3 GUIDELINES FOR DEVELOPING THE OPTIMUM LOGISTICS SYSTEM FOR VIETNAM

3.1. Main Tasks of Logistics during Industrialization

Logistics is a system to ensure an effective and smooth movement of goods. Since goods movement is a main form of economic transaction, the optimum logistics system varies depending on the economic system and economic development of a country.

Vietnam is in a transitional period into a market-based economy. But industrial SOEs, producing nearly half of the industrial gross output, often show the same business attitude common in a centralized economy toward issues, such as monopoly and price control, and are less responsive to market forces. If they are still fully confident in controlling markets, their requirement for freight service is only to lower transport costs. On the other hand, joint venture companies are strongly concerned about market access not only to domestic markets but to overseas ones as well since their business is closely connected with export and/or import. Therefore, their basis for choosing a suitable freight service is a combination of cost, speed, punctuality, liability, etc. for them to have the advantage among business competitors.

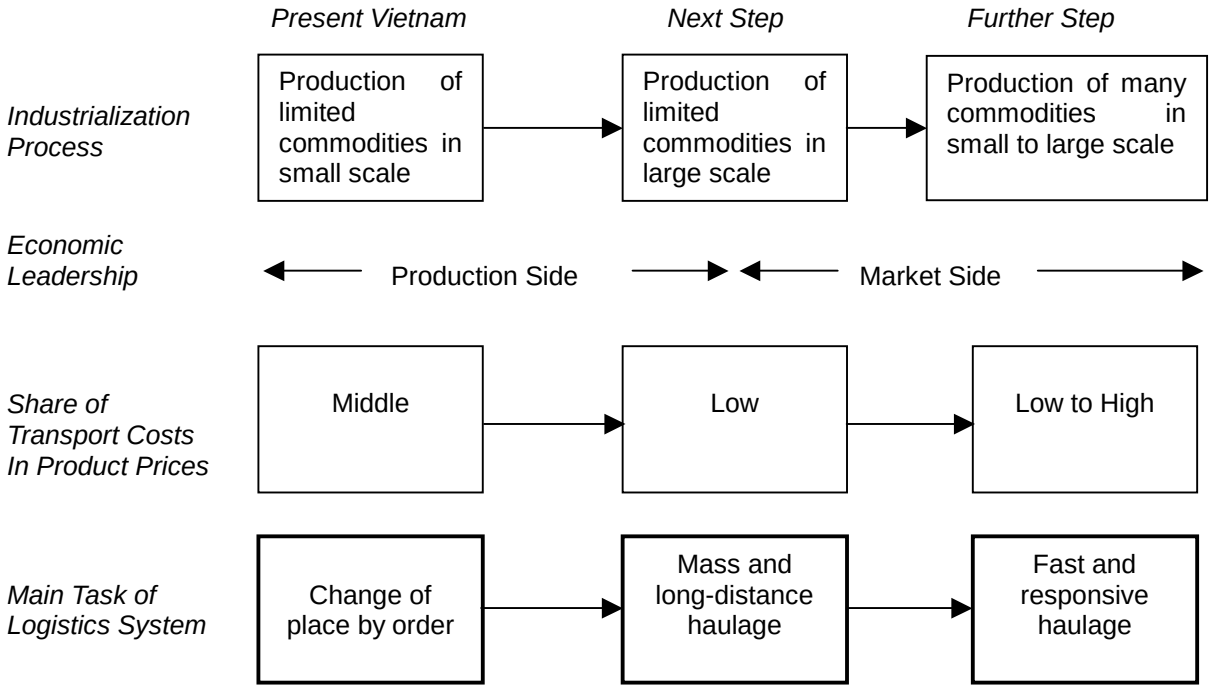
From a historical viewpoint, the period of initial industrialization broadly defines the functions of a logistics system. When a country's economy takes off, mass production must be introduced, enabling economic expansion and accessing wider markets. During this period, the country's logistics system should provide mass and long-distance freight service to large manufacturers (see Figure 3.1.1).

To become a fully industrialized country, the logistics system should ensure diversified goods distribution even though many commodities have small consignment size. Real-time information is more precious than ever and thus fast and responsive freight service itself may bring about various business opportunities.

