Japan International Cooperation Agency (JICA)
Maritime Industry Authority (MARINA)

No.

The Study on Domestic Shipping Development Plan in the Republic of the Philippines

DSDP

FINAL REPORT

Main Text Volume 2

December 2005

ALMEC CORPORATION

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The exchange rate used in the report is:

J.Yen 110 = US$ 1 = Philippine Peso 56

(average during the study period)

TABLE OF CONTENTS (Main Text - Vol.2)

APPENDICES

COLUMNS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ABS	American Bureau of Shipping
ARG	Autonomous Regional Government
ARMM	Autonomous Region in Muslim Mindanao
ASEAN	Association of South East Asian Nations
ATO	Air Transportation Office
BCDA	Bases Conversion and Development Authority
BOC	Bureau of Customs
BPI	Bank of the Philippines Islands
BSP	Bangko Sentral ng Pilipinas
BV	Bureau Veritas
C/P	Commercial Paper
CALABARZON	Cavite Laguna Batangas Rizal Quezon
CAR	Cordillera Administrative Region
CATT	Corporation of Advanced Transport and Technology
CDO	Cagayan De Oro
CEZA	Cagayan Economic Zone Authority
CO	Certificate of Ownership
CPA	Cebu Ports Authority
CPC	Certificate of Public Convenience
CPR	Certificate of Philippine Registry
CTAP	Confederation of Truckers Association of the Phils.
DA	Department of Agriculture
DBP	Development Bank of the Philippines
DFO	Diesel Fuel Oil
DILG	Department of the Interior and Local Government
DMAP	Distribution and Management Association of the Philippines
DnV	Det Norske Veritas
DODO	Drive-On, Drive-Off
DOE	Department of Energy
DOTC	Department of Transportation and Communications
DPWH	Department of Public Works and Highways
DSDA	Domestic Shipping Development Act
DSDP	Domestic Shipping Development Plan
DSMP	Domestic Shipping Modernization Program
DSO	Domestic Shipping Office
DTI	Department of Trade and Industry
DWT	Dead Weight Ton
EEC	Economic Council Regulation
EO	Executive Order
FSA	Flag State Administration
FSA	Filipino Shipowners' Associations
GDP	Gross Domestic Product
GDS	Gross Domestic Savings
GMDSS	Global Maritime Distress and Safety System
GOCC	Government Owned and Controlled Corporation
GOJ	Government of Japan
GOP	Government of the Philippines
GRT	Gross Registered Tonnage
GT	Gross Tons
IACS	International Association of Classification Societies
IMF	International Monetary Fund

IMO	International Maritime Organization
IRA	Internal Revenue Allotment
IRR	Implementing Rules and Regulations
ISM	International Safety Management
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
JRTT	Japan Railway Construction, Transport and Technology Agency
L/A	Loan Agreement
LGU	Local Government Unit
LR	Lloyd's Register of Shipping
MARINA	Maritime Industry Authority
MARSAD	Maritime Safety Administration
MC	Memorandum Circular
MEPCOM	Marine Environment Protection Command
MIMAROPA	Mindoro Marinduque Romblon Palawan
MITA	Meat Importers and Traders Association
MMAP	Master and Mates Association of the Philippines
MMTC	Maritime Training Council
MOTC	Ministry of Transportation and Communications
MPW	Ministry of Public Works
MT	Metric Ton
MTPDP	Medium-term Philippine Development Plan 2001-2004
N.M.	Nautical Mile
NCR	National Capital Region
NDC	National Development Company
NDC-MEC	National Development Company- Maritime Equity Corporation
NEDA	National Economic Development Authority
NFA	National Food Authority
NFA	National Food Authority
NK	Nippon Kaiji Kyoukai
NKK	Nippon Kaiji Kentei Kyoukai
NMEC	National Development Company – Maritime Equity Corporation
NOCOP	National Operation Center for Oil Pollution
NPL	Non-Performing Loans
NSCB	National Statistics Coordinating Board
NSM	National Safety Management
NSO	National Statistics Office
OD	Origin-Destination
ODA	Official Development Assistance
OECF	Overseas Economic Cooperation Fund (Now JBIC)
OFW	Overseas Filipino Workers
OIP	Other Investment Projects
OP-ODAAO	Office of the President's Priority Programs and Official Development Assistance Affairs Office
PAGASA	Philippine Atmospheric, Geophysical, and Astronomical Services Administration
PAMI	Philippine Association of Maritime Institutions
PAR	Philippine Area of Responsibility
PCCI	Philippine Chamber of Commerce and Industry
PCG	Philippine Coast Guard
PCPR	Provincial Certificate of Philippine Registry
PDB	Private Development Banks
PFDA	Philippine Fisheries Development Authority
PFI	Participating Financial Institutions
PHILPESTA	Philippine Petroleum Sea Transport Association Inc.
PHIVIDEC	Philippine Veterans Investment Development Corporation

PIA	Industrial Authority
PICO	Port Integrated Clearance Office
PIP	Priority Investment Projects
PISA	Philippine Inter-island Shipping Association
PISA	Philippine Interisland Shipping Association
PLSA	Philippine Liner Shipping Association
PMMRR	Philippine Merchant Marine Rules and Regulations
PMO	Project Management Office
PPA	Philippine Ports Authority
PPMB	port authority / public port management bodies (PPMBs)
PPMC	Poro Point Management Corporation
PRS	Philippine Register of Ship
PRS	Philippine Register of Shipping
PSB	Philippine Shipper's Bureau
PSCC	Philippine Standard Commodity Classification
PSE	Philippine Stock Exchange
PSRA	Philippine Shipbuilders and Repairs Association
PSY	Philippine Statistical Yearbook
PTSR	Philippine Transport Sector Review
RA	Republic Act
REC	Real Estate Collateral
REM	Real Estate Mortgage
RFC	Rehabilitation Finance Corporation
ROA	Return on Assets
ROE	Return on Equity
ROPAX	RoRo - Passenger
RORO	Roll-on, Roll-off
RPMA	Regional Ports Management Authority
RRTS	Road-RORO Terminal System
SBMA	Subic Bay Metropolitan Authority (SBMA)
SBSR	Ship Building and Ship Repairing
SC	Steering Committee
SLDP	Sustainable Logistics Development Program
SME	Small and Medium Enterprises
SOLAS	Safety of Life at Sea Convention
SRNH	Strong Republic Nautical Highway
SSMS	Sustainable Ship Modernization Scheme
STRAMINDO	JICA Study on the Development of Domestic Sea Transportation and Maritime Industry in the Republic of Indonesia
TD	Tropical Depression
TEU	Twenty feet Equivalent Unit
TS	Tropical Storm
TY	Typhoon
UP-NCTS	University of the Philippines National Center for Transportation Studies
VAFBCSO	Visayan Association of Ferry Boats and Coastwise Service Operators
VAFCSO	Visayan Association of Ferryboat and Coastwise Service Operators
VAFSCBO	Visayan Association of Ferry Service Companies & Boat Operators
WB	World Bank
WG&A	William Gothong & Aboitiz, Inc

10. DEVELOPMENT OF NEW GENERATION TRUNK LINER ROPAX VESSELS

10. DEVELOPMENT OF NEW GENERATION TRUNK LINER ROPAX VESSELS

10.1 Introduction

10.1.1 Project Background and Objectives

Liner shipping services takes an essential role in domestic trade of the country. Particularly, maritime traffic demand on trunk liner routes, e.g. Manila-Cebu and Manila-Cagayan de Oro, are mainly served by RoRo type cargo-passenger vessels so-called "Ropax" (i.e. superferry-type vessels). Ropax will still play an essential role in trunk liner shipping routes for both of passengers and cargoes. However, enumerated as follows are several constraints in strengthening the Ropax service:

- The existing Ropax vessels are all second-hand and more than 95% are imported from Japan. Those existing Ropax vessels are already very old with an average age of 31 years and are aging year after year. The demand for Ropax service particularly containerized cargoes will continue to increase. Therefore, they should be properly modernized and expanded. However, the supply of second hand Ropax vessels from Japan is not enough to provide necessary demand in the Philippines. Therefore, new sources of Ropax vessels shall be examined.
- Standard design for trunk liner Ropax vessel is necessary to fit them with the Philippine inter-island shipping and ports characteristics such as capacity, balance between passengers and cargoes, shallow depth at ports, configuration of RoRo ramps, etc. The introduction of standard vessel will result to an increase in efficiency of vessel operation as well as to reduce vessel construction periods and ship building cost. It is difficult for individual private shipping companies and shipbuilders to coordinate in this regard due to varying interests.
- Current operation of Ropax vessels is inefficient and not attractive for users. The nature of cargo handling also perpetuates the use of Ropax vessels. The prevalence of container handling using forklifts supports its operations, because low container-handling productivity does not translate into shorter turnaround time for a vessel that is constrained by the day-of-the-week schedule operation.

Based on the above, Ropax service on trunk liner routes shall be more competitive through operators' improved operational efficiency and attraction to the users. In order for the said goal to be realized, the following objectives of the project are set:

- Strengthening of trunk liner Ropax services, particularly focusing on Manila-Cebu Route, through modernization of vessels and improvement of operational efficiency
- Development of new-generation Ropax vessels to be built in domestic shipyards.
- Development of dedicated Ropax terminal at Manila and Cebu.
- Examination of a possible public ship finance system

10.1.2 Study Scope and Project Components

The Study intends to examine the feasibility of the following components of the pilot project focusing on the Manila-Cebu route which has a large traffic demand and connects two of the largest cities of the country:

(1) Introduction of new-generation Ropax Vessels with efficient operation system

(2) Development of dedicated Ropax terminal at Manila and Cebu Port

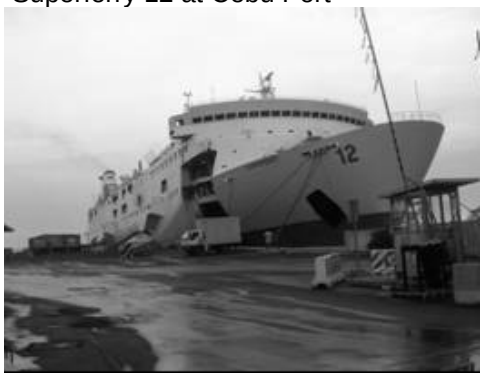
Table 10.1.1 Pilot Project Components

Component	Item	Existing	Proposed
1. Introduction of New-generation Ropax Vessel for the operation of Manila-Cebu Route	Frequency	12 trips a week (80% working ratio due to some canceled voyages)	2 trips a day (90% working ratio - no cancels except weather reason and periodical maintenance)
	Navigation Time / Speed	20-23 hours 17-20 knots	19-20 hours 20-21 knots
	Cargo Handling time	5-25 hours	4-5 hours
	Operation	50-96 hours/round trip	48 hours/round trip
	Vessel Assigned	Second hand Various size/design 10 vessels (of which 2 vessels operates as shuttle service	Brand New Standard size/design 4 vessels (all shuttle service)
	Capacity of Assigned Vessels	Vary by vessel 2,380 Pax (Ave.) 174 TEUs (Ave.)	1,000 Pax 170 TEUs 50 rolling vehicles
2. Development of Designated Ropax Terminals at Manila and Cebu Port	Terminal Operation	Individual operation at designated port area	Common terminal facility dedicated for Ropax operation with passenger boarding bridge like air port

The results of the Study were presented through a workshop on shipbuilding. The said workshop was attended by different stakeholders, MARINA officials, as well as by members of the Study Team. The workshop was held on August 17, 2005. The summary of the issues and discussions during the workshop are presented in the Appendix.

