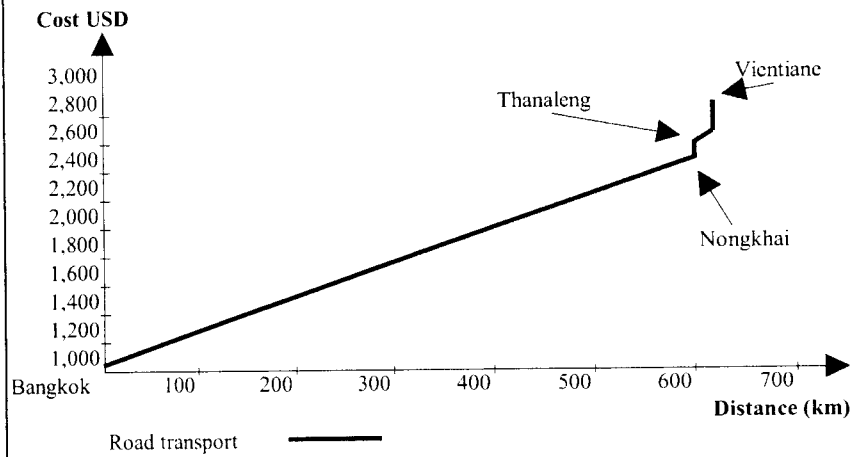
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Figure 5: Marseilles-Singapore-Bangkok-Vientiane (Route 2)



Source: The Author

Figure 6: Bangkok-Nongkhai-Thanaleng-Vientiane



Source: The Author

2) Transport cost represents around 7.5% of the goods costs. The transport price increase for this import channel is minimal if compared to the route via Vietnam with a marginal increase of USD 0.01 per bottle.

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Route No. 3 via Port Klang (Malaysia) and Lad Krabang (Thailand)

Table 5: Marseilles-Port Klang-Lad Krabang-Vientiane

Day	Leg	Mode	Transit time*	Distance (km)	Cost (USD)	Reliability Index
1	Marseilles-Port Klang	Sea	15 days	11,703	550	4
	Port Klang charges			0	37	4
16	Port Klang-transload		1 day	0	-	4
17	Port Klang-Lad Krabang	Rail	2.5 days	1,323	380	3
	Lao transit documents		2 to 3 days		12.5	2
	Rail transfer charges				12	3
23	Lad Krabang ICD charges		1 day		14.5	4
	Lad Krabang-Nongkhai	Road	1 day	595	1,500	3
25	Nongkhai-Thanaleng	Bridge	0.5 hour	4	8	4
	Transit Customs charge				39	2**
	Thanaleng Customs post		3 to 5 days			2.5***
	Thanaleng Customs post		3 to 5 days			2.5***
	Thanaleng-Vientiane	Road	1 hour	13	47	3
	Other Handling charges***				300	3
TOTAL			28/30	13,638	2,900	3.13

* Assuming no delays
 ** Personal connection and financial incentives can increase confidence index
 *** Include profit and Thanaleng customs post charges
 Source: Compiled from industry sources

Route No. 3 via Port Klang in Malaysia is the fastest import channel that is available to Lao importers with an estimated total transit time of 28 to 30 days for the goods to arrive in Vientiane. This route has also the shortest