3.2. Mass and Long-distance Freight Services

Shipping must take a leading role to enable mass and long-distance freight services. For this purpose, conventional shipping carrying general cargo should be converted to a more efficient and large transportation means. Key points to realize it are promotion of specialization and containerization, assignment of larger vessels and sufficient infrastructure development.

Figure 3.1.1
Ideal Relationship between Industrialization and Logistics System



Specialization and Containerization

It is foreseeable that present general cargo vessels will be replaced with various specialized vessels such as oil tankers, cement tankers, chemical tankers and PCC (Pure Car Carriers). These specialized vessels can carry selected cargoes in bulk. The magnitude of production and consumption by cargo may direct such specialization. This trend would phase out general cargo vessels except those used for short distances and to access remote islands.

Another big trend is containerization. Rapid expansion of containerization is expected particularly in the ASEAN region it is still in its infancy. For instance, ESCAP[1] estimates an annual average growth of 12.2% for intra-ASEAN container flows by the year 2006 compared with 7.3% globally. Supported by trade liberalization measures and proactive initiatives to improve shipping links, feeder container vessels accommodating 500-2000 TEU will become a major player next to current trunk container vessels.

Such specialized vessels serve few, big shippers through tramper operation while containerization sufficiently serves numerous shippers through liner operation.

[1] Intra-regional Container Shipping Study, 1997

Assignment of Larger Vessels

Large vessels show high productivity in terms of labor efficiency, fuel consumption and cargo-handling operation. Shipping operators should therefore be wise in assigning larger vessels to provide competitive services. This was true for oil tanker operators and bulk operators during the three decades from 1950, when, due to rapid economic recovery and growth, the number of these vessels increased 10 times their 1940 size. Further fleet expansion is technically possible but it may reduce productivity due to limited operation opportunities and insufficient port infrastructure. For example, Japanese shipyards can build an oil tanker over 1 million DWT, but considered the most optimized oil tanker is 280,000 DWT plying between Japan and the Middle of East.

Container vessels have been expanding on the average, i.e., 26,000 DWT in 1980 and 31,300 DWT in 1995. In the late 1990s, some extra-large container vessels beyond the Panamax size (L.O.A.: 274 m, breadth: 32 m) emerged on the Pacific trunk routes (see Table 3.1). Such vessels require deeper draft (over 15 m) and a high handling performance at ports and may not pass through the Panama Canal. Despite these constraints, ESCAP[1] estimates that these vessels accommodating 4,000-6,000 TEU will take a dominant role in trans-Pacific services in 2006.

Table 3.2.1
Largest Vessels by Type

Oil Tanker		Bulker		Container	
Construction Year	Size (000 DWT)	Construction Year	Size (000 DWT)	Construction Year	Size (TEU)
		1950	25		
1955	55	1955	75		
1962	132	1960	100		
1966	209	1966	160	1966	738
1968	332			1968	752
1971	373	1970	180		
1973	483	1972	228	1973	1096
1976	550	1979	248		
1980	563			1982	2,500
		1986	365	1983	3,000
				1991	4,400
				1995	4,950
				1996	6,000
				1998	6,674

Infrastructure Development

The above shipping development trend needs new infrastructure development. Dedicated ports for special shipping and container ports for container shipping are quite important to maintain their high productivity. To accommodate large vessels and handle large cargo efficiently, a modern deep seaport is necessary as well as efficient intra-port cargo circulation and sufficient port access.

Table 3.2.2
Trend in Average Size of Vessels Assigned in Foreign Trade by Type

(unit: 000 DWT)

Year	Oil Tanker	Bulker	Container
1955	Unknown	10.0	Unknown
1960	20.8	18.1	Unknown
1965	28.1	22.1	13.2 (in 1968)
1970	43.0	30.8	15.1
1975	74.7	41.4	20.2
1980	106.4	42.0	21.0
1985	100.0	44.0	24.6
1990	92.8	46.9	27.7
1995	97.8	49.0	31.3

Source: Fearnley's Review and NYK

Figure 3.2.1
Historical Scale-up of Container Vessels

Category	Breadth (m)	Vessel Size		
		Length (m)	Capacity (TEU)	Necessary Port (m)
Under Panamax (1966-1980)	17-31	110 - 210	-1700	-12
Panamax (1980-1990)	32	210 - 270	1900-3400	12-14
Panamax-max (1985-)	32	289 - 294	3000-4300	14-15
Over Panamax (1995-)	Over 32	262 - 300	Over 4100	Over 15