Figure 10.1.1. Existing Liner Ropax Vessels in Manila-Cebu Route

Superferry 12 at Cebu Port



Princess of the Stars at Manila North Harbor

10.2 Existing Liner Ropax Service and Demand in Manila-Cebu Route

10.2.1 Existing Conditions of Ropax Services

(1) EXISTING ROPAX OPERATIONS

1) Shipping Companies:

As of August 2005, there are three shipping companies providing liner shipping services using Ropax vessels in the Manila-Cebu Route. They are Aboitiz Transport System Corporation (hereinafter called Aboitiz), Sulpicio Lines Inc. (Sulpicio) and Carlos A. Gothong Co., Inc. (Gothong).

Formerly, this route was operated by Aboitiz, Sulpicio and Negros Navigation Company (Negros Navigation), providing 12 round trips a week in total. However, Negros Navigation in 2002 has withdrawn their operation from this route. On the other hand, Gothong started its operation on this route in 2004.

2) Operation Schedule:

As of August 2005, there are weekly 14 trips from Manila to Cebu and 10 trips from Cebu to Manila. In average, Manila-Cebu direction has daily 2 departures at each port. Aboitiz and Sulpicio provide dominant service with five round trips a week, respectively, while Gothong only provides four trips a week of one-way service from Manila to Cebu.

3) Vessel Assignment:

In the Manila-Cebu route, 10 different Ropax vessels are assigned to provide 24 one-way trips a week in total. Under current vessel assignment schedule, the vessels are assigned not only in Manila-Cebu route but also in other routes.

Only Superferry 12 of Aboitiz and the Princess of the Stars of Sulpicio are dedicated in Manila-Cebu route providing shuttle service. Supperferry 12 operates three round trips a week, while the Princess of the Stars operates two round trips a week. Other vessels operate in the Manila-Cebu route as part of the assigned routes which serve multi-destinations.

4) Operation Schedule:

Navigation hour varies from 20 to 23 hours depending on the vessel and the average is around 21 hours. The distance between Manila and Cebu is 392 N.M. Therefore, navigation speed ranges from 17-20 knots.

On the other hand, berthing time at port mainly for loading and unloading varies more than navigation time depending on the operator. The Ropax vessels of Aboitiz spend 5-6 hours at port, while those of Sulpicio spend more time and could sometime be more than 24 hours. From the viewpoints of efficient use of the vessel, Sulpicio shall minimize berthing time to increase turnover ratio of vessel operation.

Table 10.2.1. Ropax Service Schedule in Manila-Cebu Route (August 2005)

Operator	Vessel Name	Departure			Arrival			Navi-gation Hours	Port Hours
		Port	Day	Time	Port	Day	Time		
Aboitiz	Superferry 12	Manila	Sun	8:45	Cebu	Mon	6:00	21:15	5:45
		Cebu	Mon	11:45	Manila	Tue	9:00	21:15	5:45
		Manila	Tue	14:45	Cebu	Wed	11:59	21:15	4:46
		Cebu	Wed	16:45	Manila	Thu	14:00	21:15	5:45
		Manila	Thu	19:45	Cebu	Fri	17:00	21:15	4:45
		Cebu	Fri	21:45	Manila	Sat	19:00	21:15	16:45
	Superferry 19	Manila	Wed	19:45	Cebu	Thu	17:30	21:45	3:45
		Cebu	Thu	21:15	Manila	Fri	19:00	21:45	-
	Superferry 15/16	Cebu	Sun	13:45	Manila	Mon	11:59	22:15	-
	Superferry 17/18	Manila	Sat	9:45	Cebu	Sun	7:00	21:45	-
Sulpicio	Prin. of the Stars	Manila	Tue	10:00	Cebu	Wed	6:30	20:30	13:30
		Cebu	Wed	20:00	Manila	Thu	16:30	20:30	27:30
		Manila	Fri	20:00	Cebu	Sat	16:30	20:30	17:30
		Cebu	Sun	10:00	Manila	Mon	6:30	20:30	27:30
	Prin. of the Universe	Cebu	Tue	14:00	Manila	Wed	11:00	21:00	27:00
		Manila	Thu	14:00	Cebu	Fri	10:00	20:00	-
	Prin. of Paradise	Cebu	Mon	21:00	Manila	Tue	18:30	21:30	15:30
		Manila	Wed	10:00	Cebu	Thu	7:00	21:00	-
	Filipina Princes	Cebu	Fri	10:00	Manila	Sat	9:00	23:00	25:00
		Manila	Sun	10:00	Cebu	Mon	9:00	23:00	-
Gothong[1)]	Subic Bay I	Manila	Wed	21:00	Cebu	Thu	19:00	22:00	-
		Manila	Sun	9:00	Cebu	Mon	7:00	22:00	-
	Manila Bay I	Manila	Tue	9:00	Cebu	Wed	7:00	22:00	-
		Manila	Fri	21:00	Cebu	Mon	19:00	22:00	-

Source: Culled from each shipping company
Note: 1) Operates from Manila to Cebu only

(2) EXISTING ROPAX SERVICE CAPACITY

Average capacity of Ropax vessels is 174 TEUs of containerized cargo and 2,384 passengers. Weekly transport capacity of Ropax service in Manila-Cebu route is

4,266 TEUs and 56,832 passengers. It is noted that about 20% of the scheduled trips was cancelled in 2003 according to the analysis of Annual Reports from shipping companies.

Table 10.2.2. Capacity of Ropax Services in Manila-Cebu Route (August 2005)

Operator	Vessel Name	Vessel Capacity		One-way Trips per week	Weekly Capacity (both-way)		Yearly Capacity (both-way)	
		TEU	Pax		TEU	Pax	TEU (000)	Pax (000)
Aboitiz	Superferry 12	213	2,324	6	1,278	13,944	66	725
	Superferry 19	103	2,420	2	206	4,840	11	252
	Superferry 15/16	203	1,906	1	203	1,906	11	99
	Superferry 17/18	227	2,220	1	227	2,220	12	115
Sulpicio	Prin. of the Stars	184	1,992	4	736	7,968	38	414
	Prin. of the Universe	150	3,620	2	300	7,240	16	376
	Prin. of Paradise	120	3,259	2	240	6,518	12	339
	Filipina Princes	160	2,960	2	320	5,920	17	308
Gothong[1)]	Subic Bay I	190	1,588	2	380	3,176	20	165
	Manila Bay I	188	1,550	2	376	3,100	19	161
Average		174	2,384	-	-	-	-	-
Total		-	-	22	4,266	56,832	221	2,954

Source: Culled from each shipping company
Note: 1) Operates from Manila to Cebu only

(3) EXISTING ROPAX VESSELS

Profile of the existing Ropax vessels assigned to Manila-Cebu route is shown in Table 10.2.3. The major characteristics of vessels are as follows:

1) Vessel Age

All Ropax vessels assigned to Manila-Cebu route are purchased second hand and mostly imported from Japan. They were built in 1970's and 1980's and the average age is 25 years old. It is relatively younger as compared to the average of all Ropax vessels in the country which is 31 years old.

2) Vessel Size

Although vessel size in terms of gross tonnage (GT) varies widely from 8,000 GT to 23,000 GT, average is 14,000 GT. For Manila-Cebu route, extremely bigger Ropax vessels are assigned as compared to the average (3,800GT) due to larger traffic demand of cargoes and passengers.

3) Capacity

Average capacities of cargoes and passengers are 174 TEUs and 2,384 passengers, respectively. As for passengers, different service class is provided depending on accommodation, meals and other services. Type of accommodation varies from double-decker bed for the economy class to private room for suite class passengers. As for cargo, different sizes of containers (10', 20' and 40'), general cargoes and rolling vehicles such as truck and other passenger vehicles are being transported. However, the dominant cargo type is the container with chassis.

4) Vessel Layout

The basic configuration of Ropax vessel allocates the lower deck (one or two decks) for cargoes such as containers on chassis and rolling vehicles and upper deck for passengers and crew for accommodation facilities, restaurants and other common facilities.

Table 10.2.3. Profile of Ropax Vessels Assigned to Manila-Cebu Route (2005)

Operator	Vessel Name	GRT	Year Built	Age as of 2005	Service Speed (knot)	Built in
Aboitiz	Superferry 12	15,233	1986	19	20	Japan
	Superferry 19	7,878	1977	28	19	Japan
	Superferry 15/16	10,722	1984/81	21/24	20	Japan
	Superferry 17/18	19,207	1987/88	18/17	25	Japan
Sulpicio	Prin. of the Stars	23,824	1984	21	21	Japan
	Prin. of the Universe	13,526	1983	22	21	Japan
	Prin. of Paradise	9,466	1974	31	18.5	Japan
	Filipina Princes	13,705	1973	32	18	Japan
Gothong[1)]	Subic Bay I	13,854	1977	28	18	Japan
	Manila Bay I	13,560	1973	32	18	Japan
Average of above vessels (10)		14,098	-	25	20	-
Average of all Ropax vessels (95)		3,809	-	31	-	Japan (95%)

Source: Philippine Liner Shipping Association (PLSA)
Note: 1) Operates from Manila to Cebu only

(4) COMPARISON WITH OTHER COMPETITIVE MODES

There is only Ropax service available for passenger transport for trunk liner shipping route such as the Manila-Cebu route, there is no dedicated passenger shipping service at present. Ropax service, practically is not competitive with air transport because the segment of users is different due to the big gap in fare levels. RRTS using bus is a possible competitor of Ropax service in short-medium distance routes. However, for medium-long distance routes such as Manila-Cebu route with distance of 392 N.M. Ropax is still competitive with RRTS in terms of time, fare and comfort. This situation will continue unless road conditions and RoRo service (e.g. frequency) for RRTS are improved significantly.

For cargo transport, particularly for containerized cargoes, liner shipping service by dedicated container vessels is available in addition to Ropax service. In the Manila-Cebu route, there are weekly 5 trips from Manila to Cebu and 6 trips from Cebu to Manila. Total transport capacity is 2,176 TEUs per week (both-way). Those are operated by Sulpicio and Lorenzo Shipping Corporation (Lorenzo). In this service, RoRo and LoLo types of vessels are assigned for this service. There is no full container vessel due to limited quay crane at ports. Capacity of container vessel ranges from 120 to 150 TEUs.

Although the freight rates of dedicated container vessels are relatively cheaper than those of Ropax service, its service level is very low. It takes 26-36 hours (navigation speed: 11-15 knots) for one-way navigation and more time for container handling at ports. Though it provides a liner shipping service, it lacks certitude of operation schedule.

According to the results of port traffic survey conducted in Cebu Port for seven days, there are only four actual number of container vessels which arrived at Cebu port (all from Manila to Cebu).