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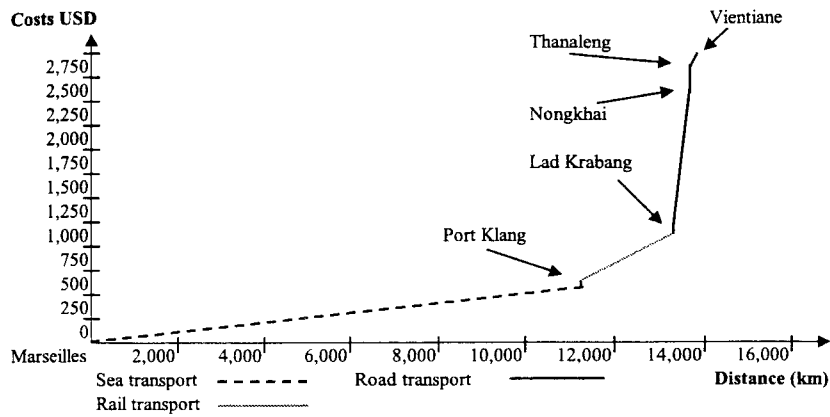
distance of the three routes with 13,638 km, rail transport is taking up to 10% of the total distance. This is due to the fact that the Strait of Malacca has been bypassed by using a land bridge from Port Klang to Lad Krabang inland clearance depot (ICD). There is no need to transship in Singapore to a feeder vessel. The perceived import channel reliability index is also consistent with the other route via Bangkok in Thailand at 3.13. This relatively high confidence in international rail transport (compared to local rail transport in Thailand) is partly due to the fact that Port Klang-Bangkok-Lad Krabang route is operated by private concessionaires with clearly defined customer service levels.

In a best-case scenario, it is possible for the goods to arrive at Thanaleng within seven days of arrival from Port Klang. This means that the journey from Marseilles to Thanaleng would have taken only 25 days but in a worst-case scenario, it can take up to more than two weeks for the goods to be delivered to the importer's warehouse. The rail transit time stands for 9% of the total transit time while road only represents 3.5%, sea transport has the highest ratio with 53%. Other types of related activities will take up to 34.5% with transit and import procedures representing at least 18% of the total transit time.

Route No. 3 via Port Klang is slightly cheaper than routes using Bangkok port in Thailand at USD 2,900 per TEU. Lao importers and logistics/transport service providers have shown a great interest in this particular import channel. The cost of this channel is competitive when compared to the other channels, the confidence index is perceived as acceptable and more importantly, the transit time is the fastest available for imports from Europe.

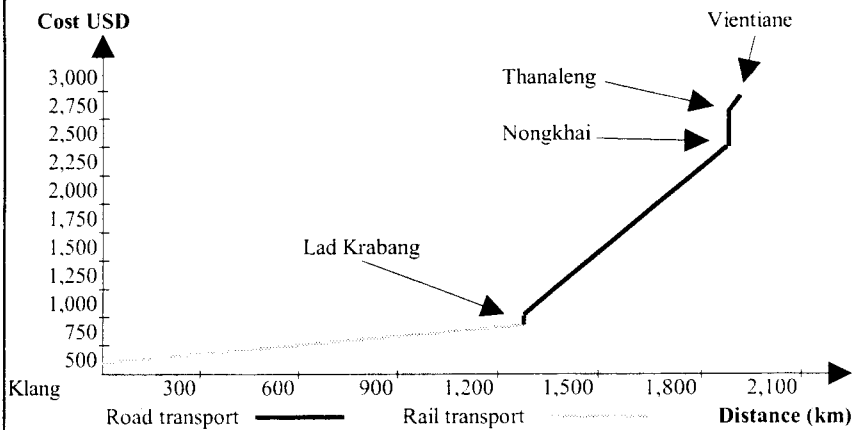
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Figure 6: Marseilles-Port Klang-Lad Krabang-Vientiane



Source: The Author

Figure 7: Port Klang-Lad Krabang-Vientiane



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held by the Lao embassy in Bangkok in delivering transit documents as well as the shorter distance involved from the port of arrival.

If the goods transit through Vietnam, the Vietnamese Ministry of Trade will have to issue the transit documents upon request by the Lao Ministry of Commerce while when the goods transits through Thailand, transit documents and certificates of final destination issued by the Lao embassy in Bangkok are sufficient to secure the release of Lao transit goods from Thai Customs to continue their journey into Lao PDR. Route No. 3 via Port Klang in Malaysia is still unknown to the majority of Lao importers and logistics/transport service providers but can become an important import channel in the near future with its competitive pricing (compared to the route via Thailand) and transit time. Table 6 provides a summary of the transport cost and transit time for the three routes presented.