Source: Ministry of Transport, Japan

For instance, Singapore enjoys a regional hub status. In 1998, Singapore recorded 15.14 million TEU in container operation, the biggest volume handled in the world. Its transshipment rate was also high, estimated at 80% in 1997.[2] The advantage of Singapore Port can be explained by the following:

1) Modern and sufficient port infrastructure and facilities (deep and long berths for exclusive purposes such as container traffic, liquid bulk and dry bulk; efficient cargo-handling equipment; advanced cargo distribution centers, and various warehouses)

[2] Drewery Shipping Consultants Ltd., 1997

2) Expeditious port documentation procedure using advanced EDI technologies
3) Convenient port services such as pilotage, towage and bunkering
4) A well-developed road network which can collect/distribute cargo within Singapore and a major part of the Malaysian peninsula
5) Premier location for some 400 shipping lines with links to over 700 ports worldwide

3.3. Fast and Responsive Freight Services

Vietnam will be able to provide consignors with fast and responsive freight services by means of four transport innovations. They are:

1) Fast operation through advanced infrastructure development,
2) Efficient cargo handling by means of unitization and others,
3) Promotion of multimodal transport operation to facilitate intermodal change, and
4) Intelligent cargo management systems such as port EDI.

Scheduled Fast Operation

Air transport has the superior advantage of providing fast transport service. But present consignors in Vietnam do not enjoy it due to poor intermodal connection and uncertain cargo space availability. Other transport means will be able to reduce their travel time to less than the half of existing operation by combining fleet improvement, infrastructure development and efficient intermodal change. The following are technically possible measures that will benefit consignors:

Air Transport: Improvements such as a dedicated air freight liner operation on both overseas and domestic routes, dedicated air freight terminal at international airport, competitive environments for ground handling operators

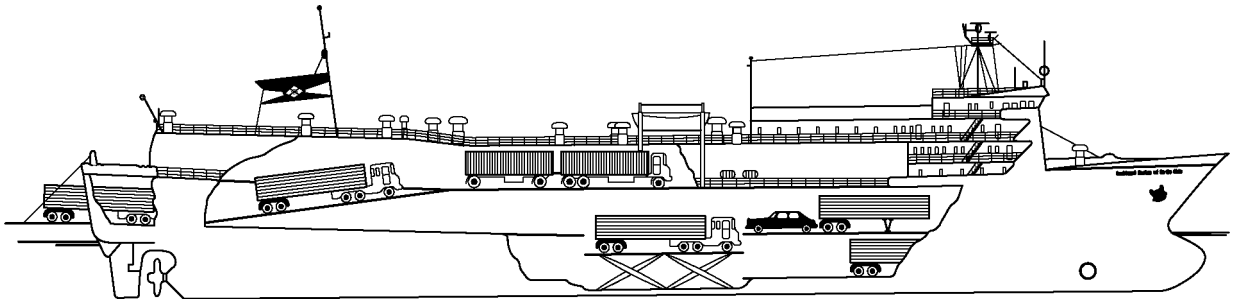
Railway Transport: Physical improvements such as installation of double tracks and electricity, modification of rail alignment and new tunnels, scheduled freight trains, introduction of new rolling stock to serve double-stack rail services, improvement of cargo information service, fostering of railway forwarders to serve cargo collection and delivery

Road Transport: Improvement of existing roads and bridges, construction of expressway exclusively for four-wheel vehicles, application of ITS (Intelligent Transport System) such as electronic toll collection, assignment of high-speed tractors for scheduled container haulage, truck terminals, fostering of LTL/LCL truck operators

Shipping: Replacement of obsolete fleet with modern vessels, assignment of roll on-roll off (Ro-Ro) ships, port improvement, navigational ways and cargo-handling

operation to avoid demurrage, and simplification of port procedures

Norfolk Southern Double-stack Container



Sectional Design of Ro-Ro Ship

Efficient Cargo Handling

The rate at which cargo is loaded or discharged has a significant bearing upon the overall cost of transport. Excessive time in port deprives consignees of the use of their goods, and ship operators of the use of their vessels. Therefore, the improvement of cargo handling methods has been a constant aim of many of those concerned in the transport chain.