Table 10.2.4. Capacity of Ropax Services in Manila-Cebu Route (August 2005)

Service	Mode	Transport Time	Fare
Passenger	Ropax	20h (20knot)	P1500/pax (economy w/o A/C)
	SRNH/RRTS	29h (Western route)	P1700/pax (by A/C bus)
	(Bus)	23h (Central route)	N.A. (not yet developed)
Cargo	Ropax	20h (20knot)	P25,000-30,000/TEU
(Container)	Container	33h (12knot)	P20,000-30,000/TEU

Table 10.2.5. Service of Container Vessel in Manila-Cebu Route (2005)

Direction	No. of Trips/ week (one-way)	Weekly Capacity (TEU)
Manila to Cebu	5	1,033
Cebu to Manila	6	1,143
Total	11	2,176

Source: CPA
Note: Schedule in the second week of July 2005

(5) PASSENGER FARE AND FREIGHT RATE

1) Passenger Fare

There are various classes available for Ropax passengers. The cheapest is economy class without air-con and it costs P770-1680/pax (one-way, published fare without meal). The operators sometimes provide discounted promotion rates of about P800, particularly in off-peak season. Air transport costs about P3,500/pax (one-way, economy class regular fare, Philippine Airlines) for the Manila-Cebu route. Therefore, there is a wide cost disparity between Ropax service and air transport. Although airlines also provide discounted promotion air fare, there are still other expenses such as terminal fee, etc. On the other hand, the most expensive class is suites room (for 2 passengers) and it costs around P3,500-6,150/room, almost costing the same as air fare.

2) Freight Rate

For container shipping, there are several service types depending on the demand of shippers. Published freight rate of “pier to pier” service is the cheapest and ranging from P18,500-33,900/TEU for one-way transport in the Manila-Cebu route. Gothong offers very low rates compared to other operators to get more regular clients since they entered this route only recently.

As compared to the Ropax freight rate with container vessel, it is about P22,600/TEU for “pier to pier” service and has no significant difference with Ropax service.

Table 10.2.6. Published Ropax Passenger Fare for Manila-Cebu, 2005 (Pesos)

Operator	Economy Class (without A/C)	Economy Class (with A/C)	Suite Room[2)]
Aboitiz	1,680/pax	1,960/pax	6,150/room (2pax)
Sulpicio	1,450/pax (820/pax)[3)]	1,600/pax (990/pax)[3)]	5,650/room (2pax)
Gothong[1)]	770/pax	920/pax	3,500/room (2pax)

Source: Culled from each shipping company
Note: fare without meal
1) Operates from Manila to Cebu only
2) Conditions of accommodation and amenities vary by vessel
3) Discounted promotion rate

Table 10.2.7. Published Ropax Freight Rate for Manla-Cebu, 2005 (Pesos/TEU)

Operator	Pier to Pier	Pier to Door	Door to Pier	Door to Door
Aboitiz	33,886.00	36,286.00	38,136.00	40,536.00
Sulpicio	32,429.59	35,461.79	37,502.95	40,535.14
Gothong[1)]	18,516.16	20,316.15	22,766.15	24,566.15

Source: Culled from each shipping company
Note: 1) Operates from Manila to Cebu only

10.2.2 Existing Demand

(1) Overall Maritime Traffic Demand between Manila and Cebu

Based on the maritime traffic demand data developed in the Study, the total maritime traffic demand between Manila and Cebu was estimated at about 2.5 million MT of cargoes and 450,000 passengers in 2003. Most dominant cargo type is general cargoes. Cargo volumes by direction are 1.4 million MT on the Manila-Cebu link and 1.1 million MT on Cebu-Manila link.

Table 10.2.8. Existing Maritime Traffic between Manila and Cebu (2003)

	Manila to Cebu	Cebu to Manila	Total	%
Passengers (persons)	**224,863**	**224,863**	**449,726**	**-**
Cargoes (MT)	**1,394,129**	**1,092,841**	**2,486,970**	100.0
1. Animal Feeds	52,142	55,905	108,047	4.3
2. Bottled Cargo	20,289	101,886	122,175	4.9
3. Cement	9,217	3,598	12,816	0.5
4. Chemicals	162,887	103,503	266,390	10.7
5. Coconut Oil	7	0	7	0.0
6. Copra	0	682	683	0.0
7. Corn	67	35	102	0.0
8. Crude Oil	0	193	193	0.0
9. Fertilizer	0	0	0	0.0
10. Fish & Fish Prep.	6,295	10,921	17,217	0.7
11. Fruits & Vegetables	81,727	5,620	87,347	3.5
12. Iron & Steel	66,265	504,769	571,935	23.0
13. Live Animals	918	17,814	18,732	0.8
14. Mineral Fuel	1,409	19,422	20,831	0.8
15. Molasses	0	0	0	0.0
16. Palay & Rice	98,502	15,525	114,027	4.6
17. Ref. Petroleum & Prod.	30,114	619	30,732	1.2
18. Sugar	1,688	4,969	6,657	0.3
19. Wheat	44,037	1,497	45,534	1.8
20. General Cargoes/Others	818,563	245,884	1,064,447	42.8

(2) Maritime Traffic Demand by Shipping Service

Among the total cargo traffic demand in 2003, about 1.8 million MT of cargoes are accounted as containerized cargoes through excluding break bulk cargoes such as iron, steel and mineral fuels, liquid bulk cargoes such as petroleum and dry bulk such as wheat and sugar.

As mentioned before, in trunk liner container shipping Ropax service is competing with dedicated liner container vessels. Based on the existing supply capacity and load factors, the modal shares of Ropax vessel and container vessel are about 65% and 35%, respectively. Therefore, cargo traffic demand for Ropax service is 1.17 million MT or 78,000 TEUs. By direction, the volume of container traffic is 63,000 TEUs for the Manila-Cebu link and 27,000 TEUs for the Cebu-Manila Link.

As for passenger transport, there is no other alternative service other than Ropax. Therefore, the total traffic demand of 440,000 passengers all depends on Ropax service.

The modal share of maritime traffic demand between Manila and Cebu is shown in the figure below. In a similar way, the modal share in 2005 is also estimated, 415,000 passengers and 1.35 million MT (90,000 TEUs).

Figure 10.2.1. Modal Share of Maritime Traffic between Manila and Cebu (2003)

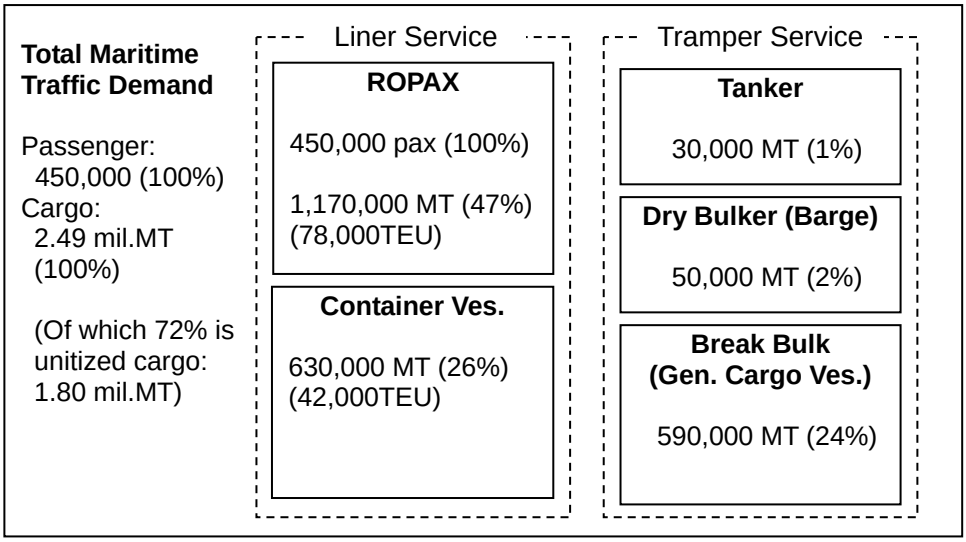
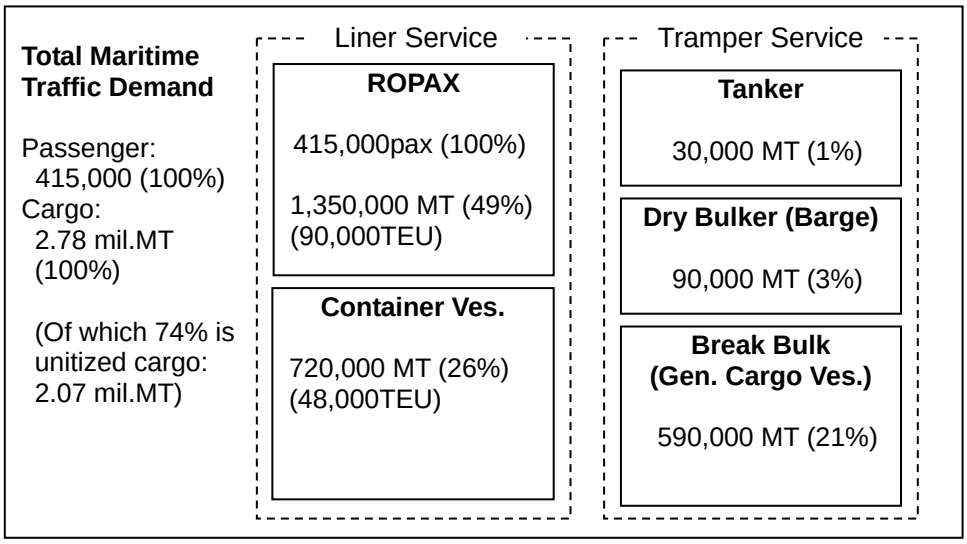


Figure 10.2.2. Modal Share of Maritime Traffic between Manila and Cebu (2005)



10.2.3 Load Factors

(1) ANNUAL AVERAGE LOAD FACTOR

Based on the analysis of supply and demand of liner Ropax service for Manila-Cebu route, annual average load factors in 2005 are estimated at 53% for container and 18% for passenger, respectively.

Annual average passenger load factor is almost the same level in both directions. However, there is a disparity by direction for cargo. Manila-Cebu link has a load factor of 64% and Cebu-Manila link has 38%. Although the annual load factors are generally low, balance between peak and off-peak periods and operating route of vessels have to be carefully considered.

Table 10.2.9. Annual Average Load Factor (2003 and 2005)

Item		Unit	2003	2005
Service	Schedule	Trips/week	24	24
	Vessel working ratio	%	80	80
	Actual trips from Manila	Trips/year	499	582
	Actual trips from Cebu	Trips/year	499	416
Cargo	Capacity (Manila-Cebu)	'000TEUs/year	85	99
	Capacity (Cebu-Manila)	'000TEUs/year	85	71
	Demand (Manila-Cebu)	'000TEUs/year	55	63
	Demand (Cebu-Manila)	'000TEUs/year	23	27
	Load Factor (Manila-Cebu)	**%**	**64.3**	**63.6**
	Load Factor (Manila-Cebu)	**%**	**27.6**	**38.2**
	Average Load Factor	**%**	**46.0**	**53.0**
Passenger	Capacity (both direction)	'000 Pax/year	2,376	2,376
	Demand (both direction)	'000 Pax/year	450	415
	Average Load factor	**%**	**18.9**	**17.5**

(2) LOAD FACTOR BY VESSEL AND BY VOYAGE

In order to examine load factors by vessel and by season, a set of data of the operator's annual report to MARINA in 2003 was analyzed. By vessel, the vessels dedicated for Manila-Cebu route such as Superferry 12 and Princes of the Stars has relatively higher load factor for both of cargo and passenger as shown in the table below. The other vessels have low load factors because their cargo for other destinations was not well accounted for.