Table 6: Total transport costs, transit time and confidence index

Route	Total Transport Cost (USD)	Total Transit Time (days)	Reliability index
1 Via Danang (Vietnam)	2,797	32/34	2.75
2 Via Bangkok (Thailand)	2,927.3	31/33	3.13
3 Via Port Klang (Malaysia)	2,900	28/30	3.13

Source: The Author

At the present moment, Laotian importers of European goods are not fully aware of the logistics alternatives that are offered to them via Malaysia. This might be due to the fact that most of these importers prefer to buy their product CIF Thanaleng (Lao PDR) or CIF Bangkok thus not controlling the logistics chain until the goods have been discharged at the port of arrival. If Laotian importers want to benefit from the various logistics options that are offered to them, then they will have to negotiate their international trade under trade terms that gives them control of the transport chain. These INCOTERMS, such as FOB or FCA Marseilles, will assist in the control of the import logistics channel, as Laotian importers will be able to organize and nominate the main carriers and choose the most suitable import channel.

When comparing the costs involved in these routes, sea transport is as expected the cheapest per TEU/km, rail is intermediate and road transport is the most expensive (see Table 7). It is also worth noting that the various other charges represent quite a significant proportion of the final 'delivered' price into Lao PDR. On certain routes, such as via Bangkok, transit and other charges can represent up to 22% of the total transport cost.

Table 7: Cost of freight by km/TEU by modes of transport with reliability index

Route	Mode	Cost/km/TEU (USD)	Reliability index
1. Marseilles-Singapore	Sea (main)	0.05	4
Singapore-Danang	Sea (feeder)	0.21	3
Danang-Vientiane	Road	0.71	1
2. Marseilles-Singapore	Sea (main)	0.05	4
Singapore-Bangkok	Sea (feeder)	0.12	4
Bangkok-Vientiane	Road	2.30	3
3. Marseilles-Port Klang	Sea (main)	0.28	4
Port Klang-Lad Krabang	Rail	2.45	3
Lad Krabang-Vientiane	Road	0.04	3

Source: The Author

Table 8 illustrates the transport cost per bottle of wine according to the alternative import channels. It was discovered that there was not much difference between the various import channels in terms of price, therefore transit time and confidence index will help the logistics decision-making for the selection of the most efficient import channel, within import and transit regulatory constraints.

Table 8: Cost of transport (per bottle) from Marseilles

Route	Average cost of wine per bottle	Cost of transport per bottle	Total cost (bottle and transport)
1 Via Danang	USD 2.82	USD 0.21	USD 3.03
2 Via Bangkok	USD 2.82	USD 0.22	USD 3.04
3 Via Port Klang	USD 2.82	USD 0.21	USD 3.03

Source: The Author

The findings are quite interesting, as no matter where the import channel is there is only a USD 0.01 difference in transport cost per wine bottle. The final decision regarding import channel selection should therefore be highly dependent on transit time and reliability index. However, Bangkok Port is still the dominant import port for Lao trade, but this is not because of price, transit time or reliability index. The dominance of Bangkok Port is more based on the location of transit-related regulatory agencies that may facilitate or impede the movement of wine to Vientiane (i.e. the Port Authority of Thailand and the location of the dedicated transit warehouse for Lao PDR under the Thai Customs Department).

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Lao exporters, importers and logistics service providers must be able to re-evaluate their strategies related to international logistics channels, as all modes and all possible transfers between modes must be considered, with the development of new modal and multimodal infrastructure in the region, Lao PDR will be able to achieve a growing accessibility to the global market.

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y to the global

Endnotes

1. Instead of representing around 10% of the total transit time in case of no delays (32/34 days).
2. Gifts of similar value are also accepted.
3. "How Asia is governed," in Asiaweek, August 18-25, 2000, pp.52-53.
4. Except if these trucks belong to the transit traffic franchisees such as the ETO, Ubonsahatham, RCL, TL Enterprise, the SRT, and have return freight.

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