The techniques of cargo handling have developed considerably over the last decades. This is particularly due to:

(a) Technological advances in fleet design;

(b) Rapid development and increase in the tonnage of bulk cargo;

(c) The impact of unitization; and

(d) The new and modern techniques of refrigeration, particularly with container carriage.

Among them, unitization such as containerization and palleterization has greatly contributed to efficient cargo handling. The advantages of unitization are obvious:

(a) Speed and economy of handling;

(b) Safety both with regard to breakage and pilferage;

(c) Reduction in packing preparations; and

(d) A real door-to-door transport service can be offered.

Shippers have been influencing the levels of cargo handling services. It is presently obvious that the majority is cost-sensitive, and thus, chooses time-consuming and man-made service rather than speedy and unitized service where, in Vietnam, low-cost labor force is abundant for stevedoring work.

A problem often found in developing countries, where their trading partners in the industrialized world may impose the use of containers, is that containers have to be handled in conventional berths. The throughput rate and expected savings from unitization may be severely reduced as a consequence. The aim of unitization is clearly to handle cargo more speedily and at a lower cost. It is probable that although the capital investment in container berths is higher than in conventional berths, the annual throughput in tons is proportionally much higher in the container berth. The port cost per ton is lower accordingly. There is need, in other words, for a certain level of throughput in a container berth to obtain the positive effects on cost per ton. Figure 3.3.1 shows the principle of economies of scale in container handling in a container berth. Figure 3.3.2 illustrates a typical layout of container berth and yard.

Figure 3.3.1
Decreasing Unit Cost with an Increasing Number of Containers in a Container Berth