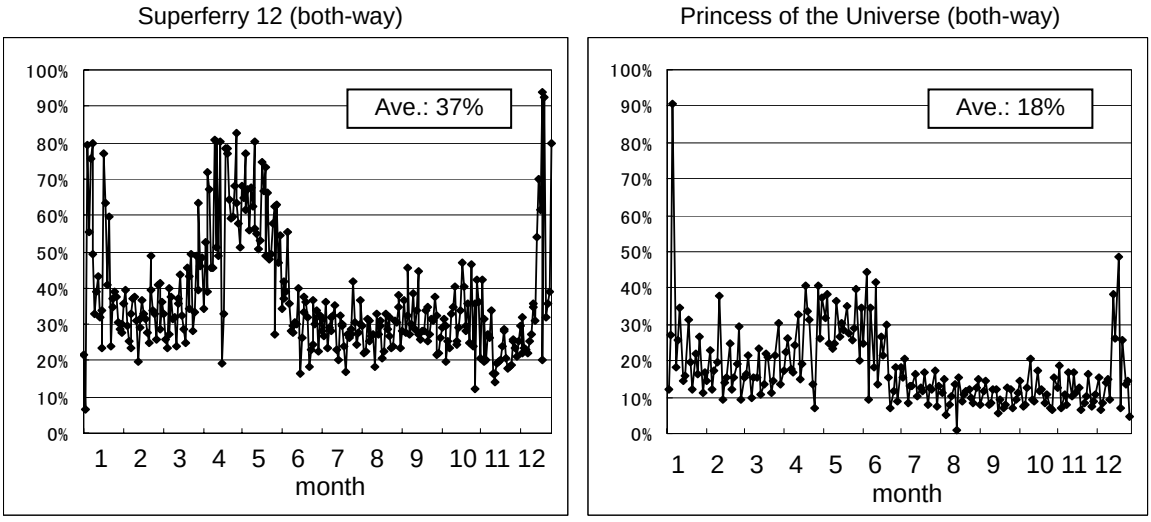
Table 10.2.10. Load Factor by Vessel (2003)

Operator	Vessel	Trips/ year	Cargo		Passenger	
			Mnl-Ceb	Ceb-Mnl	Mnl-Ceb	Ceb-Mnl
Aboitiz	Superferry 1	62	-	-	27	20
	Superferry 2	20	39	55	15	10
	Superferry 9	24	28	19	22	18
	Superferry 12 [1)]	**306**	**81**	**37**	**38**	**36**
	Average	(412)	73	36	34	32
Sulpicio	Princess of the Universe[1)]	**193**	**96**	**71**	**15**	**20**
	Filipina Princess	99	49	39	11	9
	Princess of the Paradise	89	46	41	7	2
	Princess of the Unity	52	37	13	4	2
	Average	(433)	57	41	9	10

Note: These vessels are dedicated to Manila-Cebu route only, operated as shuttle service.

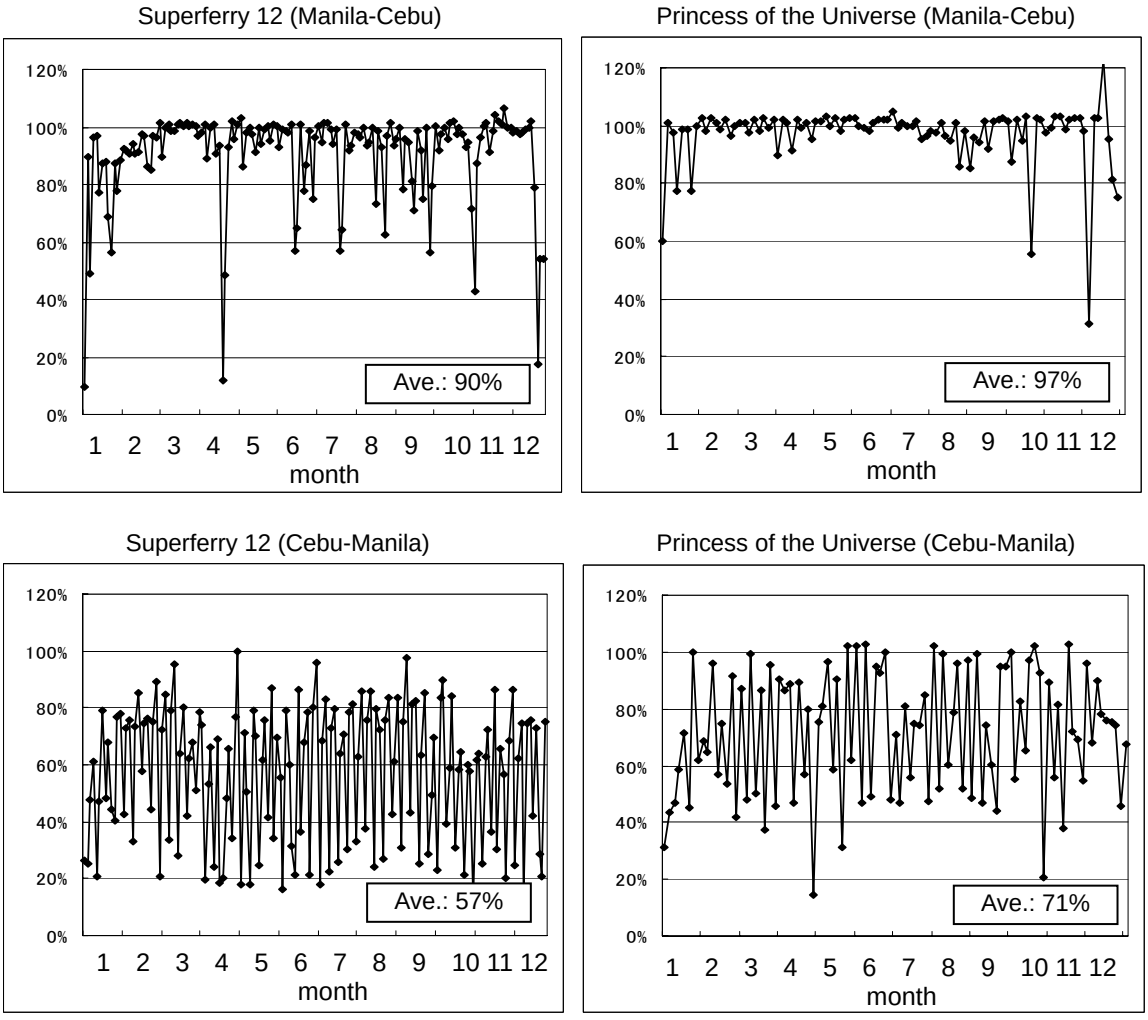
Fluctuations of load factors (Superferry 12 and Princess of the Stars are sampled) by voyage are show in Fig. 10.2.3-4. There are considerable seasonal fluctuations, particularly for passengers. Although these dedicated vessels have relatively high load factors, capacity of passengers are fully utilized only for several voyages in peak seasons in summer (April and May) and Christmas and new year holidays (November and January). On the other hand, load factor of cargoes are relatively stable although there are some spikes in demand.

Figure 10.2.3. Fluctuation of Passenger Load Factors in 2003



Source: Annual Report of Aboitiz and Sulpicio, 2003

Figure 10.2.4. Fluctuation of Container Load Factors in 2003



Source: Annual Report of Aboitiz and Sulpicio, 2003

(3) ANALYSIS OF PORT TRAFFIC SURVEY

In order to validate the data indicating the existing Ropax operation, supply and demand, a port traffic survey was conducted at the Cebu port focusing on the Ropax vessels to and from Manila. The observation and counting of all arrival and departing Ropax vessels and passengers and containers was conducted for seven days (one week) in July 2005. In this survey, traffic of liner container vessels to and from Manila was also surveyed. There was no observed container vessel going from Cebu to Manila during the survey

As for Ropax operation, although time of arrival and departure was followed by the scheduled timetable, there are four voyages that were cancelled among the 24 scheduled voyages. On the other hand, some of dedicated container vessels did not arrive and departed according to schedule and more than half of the scheduled voyages were not pushed through.

The average number of passengers by vessel was about 500 and load factor is 21-23% for both directions coinciding with the annual average.

On the other hand, average container carried in Manila-Cebu link is 169 TEUs per vessel, while average container carried in the Cebu-Manila link is 142 TEUs per vessel. In the case of dedicated container vessels, average container carried is 44 TEUs for the Manila-Cebu link.

Table 10.2.11. Traffic and Average Load Factor of Ropax Vessel in July 2005

	Cargo		Passenger	
	in TEU	Load Factor	Pax	Load Factor
Manila - Cebu	169	93.5	508	22.6
Cebu - Manila	142	78.8	477	20.7

Source: Port Traffic Survey by Study Team

10.2.4 Port Facilities and Operation at Manila Cebu Ports

(1) PORT FACILITIES AND ASSIGNMENT OF PIER/BERTH

In the ports of Manila and Cebu, each berth and pier is basically assigned for specific shipping companies. In Manila Port, Sulpicio and Gothong have the dedicated piers in North Harbor which is used not only for their Ropax vessels but also for other cargo vessels such as container vessels (RoRo and LoLo type) and general cargo vessels. Aboitiz is recently using a pier in the South Harbor for their Ropax operation only. In Cebu Port, each of three operators has also their dedicated berths.

(2) PORT OPERATIONS

1) Passenger Waiting, Boarding and Alighting

In Manila Port, there are currently simple facilities for waiting passengers but there is no special facility for passengers for boarding and alighting. All passengers have to walk from waiting area to the ship at grade where container chassis is passing through which is very dangerous at times. In Cebu Port, there is no permanent facility for waiting passengers. There is only a check-in counter with simple shed made from a modified container van.

Figure 10.2.5. Existing Conditions of Manila and Cebu Port

Manila South Harbour (Aboitiz)

Cebu Port (Aboitiz)

Manila North Harbour (Sulpicio)

Cebu Port (Sulpicio)

Figure 10.2.6. Existing Facilities for Passengers

Manila South Harbour (Aboitiz)

Manila North Harbour (Sulpicio)

2）Cargo (Container) Loading and Unloading

Container is the most dominant cargo for Ropax service. Containers are currently put on chassis at yard and loaded and unloaded by tractor. Although a basic feature of Ropax vessel is premised on self-driven loading and unloading by rolling cargo vehicles such as trucks, it is not applicable to the Philippines due to mismatched design of vessels and ports and the relatively high opportunity cost of rolling vehicles.

Some Ropax vessels are provided with only stern ramp without any forward ramp. There are no ramp way at Manila North Harbour and Cebu Port, while Manila South Harbour has six ramps to fit with the Ropax vessels.

Therefore, current condition of cargo handling is not efficient. It costs much because it requires longer time, much manpower, large yard space and expensive equipment such as folk lifts, chassis, etc.