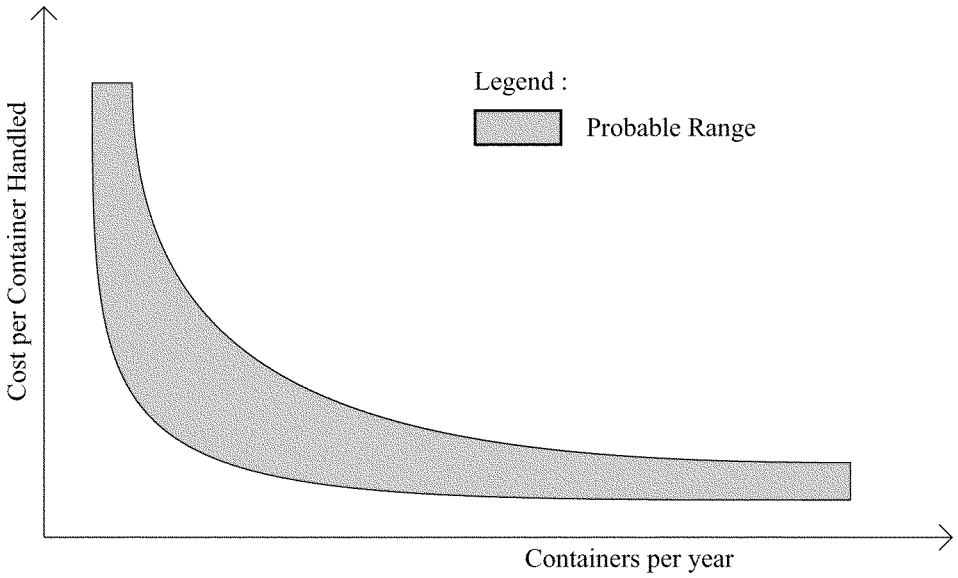
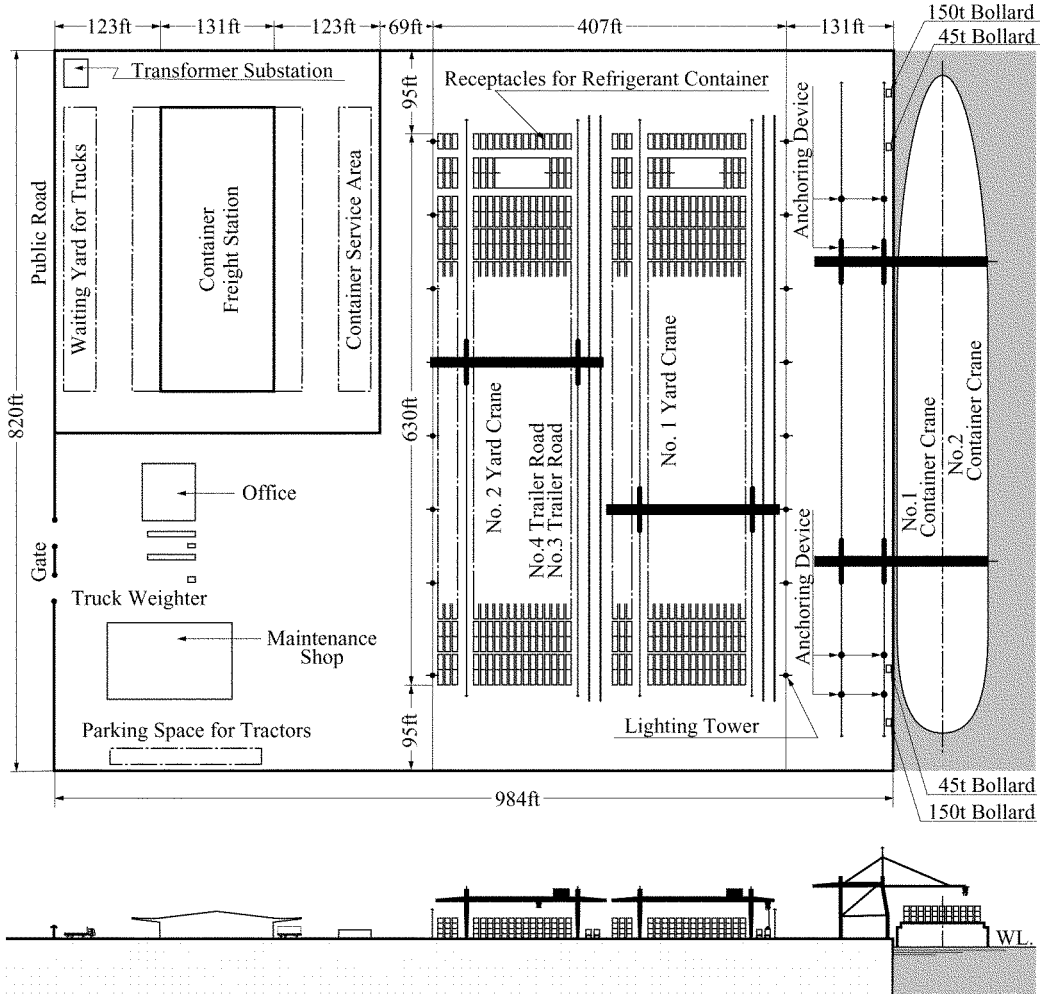


Figure 3.3.2
Container Berth and Yard



Multimodal Transport Operation

Characteristics

In today's market, just-in-time delivery is almost a prerequisite to become competitive in international trading. Instead of a piecemeal, fragmented, unimodal system of transport with different laws, regulation, procedures, customs, and practices for each mode, traders require multimodal transport distribution network that effects a highly efficient, economical and integrated system of dispatch, transport and delivery.

The inherent benefits of multimodal transport, both in the physical handling of goods and in the reduction of paper burden through the use of a single door-to-door document are not being fully enjoyed in Vietnam. The potential benefits of through traffic movement include;

1) Reduction in packaging costs because there is no need for pallets or other packaging required for loading break-bulk cargo efficiently into standard vessels;
2) Reduction in claims of loss and damage resulting from multiple handling and packing/unpacking;
3) Reduction in overall transport costs due to less transfer costs with the use of standardized mechanized handling equipment, especially by container handling; and
4) Reduction in inventory costs through a reduction in total travel time and increased reliability of delivery schedule by utilizing scheduled liner operations.

The concept of multimodal transport is not new: It has been institutionalized since the 1930s. The advent of the marine container provided the impetus in the development of multimodal transport which enabled ship operators to extend their services inland. Thereafter, multimodal transport has developed significantly under the following operational environments:

1) The growing awareness of the importance of logistics costs to business profitability;
2) Changes in port operation and other logistics management such as just-in-time shipment;
3) Overcapacity in the major shipping routes putting strong downward pressures on freight rates and leading shipping lines to engage in value-added service.

Business Opportunities

To actualize the above-mentioned potential benefits of multimodal transport in Vietnam, efforts will have to be made to foster a multimodal transport operator. According to the definition in the Multimodal Transport Convention (UN Convention

on International Multimodal Transport of Goods), an MTO is:

"…any person who on his own behalf or through another person acting on his behalf concludes a multimodal transport contract and who acts as a principle, not as an agent or on behalf of the consignors or of the carriers participating in the multimodal transport operations, and who assumes responsibility for the performance of the contract."

There are several types of MTOs. They can be divided into "ocean based" MTOs and those not operating ships, in more formal words, VO-MOTs (Vessel Operating Multimodal Transport Operators) and NVO-MOTs (Non-Vessel Operating Multimodal Transport Operators). Good business opportunities are laid in Vietnam for both MTO categories:

VO-MTOs

The share of the national fleet in overseas shipping is less than 20%. In the last decade, severe competition in capacity and freight rates among megashipping lines made them realize that there would be no future in being just a line hauler. However, becoming a multimodal transport operator requires a detailed knowledge on the transport arrangement within a country as well as across adjoining countries. In this sense, national shipping lines may have an edge over foreign megashipping lines.

However, the shipping industry in Vietnam is dominated by strong government control, which severely constrains the application of coherent business policies. Without a favorable commercial and business environment, national shipping operators may not be interested in multimodal transport.

NVO-MTOs

Rail and marine transports are major means to support multimodal transport operations on many existing routes. Restructuring of Vietnam Railway through options such as privatization and separation of freight service needs to be looked into if the railway will have a significant role in multimodal transport.

Roads are the first and last mode in multimodal transport operation. In Vietnam, trunk roads will have to be improved to accommodate 40-foot container trailers. Although the number of private trucking companies is rapidly increasing, these companies often have a very limited vehicle fleet, some of which are operated by owner-operators whose operating costs are high, while vehicle utilization is low. Vietnam should pay more attention to CFS operators who can efficiently consolidate LCL cargo and arrange truckers. An orderly regulatory framework needs to be undertaken to promote efficient door-to-door freight transport services.

Figure 3.3.3
Examples of Existing Multimodal Transport Operations

American Landbridge	Asian Ports	Ship	US Ports along the West Coast	Rail	US cities on the East Coast
Canadian Landbridge	Asian Ports	Ship	Canadian PNW Ports	Rail	Toronto Montreal
Siberian Landbridge	Asian Ports	Ship	Vostochniy (Russia)	Rail	European Cities
African Landbridge	Asian Ports	Ship	Dar es Salaam, Maputo	Rail/Truck	Zambia & neighboring Inland Countries
South American Routes	Asian Ports	Ship	Arica, Montevideo	Rail/Truck/River	Bolivia, Paraguay
Shanghai Routes	Asian Ports	Ship	Shanghai	Rail/Truck	Chinese Inland Cities
Hong Kong Routes	Asian Ports	Ship	Hong Kong	Rail/Truck/River	Chinese Inland Cities
Pusan Route	Japanese Cities	Ship	Pusan	Rail/Truck	Seoul

In the ASEAN region, many railway operators have experienced serious decline in both volume and modal share of traffic in recent years. This may be attributed to their nonadjustment in the changing market and economic environments. A number of countries, however, have recently taken measures to rectify the situation by reducing state intervention and staff, verifying prices and modernizing management skills and maintenance systems.

In the late 1990s, a new regional railway development concept emerged: the Singapore-Kunming Rail Link Project, a follow-up project of the ESCAP's Trans-Asian Railway (TAR) in the ASEAN region. Private initiatives are presumably a major implementing force. Taking account of the global development trend in multimodal transport, it would be necessary for the Singapore-Kunming Rail Link Project to thoroughly examine the feasibility of multimodal transport operation, such as double-stack rail services, on the proposed rail-sea port linkage.