Figure 10.2.7. Existing Cargo Handling

Manila North Harbour (Sulpicio)

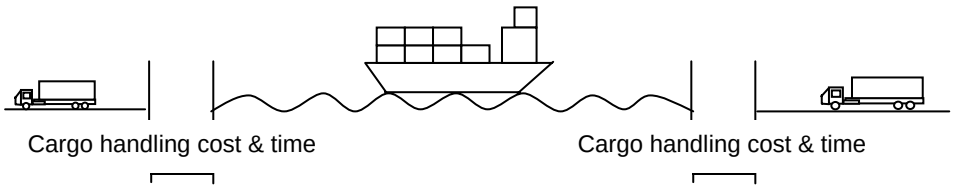
Cebu Port (Aboitiz)

Container Hold (Superferry 12)

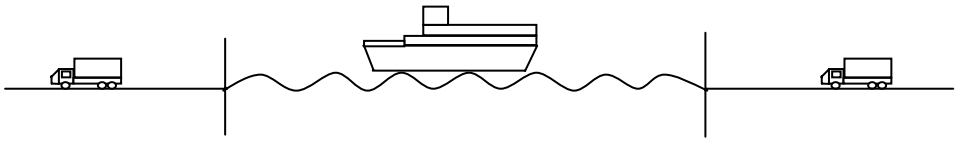
Container Hold (Princes of the Stars)

Figure 10.2.8. Schematic Diagram of Cargo Handling System

Container



Truck (RoRo)



(3) PORT CHARGES

Vessels which berth at either Manila Port or Cebu Port are obliged to pay two major fees: one is “usage fee” and the other is “wharfage fee”.

Usage fee is a charge on vessels that berth or drop anchor at any government port. The amount to be charged is dependent upon the Gross Tonnage (GT) of a vessel. The table below shows the usage fees charged at the Ports of Manila and Cebu per GT range. Vessels engaged in domestic trade, as well as those registered as bay and river trade vessels are charged one-half (1/2) of the required usage fees.

Both ports also charge lay-up fees, which is applied to vessels that temporarily anchor and lay-up at the port. The lay-up fee is also equal to 50% of applicable usage fees.

Table 10.2.12. Usage Fee at Manila and Cebu Port

	Port of Manila	Port of Cebu
below 6 GT	No Charge	No Charge
6 to 100 GT	82.00 per calendar day or a fraction thereof	30.10 per calendar day or a fraction thereof
over 100 GT	0.80 per GT in excess of 100 per calendar day or a fraction thereof	30.10 + (0.301 per GT in excess of 100) per calendar day or a fraction thereof

Source: PPA and CPA

Wharfage fee is applied to cargoes either in containers or not. At the Manila Port, all non-containerized domestic cargoes shall be charged based on their total revenue or metric tonnage. On the other hand, at the Cebu Port, non-containerized cargoes are charged based on different units such as per metric ton, per head, or per board feet. The table below shows the wharfage charges for different types of non-containerized domestic cargoes at the Ports of Manila and Cebu.

Table 10.2.13. Wharfage Fee (non-containerized cargoes) at Manila and Cebu Port

Type of Cargo	Port of Manila		Port of Cebu	
	Unit	Fee	Unit	Fee
In sacks/bags/bulk/steel products /heavy lift	per metric ton	P9.00	per metric ton	P4.00
Logs/Uncrated Lumber/Other wood products	per metric ton	P9.00	per 1000 Bd. Ft.	P7.00
Live Crated Animals/Crated Lumber/Others	No data		per revenue ton	P3.50
Uncrated pigs / goats	per metric ton	P9.00	per head	P1.50
Carabaos / cows / horses	per metric ton	P9.00	per head	P6.50
Rattan Poles	per metric ton	P9.00	per pile of 2000 poles or less	P52.50
Other	per revenue ton	P7.00		
Minimum Charge	P15.00		P10.00	

Source: PPA and CPA

For containerized cargo, wharfage fee is based on the size of the container. The table below shows the wharfage charges for containerized cargoes for both the Ports of Manila and Cebu.

For cargoes discharged or loaded at anchorage or at a duly registered private port, wharfage fee is 50% of the applicable rates. Further, empty containers loaded and unloaded at either of the ports are not charged with wharfage.

Table 10.2.14. Wharfage Fee (non-containerized cargoes) at Manila and Cebu Port

Container Size	Port of Manila	Port of Cebu
10 footer	P63.00	P27.00
20 footer	P126.00	P55.00
35 footer	P157.00	P70.00
40 footer	P189.00	P84.00
45 footer	P221.00	P97.00

Source: PPA and CPA

Arrastre and stevedoring fees are charged based on the revenue ton for loose cargoes and TEU for containers. These fees at Cebu Port are shown in the table below.

Table 10.2.15. Arrastre and Stevedoring Fees at Manila and Cebu Port

Cargo Type	Arrastre Fee	Stevedoring Fee
Loose Cargo	P59.15/revenue ton	P474.70/TEU
Containerized Cargo	P13.30/revenue ton	P145.05/TEU

Source: CPA

10.2.5 Perception of Users for the Existing Ropax Service

(1) PERCEPTION OF SHIPPERS AND FORWARDERS

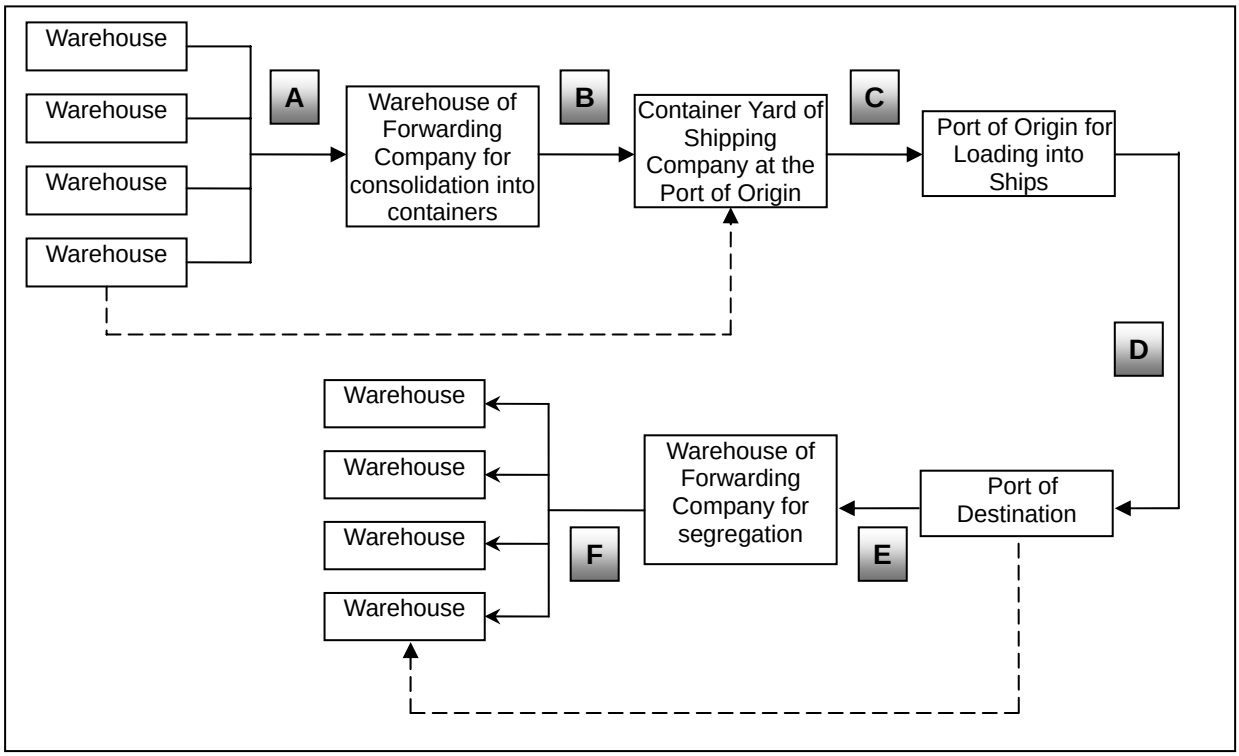
Interviews with domestic cargo shippers and forwarders revealed that the Manila-Cebu route is indeed a major route in the domestic cargo shipping. Manila is still considered as the major hub for the Philippines, while Cebu is considered as the primary hub for the southern part of the country.

1) Common Trip Chain

In transporting cargo from Manila to Cebu, and vice-versa, forwarders play a major role. Door-to-door service is still common wherein cargo is picked-up from the warehouses of customers and delivered also to the warehouses at the place of destination. Since it is common that the cargo to be shipped is less than the capacity of one twenty foot container, cargo consolidation is often practiced. This means that cargoes of individual customers are placed together in a single container (usually 20') before being shipped. Cargo consolidation is often done at the warehouse of the forwarders. The pick-up and delivery of goods is done using the trucks owned by the forwarders ("A" in the diagram). Since the demand for freight shipment is not constant through out the year, forwarders do not invest in trucks that are commensurate to the maximum demand. During the times when demand is high, the forwarding companies usually rent additional trucks or avail of the services of trucking companies.

Another common type of cargo shipped in Manila-Cebu route is containerized cargo bound and coming from foreign destinations. For example, cargoes, in containers, bound for Kaoshiung from Cebu are first shipped to Manila then are transferred to a different vessel at Manila Port. They are transferred to vessels which ply the Manila to Kaoshiung route. The figure below shows a schematic diagram of the common trip chain in transporting cargoes.

Figure 10.2.9. Schematic Diagram of Common Trip Chain using Ropax Service



In cases, where there is no need to consolidate cargoes, the forwarding companies usually deliver the container to the warehouse of their clients. The cargo is loaded into the container at the client's warehouse. From there, the container is directly brought to the container yards of shipping companies.

Forwarding companies also shoulder the cost of bringing the containers from their warehouse to the container yards of shipping companies ("B"). It is done using the company's tractor, if it owns one. Otherwise, it avails of the services of independent truckers. The same is also true for getting cargo from the point of destination to the forwarders warehouse ("E"). If a container is loaded with cargoes owned by only one client, the container is usually brought directly from the port of destination to the client's warehouse. If segregation is needed, it is first brought to the forwarders warehouse to be segregated. The cargoes are then delivered to their individual destinations using trucks owned by the forwarding companies ("F"). The entire link usually takes 4-7 days. However, the sub-link from the origin port to the destination port ("D") usually takes approximately 25-28 hours. This includes the time consumed in loading and unloading of containers.

2) Comparison between Ropax and Container Service

It was found that forwarders and shippers prefer the services of Ropax shipping over pure container shipping primarily due to the reliability of the schedule. They consider this very important since they have to also meet their commitments with their clients.

However, they also acknowledged the fact that container service is cheaper than Ropax. Further, they also stated that domestic freight rates are too high especially when compared to international rates.

(2) PERCEPTION OF PASSENGERS

A passenger interview was conducted on-board of three vessels. These are Princess of the Stars (Sulpicio), Subic Bay 1 (Gothong), and Superferry 12 (Aboitiz). The first two are on their Manila to Cebu trips at the time of the survey, while the third is traveling from Cebu to Manila.

1) Respondents' Profile

There were a total of 214 respondents. The breakdown of respondents onboard the three vessels are 91, 83, and 40 respondents for the Princess of the Stars, Superferry 12, and Subic Bay 1, respectively. Hence, 131 of the respondents are travelling from Manila to Cebu, while 83 are going from Cebu to Manila.