Intelligent Cargo Management System

Industrialization will require a complex system to provide responsive, massive and reasonable freight services throughout a country. This is the area where advanced IT must be introduced instead of conventional manual-based operation. Within international transport chains, Vietnam can not ignore the global trend in IT

innovation. An intelligent cargo management system will have to be developed among three main actors, i.e., service providers, consignors and related governmental authorities.

(a) Service Provider: Advanced IT enables sophisticated freight services in storage, distribution, pick-up and tracing processes. Such services may distinguish competent providers from others.

(b) Consignor: Advanced IT enables real-time data exchange between consignors and service providers. It is a computerized information interface between orders and services. EDI (Electronic Data Exchange) is a custom-made system for this purpose. However, it requires various contracts such as networking, system operation and data exchange, and the contractors must bear considerable costs for system development and operation. For large service providers, EDI is a marketing tool to enclose consignors. Internet technology may provide similar business communications at a low cost despite of its uncertainty of security and capacity.

(c) Government authorities: Advanced IT may transform freight related government procedures into simple, rational and transparent ones. For instance, the Government of Singapore operates five EDIs (Port Net, Trade Net, CITOS: Computer Integrated Terminal Operation System, CICOS: Computer Integrated Conventional Operation System, CIMOS: Computer Integrated Marine Operations System). As a whole, the Singapore EDIs actually benefit freight service providers and consignors to a large extent. Main benefits can be pointed out as follows:

- All trade and port related procedures can be done through EDI. Document-based procedures are more expensive in terms of regulated transaction fees.
- There is an intelligent EDI network where one EDI is accessible to others. Since the international standard EDI system, UN/EDIFACT, is applied to the Singapore EDIs, foreign companies can access to the network without particular preparation.
- The EDI network is at full work without interruption throughout a year. It contributes to minimizing idle time during port entry/exit, cargo handling and customs clearance.
- The relevant costs to participate in the network such as registration, operation and purchasing relevant software are comparatively cheap than similar systems in other countries[3].

[3] *The annual cost of "Trade Net" is 5,250 Singapore dollars as of 1998 inclusive of initial and running costs. It is about one sixth of the cost of a Japanese similar EDI "Sea-NACCS".*

Figure 3.3.4
An Overview of Singapore EDI Network

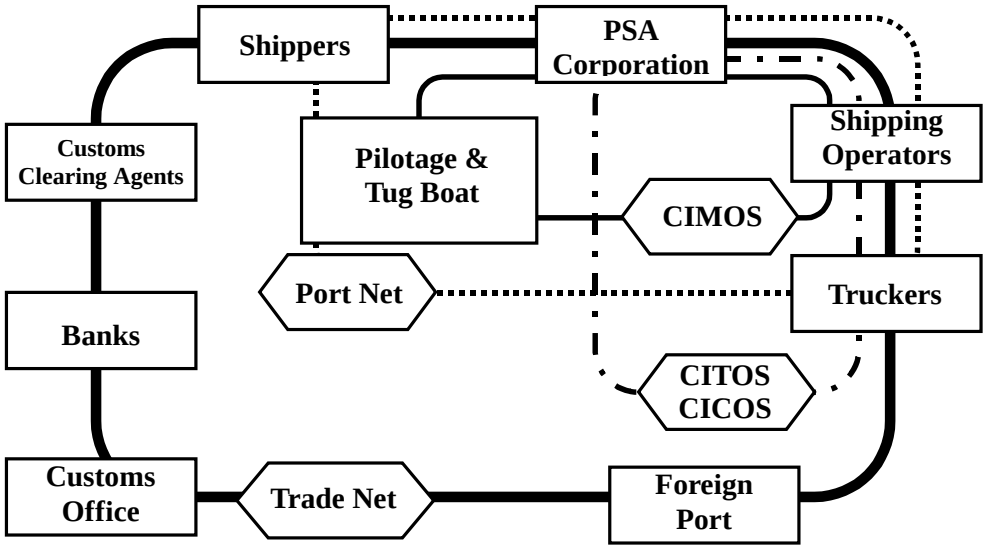
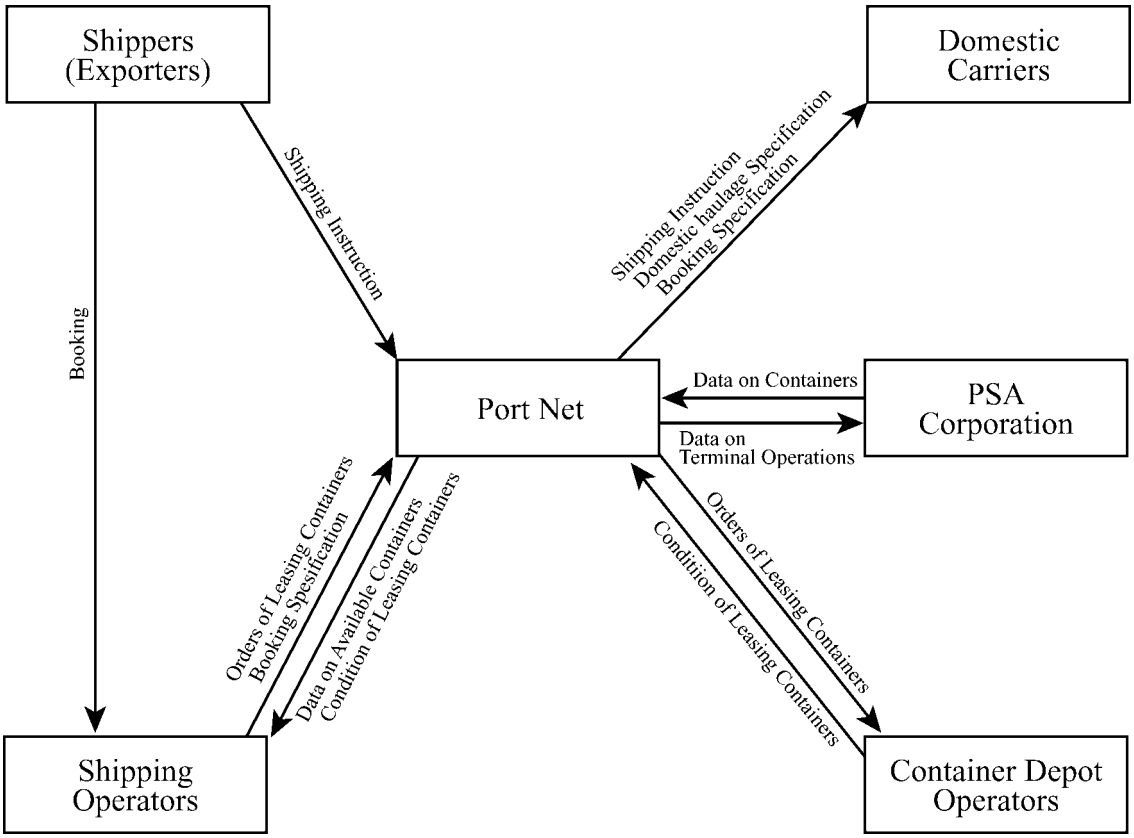


Figure 3.3.5
Transactions of Export Data on Port Net



3.4 Desirable Directions

Currently, frequent and scheduled freight service is not of significant value in Vietnam. Consequently, a shortage of materials often suspends factory operation and thus markets cannot satisfy buyers' needs in time. In a competitive market economy, such short and unscheduled supply must be regarded as the undermining factor for a buyer's reliance on a manufacturer, resulting in losing his market share.

In future, some competitive large manufacturers will be able to emerge in the market in line with economic development. They will demand punctual mass and long-distance freight service that will conform to their production and supply schedule. All transport modes will then have to invest primarily in capacity expansion and scheduled operation on trunk routes. Consolidating small consignment, containerization and door-to-door service will be valuable for such selected consignors.

As a further step, under a mature and fully competitive market economy in Vietnam, all market players will have to pay attention to valuable freight services for better market access. Consignors will therefore need larger and more frequent scheduled operation and efficient intermodal arrangement. Fast and responsive freight services will be provided on a wide and dense network all over the country. Since competition among transport operators and forwarders will become stiff at this stage, they will have to provide more sophisticated services including frequent and on-time delivery, desk-to-desk service, intelligent cargo management, and multimodal transport operation especially in connection with its neighboring countries.

Figure 3.4.1
Desirable Directions for Vietnam's Freight Transport Development