There were 81 females and 133 male respondents. Of the 81 females, 48 are in the Manila-Cebu trips while 33 are in the Cebu-Manila. 83 of the 133 male respondents are in the Manila-Cebu trips while 50 are in the Cebu-Manila.

Of the total number of respondents, majority or approximately 65% are between 18 to 35 years old. Only 10 of the 214 respondents are 60 years old or above. And only 6 are below 18 years old.

2) Origin - Destination

Almost half of the respondents reside in Cebu. 96 of 214 respondents reside in Cebu. Bohol and Metro Manila account for the second and third most number of residents among the respondents with 35 and 28, respectively. The rest of the respondents come from different provinces including Leyte, Cagayan de Oro, Pangasinan, Tarlac and others. The respondents of the survey showed a wide range of origin-destination (OD) pairs. There is no single dominant OD pair for either direction.

3) Trip Purpose and Frequency

Majority of the trips are "to home" trips. These account for 115 of the 214 respondents. The "to home" trips is more dominant in the southbound compared to the northbound trips. In the southbound, 72% are trips to home. On the other hand, in the northbound, only 25% of the trips are "to home".

There are relatively few business and pleasure trips. These account for 7% and 8% of the total number of trips, respectively. The northbound respondents indicated a wider range of trip purposes. Trips, other than "to home", business, and pleasure trips account for 54% of northbound trips. Other trip purposes account for only 16% of southbound trips. Among the trip purposes classified as "others" are to look for employment opportunities and visit to relatives.

Majority of the respondents travel the said route twice a year or less; 63 respondents stated that they travel the route once a year; 39 of the respondents stated that it is their first time to ride a ship. While 40 of the respondents stated that they travel the route twice a year, other respondents indicated that they seldom travel on the route. Some travel using sea transport as seldom as once in the last 15 years.

4) Ratings of On-board Facilities and Services

On-board facilities and services were categorized into five and respondents were asked to rate them as either "Very Satisfactory", "Satisfactory", "Just Right", "Poor", or "Very Poor". The five categories are accommodation, amenities, services, facilities, and safety equipment. These ratings were then subjected to a corresponding scoring system such that "Very Satisfactory" = 1, "Satisfactory" = 2, "Just Right" = 3, "Poor" = 4, and "Very Poor" = 5. The summary of the ratings of on-board facilities and services are presented per vessel below.

- Princess of the Stars: Respondents gave this ship a general average rating of 2.16. Safety equipments got the most satisfactory rating with an average of 2.07. While amenities got the lowest rating with an average of 2.34.
- Subic Bay 1: Respondents gave this ship a general average rating of 2.83. As in the case of the Princess of the Stars, safety equipment also got the highest rating with an average of 2.65. Similarly, amenities also got the lowest rating with 3.00.
- Superferry 12: This ship also got relatively fair rating with an average of 2.26. However, unlike in the case of the two other vessels, accommodations got the highest rating at 2.13. Amenities, on the other hand, got the lowest rating with 2.47.

The table below shows the comparative ratings of the three vessels.

Table 10.2.16. Passenger's Rating of On-board Facilities and Services

	Princess of the Stars	Subic Bay 1	Superferry 12
Accommodation	2.12	2.75	2.13
Amenities	2.34	3.00	2.47
Services	2.14	2.95	2.16
Facilities	2.12	2.80	2.36
Safety Equipment	2.07	2.65	2.18
General Average	2.16	2.83	2.26

Source: Passenger Interview by Study Team

5) Ratings of Facilities and Services at Origin Port

The survey respondents were also asked to rate certain categories which pertain to facilities and service at the port of origin (i.e. Port of Manila and Cebu). The categories are passenger waiting area, facilities, service, luggage handling, and boarding facilities. The same rating system used for the onboard facilities and services was applied.

The Ports of Manila and Cebu got almost similar ratings from passengers with average scores of 2.56 and 2.51, respectively. Passengers boarding at Cebu Port gave the highest rating to boarding facilities with an average of 2.29. The general facilities of Cebu Port got the lowest rating with an average of 2.64.

Passengers at Manila Port gave the highest rating to luggage handling with an average of 2.43. For the same group of respondents, boarding facilities got the lowest rating with an average of 2.66. The table below shows the summary of the ratings of facilities and services at the Ports of Manila and Cebu.

Table 10.2.17. Passenger's Rating of Port Facilities and Services

	Manila Port	Cebu Port
Passenger Waiting Area	2.64	2.54
Facilities	2.55	2.64
Service	2.54	2.54
Luggage Handling	2.43	2.55
Boarding Facilities	2.66	2.29
General Average	2.56	2.51

Source: Passenger Interview by Study Team

6）Ratings of Other Categories

Three other categories were rated by passengers. These are the fare, the price of food on-board, and travel time. The said categories were rated as either “Too High”, “High”, “Just Right”, “Low”, or “Too Low”. The ratings were then subjected to a corresponding scoring system such that “Too High”=1, “High”=2, “Just Right”=3, “Too Low”=4, and “Low”=5. The summary of the ratings of the three categories are presented per vessel below.

- Princess of the Stars: Fare is generally regarded as low as it garnered an average rating of 3.56. On the other hand, the price of food on-board is viewed as a bit high. It had an average rating of 1.97. Travel time had an average rating of 2.21.
- Subic Bay 1: Respondents viewed the fare charged by Gothong Lines as generally low. It had an average rating of 3.48. The price of food on-board had an average rating of 2.60. And travel time on-board Subic Bay 1 is viewed as too low as it garnered an average rating of 3.10.
- Superferry 12: Compared to the two other vessels, respondents view the fare as a bit too high. The average rating for the fare is 2.48. The price of the food onboard is also viewed as high. It had an average rating of 1.78. The travel time on-board Superferry 12 is viewed as just right with an average rating of 2.93.

The table below shows the comparative ratings of the three vessels.

Table 10.2.18. Passenger’s Rating of Port Facilities and Services

	Princess of the Stars	Subic Bay 1	Superferry 12
Fare	3.56	3.48	2.48
Price of Food On-Board	1.97	2.60	1.78
Travel Time	2.21	3.10	2.93

Source: Passenger Interview by Study Team

7）Choice for Vessel

The respondents were also asked to choose from several attributes which could be the reasons for their choice of vessels. Specifically, they were made to choose from eight attributes which is their first, second, and third reason for choosing the ship. The eight attributes are:

- Fare
- Schedule
- On-board Service
- Customer Service
- Safety
- Ship Amenities
- Ship Facilities
- Accommodation

A scoring system was then applied in order to determine the top reasons of passengers for choosing such type of vessel. The top choice is given three points, the second is given two points, and the third is given one point.

The fare is the top priority for choosing the vessel. It had a total of 289 points. The second priority is schedule. The third is safety and accommodation came in fourth.

The table below shows the tabulated scores for the passengers' choice of vessel.

Table 10.2.19. Passenger's Choice of Vessel

	Top Priority	2nd Priority	3rd Priority	Total	Rank
Fare	249	28	12	289	First
Schedule	135	94	9	238	Second
On-board Service	15	36	18	69	
Customer Service	12	22	19	53	
Safety	84	48	31	163	Third
Ship Amenities	12	6	3	21	
Ship Facilities	42	24	13	79	
Accommodation	30	48	37	115	Fourth

Source: Passenger Interview by Study Team
Note: scoring system Top Priority: 3points, 2nd Priority: 2 points, 3rd Priority: 1 point

10.3 Proposed Liner Ropax Service and Operation in Manila-Cebu Route

10.3.1 Future Maritime Traffic Demand in Manila-Cebu Route

(1) FUTURE MARITIME TRAFFIC DEMAND BETWEEN MANILA AND CEBU

Based on the future socio-economic framework, future maritime traffic demand is estimated as shown in Chapter 7. The table below shows the estimated overall maritime traffic demand between Manila and Cebu.

It is estimated that the total maritime traffic demand of cargoes and passengers will be 4.2 million MT and 242,000 passengers in 2015, respectively. Cargo traffic demand between Manila and Cebu shares 6% of the nationwide maritime traffic demand. Cargo traffic will be significantly increased (about 1.7 times). By direction, rapid increase is observed in the Manila-Cebu link.

On the other hand, passenger demand will decrease according to the increase of people's income under competition with air transport, but still remains to be a large volume to be transported.

Table 10.3.1. Total Maritime Traffic Demand between Manila and Cebu

	Direction	Unit	Yearly Traffic Demand		
			2005	2015	2015/2005
Cargo	MNL-CEB	'000MT	1,394	2,721	2.0
	CEB-MNL	'000MT	1,093	1,509	1.4
	Total	'000MT	2,487	4,230	1.7
Passenger	Total	'000Pax	415	240	0.6

(2) FUTURE TRAFFIC DEMAND FOR ROPAX SERVICES

Among the total cargo traffic demand in 2015, about 3.44 million MT of cargoes is estimated as containerized cargoes to be transported between Manila and Cebu. Containerized cargoes are mostly transported by liner shipping services such as Ropax vessels and dedicated container vessels. Modal share between Ropax vessels and container vessels are assumed to be same as the existing trend.

In considering the above, the modal share of maritime traffic demand between Manila and Cebu by shipping service is shown in the Figure 10.3.1.

As a result, cargo traffic demand for Ropax service is estimated to be 2.24 million MT or 150,000 TEUs. By direction, the volume of container traffic is 105,000 TEUs for Manila-Cebu link and 45,000 TEUs for Cebu-Manila Link.

As for passenger transport, there is no other alternative shipping service other than Ropax. Therefore, the total traffic demand of 242,000 passengers will all be depending on the Ropax service.

Figure 10.3.1. Modal Share of Maritime Traffic between Manila and Cebu (2015)

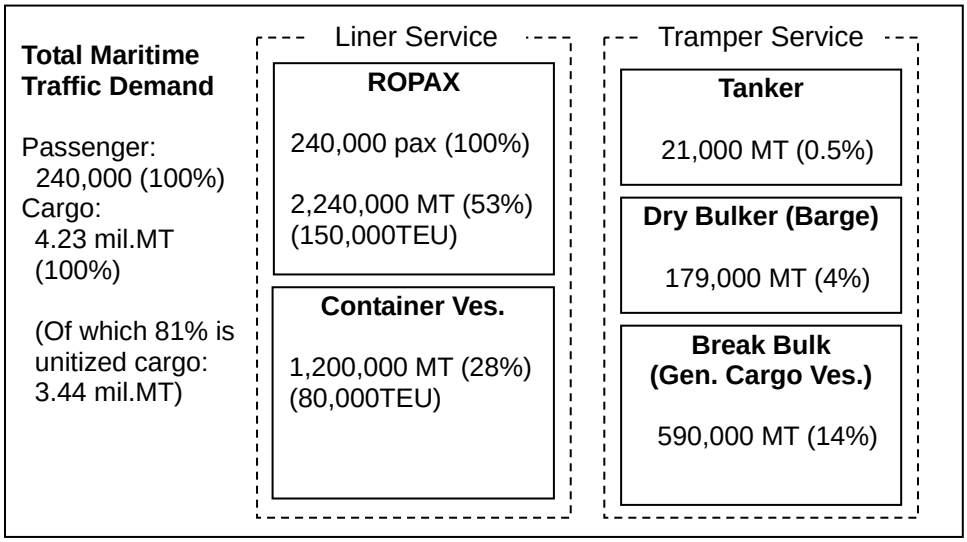


Table 10.3.2. Future Demand for Ropax Service in Manila-Cebu Route (2015)

	Unit	Direction	Yearly Traffic Demand			Daily Average	
			2005	2015	2015/ 2005	2005	2015
Cargo	'000MT/yr MT/day	MNL-CEB	945	1,570	1.7	2,620	4,360
		CEB-MNL	405	670		1,130	1,860
		Total	1,350	2,240		3,750	6,220
	TEU	MNL-CEB	63,000	105,000	1.7	175	292
		CEB-MNL	27,000	45,000		75	125
		Total	90,000	150,000		250	410
Passenger	Pax	Total	415,000	240,000	0.6	1,150	670

10.3.2 Overall Future Ropax Demand and Estimated Ropax Supply from Japan

As shown in the previous section, the demand for Ropax service will increase in the future, particularly significant increase is foreseen in containerized cargoes. However, the existing Ropax vessels are already very old and aging year after year. Therefore, the existing old Ropax vessels need to be modernized together with the expansion in the number of vessels to meet the future increase in demand.

It is estimated that the required number of Ropax vessels with more than 5000GT (potential demand for trunk liner Ropax service) will double by 2015. However, during this period, the estimated supply of Ropax vessels from Japan (the primary source of Ropax vessels) will not be enough to provide the necessary second hand vessels. Therefore, new building of Ropax by the domestic shipbuilders should be considered.

Table 10.3.3. Future Ropax Demand in Phil. and Estimated Ropax Supply from Japan

Period / GT	2005-2010		2011-2015		2016-2020	
	Demand in PH	Supply from JPN	Demand in PH	Supply from JPN	Demand in PH	Supply from JPN
0-400	26	34	21	21	15	14
401-1000	37	28	0	9	5	6
1001-5000	25	19	19	9	9	5
5001-10000	27	8	23	4	14	1
10000-		8		7		4
Total	115	97	63	50	43	31

Source: Nikkan kaiji Tsushin Co.,Ltd and Study Team

Note: 1) Demand in PH - demand for RoRo vessels which are to be converted from wooden-hull vessels are not included.

2) Size of Japanese vessels are presented based on the Japanese standard. It is assumed that half of vessels with more than 15 years old Ropax will be sold to the Philippines.

10.3.3 Proposed Ropax Service Operation and Vessel Capacity

Based on the analysis of existing conditions and future traffic demand, the following parameters of Ropax service operation and new vessel capacity are proposed in order to increase the efficiency of operation and increase the attraction to the end users:

1) Operation Frequency

Liner operation is an essential feature of a Ropax service. Currently there are 14 weekly departures from Manila Port and 10 departures for Cebu Port. However, about 20% of the scheduled voyages are usually cancelled. Since the two daily departures from each port of Manila and Cebu are already attractive for the passengers and cargo shippers, this level of frequency must be strictly ensured. However, 10% of the scheduled voyages are being cancelled due to seasonal bad weather and periodical maintenance during off-peak season.

2) Operation Cycle

Current operational cycle in the Manila-Cebu route varies by vessel and takes more than 48 hours for a round trip. The actual navigation time by vessel does not vary considerably, ranging 20-23 hours (one-way), the disparity is mainly due to long berthing time at port, mostly for loading and unloading of containers. This causes much difficulty for the vessels to maintain a well scheduled operation. In order to maximize the utilization ratio of vessel and number of necessary vessels, reduction of berthing time shall be considered. Therefore, it is proposed to implement a 48-hour

operation cycle for a round trip. This requires only 4 vessels to maintain daily two departures (morning and afternoon) from each port.

3) Navigation Speed and Cargo Handling Time

In order to implement the said operational cycle, time for container loading and unloading should be shortened. Although this actually depends on the number of containers to be handled, Aboitiz is currently implementing 4-6 hours cargo handling time for about 150-200 TEUs of containers from which other operators could likewise follow. On the other side, if the speed of the new Ropax vessels is increased to 21 knots, one-way navigation time will be lessened to 19 hours. Therefore, it is possible to implement 48 hours operational cycle.

With regards to speed versus fuel and oil consumption (FOC), if navigation speed will be increased from 20 knots to 21 knots, FOC will increase by 10%. However, the operator may compensate such increase in operating cost by having container load of more than 200TEUs from which the freight fee is said to balance such loss due to increased FOC consumption.

Table 10.3.4. Relationship between Navigation Speed and FOC

Navigation Speed (knot)	PS (CSO) (85%MCR)	FOC(t/d)	Manila-Cebu Route (392 N.M)	
			Navigation Hour (hrs)	Total Consumption (tons/voyage)
10.0	2,019	6.3		
11.0	2,688	8.4		
12.0	3,489	10.9		
13.0	4,436	13.8		
14.0	5,541	17.3		
15.0	6,815	21.3		
16.0	8,271	25.8		
17.0	9,920	31.0		
18.0	11,776	36.7	22.0	33.7
19.0	13,850	43.2	21.0	37.8
20.0	**16,154**	**50.4**	**20.0**	**42.0**
21.0	**18,700**	**58.3**	**19.0**	**46.2**
22.0	**21,501**	**67.1**	**18.0**	**50.3**
23.0	24,568	76.7	17.0	54.3

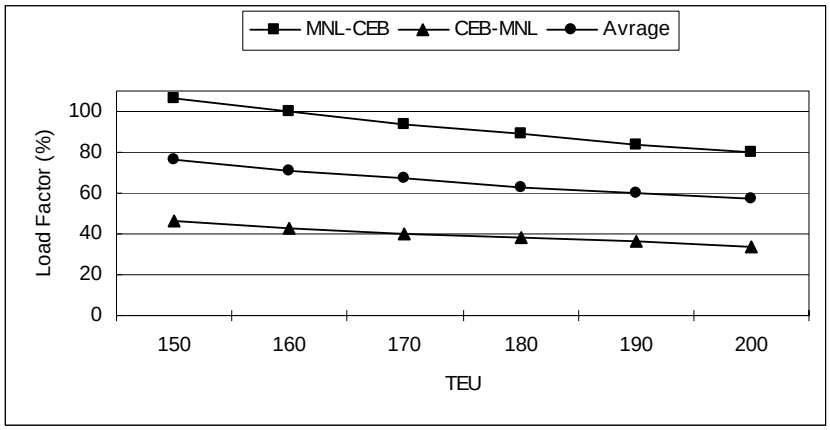
4) Vessel Capacity and Load Factor

In order to meet with the existing and future demand efficiently, appropriate capacity size of new Ropax vessels will be determined in considering the proposed service level and operational system, and anticipated load factors.

TEU capacity of new Ropax vessel is really the key factor for determining the vessel size because container cargoes are quite heavy and they occupy considerable space inside the vessel. On the other hand, space for passengers inside the vessel can be easily adjusted.

Figure 10.3.2 shows the relationship between vessel's TEU capacity and load factor under the proposed service level (daily two departures at each port) and demand in 2015. Load factor will decline in proportion to the number of TEU capacity. Those load factors denote annual average. If the load factor is 100% (in the case of 160TEU) it cannot meet the seasonal fluctuation of demand. According to the actual practice of existing operation, 95% is the maximum load factor to accommodate demand fluctuation. Therefore, 170 TEU is possible and the most efficient capacity of the new Ropax vessel.

Figure 10.3.2. TEU Capacity and Load Factor



Current average load factor of passenger is about 18%, very low as compared to the capacity primarily attributed to the wide seasonal fluctuation of passenger demand. In addition, it is estimated that the demand of passengers in the Manila-Cebu route will decrease. Therefore, vessel capacity of passenger will decrease from 2,380 to 1,000 pax. This will ensure the same level of load factor in 2015.

The particulars of proposed Ropax service operation and its performance is summarized in table 10.3.5

Table 10.3.5. Proposed Ropax Operation and Performance

Item		Unit	2005	2015
Service	Frequency	One-way trips/week	24	28
		One-way trips/year	1,248	1,456
	Working Ratio	%	80	90
	Actual Frequency	One-way trips/year	998	1,310
Operation	Distance	N.M.	392	392
	Navigation Speed	Knot	17-20	20-21
	Navigation Time (one way)	Hours	20-23	19-20
	Cargo Handling	Hours	5-25	4-5
	Cycle Time (round trip)	Hours	50-96	48
	Necessary Vessel No.	Vessel	5-8	4
Capacity	Passenger	pax/vessel	2,380	1,000
		‘000pax/year	2,376	1,310
	Container	TEU/vessel	170	170
		‘000TEU/year	170	223
Demand	Passenger	‘000pax/year	415	240
	Container	‘000MT/year	1,350	2,240
		‘000TEU/year	90	149
Performance (Load Factor)	Passenger (both direction)	%	17.5	18.3
	Container (both direction)	%	53.0	67.0
	Container (MNL-CEB)	%	63.6	93.8
	Container (CEB-MNL)	%	38.2	40.2

10.4 Proposed Standard Design for New Generation Ropax Vessel

10.4.1 Examination of Existing Design of Ropax Vessels

Almost all vessels were imported from Japan. Therefore, the original design of these ships was for Japanese ship owners and are suited to Japan's port systems. After importation, some modification and/or conversion woks are being carried out and some of these are as follows:

- Conversion to increase passengers (mainly for economy class)
- Additional gangway for passenger embarkation on side or aft
- Conversion of passenger's rooms and cabins to suit Philippine style
- No modification at wheel house, cargo hold and engine room

Figure 10.4.1. Economy Class Accommodation Converted from Car Deck

Figure 10.4.2. Side Gangway

Figure 10.4.3. Aft-end Gangway for Cebu Port

10.4.2 Standard Design of New Ropax Vessels

(1) BASIC DESIGN CONCEPT

The following are the basic design concept proposed for new Ropax vessels:

- Enough spaces for Container Chassis: At least 4.2m clear height for deck throughout
- Efficient and Smooth Loading/Unloading: No pillars in cargo hold
- Sufficient Deck Strength of Cargo Hold: Suitable reinforcement for transverse strength

- Energy Saving Engines and Moderate Service Speed: Daily regular service for the customer's convenience.
- Safety Construction/Equipment under the Regulations: SOLAS/MARINA regulation for Safety.

(2) PRINCIPAL PARTICULARS

Based on the required vessel capacity of cargoes, passengers and the Ropax operating system proposed in the previous section, the principal particulars of the proposed vessels were examined and summarized as shown in Table 10.4.1, the details of which are explained later.

In considering other trunk liner Ropax routes, three sizes of standard Ropax vessels are examined. From among the standard Ropax vessels, the medium size Ropax vessel is proposed as the most suitable vessel to ply the Manila-Cebu Route.

Table 10.4.1. Summary of Principal Particulars of Ropax Vessels

	Item＼Type	Unit	MEDIUM (Proposed for Manila-Cebu Route)	LARGE	SMALL	Remark
1	Dimensions					
	Length (over all)	m	142.0	185.0	126.0	
	Length (pp.)	m	135.0	175.0	120.0	
	Breadth	m	23.0	28.0	21.0	
	Depth (Btm-Upp. Dk)	m	16.2	17.4	14.0	A-Deck
	(Freeboard Dk)	m	6.5	7.5	6.0	C-Deck
	Draft (des)/(scant.)	m	5.5/6.0	6.0/6.5	5.0/5.5	
2	Gross Tonnage (International)		16,000	30,000	11,000	
	(Japan)	T	8,000	15,000	5,500	(For reference)
3	Deadweight	MT	5,200	9,300	3,700	
4	Flag		Philippine	Philippine	Philippine	SOLAS74, PMMRR97
5	Category of Ship		2 Coastwise	2 Coastwise	2 Coastwise	PMMRR97
6	Class		IACS	IACS	IACS	6-Classes
7	Service Speed (Vs)	knots	21.0	22.0	20.0	85% MCR, 15% S.M
	(Cruising hours)	hrs	19.0	18.0	20.0	Manila/Cebu 356 N.M.
8	Loading Capacity					
	Container	TEU	170	300	80	
	Vehicle	4.6m x 1.8m	34	75	65	
	Passenger	P	1,000	1,500	1,000	
9	Main Engine(MCR)	PS x set	11000 x 2	16000 x 2	9000 x 2	CSO = 85% MCR
10	Fuel Oil Consumption	t/day	46.2	63.6	39.8	Manila/Cebu Base
11	Propeller		Fixed x 2	Fixed x 2	Fixed x 2	Option : CPP
12	Major Equipment					
	Shore Ramp		○ x 2	○ x 2	○ x 2*	* 1 for aft. end
	Hold Ramp		○	○ x 2	○ *	* only for vehicle
	Lift		○ *	—	—	* only for vehicle
	Bow Thruster		○	○	○	
	Stern Thruster		—	○	—	
	Fin Stabilizer		○	○	○	
	Reefer Plug		○	○	○	About 20-30
	Construction Cost	P Mil.	1,570	2,330	1,260	
		US$ Mil.	28.6	42.4	22.9	

1) Dimensions

- Length: Length shall be within the maximum size which, the South Harbour of Manila port can accommodate. Superferry 10 (Aboitiz) had the length of 185m, but she already retired.
- Depth: For ships which have multi-decks like ferries, two kinds of depth are used, one is measured from bottom to upper deck, and another is from bottom to freeboard deck, in this case, the former is A-Deck and the latter is C-Deck.
- Draft: Superferry 18 (Aboitiz) has the draft of 6.8m, so 6.0/6.5m for large sized Ropax is an allowable level. Usually, ship has two kinds of draft, one is design draft, which is for normal operation. Scantling draft is the maximum draft, which is decided by structural strength.

2) Gross Tonnage

In Japan, there are the special domestic rules to reduce gross tonnage for the ships having multi-decks, like ferries, if requested by owner. In the Philippines, only international tonnage is applicable.

3) Dead Weight

It is necessary to have enough capacity for container cargo weight. A 20LT for unit weight of 20'container, and 30LT for 40' is assumed. But, if necessary, draft may be increased up to scantling (extreme) draft. Deadweight includes the weight of water ballast, fuel oil etc, excluding weight of cargo.

4) Flag

Registration certificate (CPR) is issued by MARINA, and according to the MARINA's regulations as "conventional sized, domestic trade" vessel, SOLAS 74 and amendment, PMMRR97, MARINA Memorandum Circulars rules are complied with. SOLAS74 includes subdivision and stability, fire protection and life saving apparatus.

5) Category of Ship

According to the regulation, "Category 2, Engaged on a coastwise" voyage is to be applied.

6) Class

It is necessary to have the inspections by classification society of IACS member, not only during the construction but after completion to maintain good ship condition. Among IACS members, NK, LR, ABS, dNV, BV and GL are recommendable.

7) Service Speed

Service speed is calculated based on the condition at 85% output of main engines, and 15% sea margin. In each case, large, middle and small sized cruising hours will be about 18, 19 and 20 hours respectively.

In case of middle sized Ropax, 2.5-hours for cargo unloading, and another 2.5-hours for loading will enable daily service of the Ropax on this route. The same for large and small sized Ropax, 3-hours and 2-hours loading/unloading is possible, respectively (loading/unloading rate per hour: Large-100TEU, Middle-68TEU, Small-40TEU).

8) Loading Capacities

- Container chassis: According to the design policy, number of containers shall be maximized. For reference, the size of trucks (10 tons), and large sized buses are almost same as 40' containers of 12m in length. Additional weight of

chassis itself is also considered.

- Vehicle: Loadable number is based on the size of 4.6 m length, and 1.8 m width.
- Passenger: The number of passengers is shown in Table 10.4.1. The space for passengers is very flexible, increase/decrease of passengers is possible, if needed.

9) Main Engines

Two sets of middle speed engine with reduction gear are recommendable to satisfy the limited height of engine room underneath the car deck. In general, middle speed engine is very compact-sized, and suitable for this kind of ships.

10) F.O. Consumption

Calculation is based on the condition at normal output of 85% MCR for main engine, and 19 hours for Middle sized, 18 hours of navigation time for large Ropax and 20 hours for small sized Ropax. F.O.C Rate is 130g/PS/hr.

In this case, if ship speed is increased by 10%, fuel consumption will increase about 20%. As the same for the case of reducing speed, in case of large sized Ropax, 63.6 tons/day will be reduced to about 50 tons/day, if the ship runs 20 knots instead of 22.0 knots.

11) Propeller

In order to get the propeller properly immersed, the diameter of propeller is limited under shallow draft. The option of using Controllable Pitch Propeller (CPP) is also possible, however such type costs more compared to the conventional type.

12) More Equipment

a. Cargo Handling

- Shore Ramp: It is necessary to have a capacity of SWL 45tons, and vertical clearance of 4.5m. Two sets of shore ramps located fore and aft are recommendable in view of efficient cargo handling.
- Hold Ramp: Same as above, 45t SWL for container chassis.
- Lift: Lift is not so recommendable, because it is not so efficient for loading/unloading. Although it is advantageous to have lifts when space is limited.

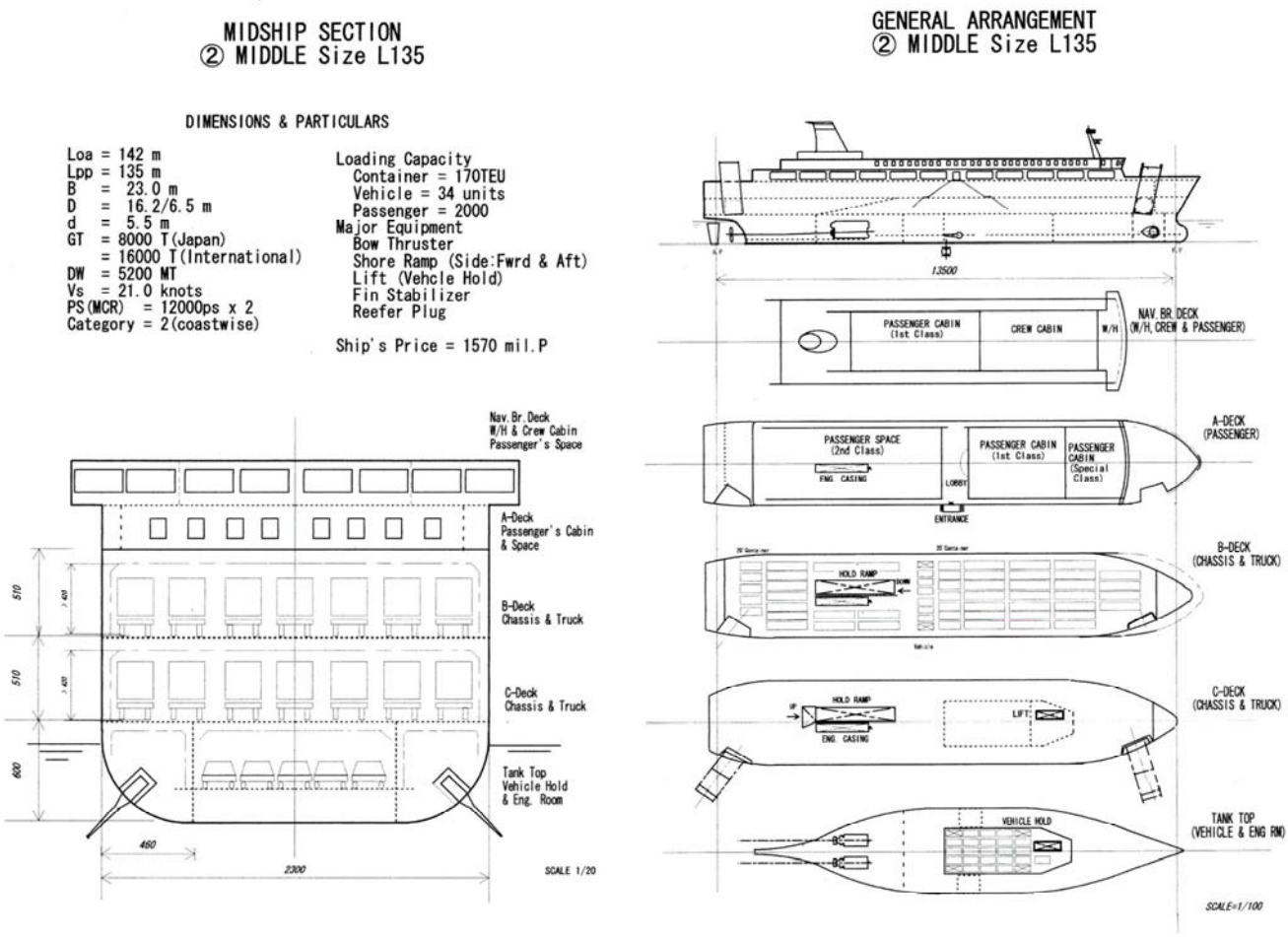
b. Others

- Bow thruster: It is essential for this size of Ropax for safe and easy maneuvering.
- Stern thrusters: Not always necessary, being assisted by a tugboat will be more practical.
- Fin Stabilizer: Fin stabilizer will be essential for this size of ferry. It minimizes sway that may cause seasickness of passengers and for the protection of the fixed embarkation gangway from wave damages.
- Reefer Plugs: It may be necessary to correspond to the increase of reefer containers in the future. Electric generator capacity should also be increased if additional plugs are to be provided. Likewise, in accordance with the number of plugs, additional air ventilation of hold shall be duly considered.

(3) SAMPLE DRAWINGS

Sample drawing of the proposed Ropax vessel for Manila-Cebu route is shown in Figure10.4.4.

Figure 10.4.4. Sample Vessel Drawing (Medium Size Ropax)



Midship Section:
- Each deck is called from the top, as Navigation Bridge Deck, A-Deck, B-Deck,…
- B & C Decks are for container chassis and trucks.
- Fin Stabilizers are provided at bilge circle.

General Arrangement:
- Shore Ramps are arranged at Side of Fore & Aft
- Lift is arranged for vehicle loading/unloading
- Bow thruster only
- Engine casing is arranged at center line
- The Drawing on B-Deck is the sample of Stowage Plan of 40' Containers

10.4.3 Cost of Vessel Construction

Construction cost of the proposed standard Ropax vessel is estimated at P1.57 billion or US$ 28.6 million if the vessel is constructed in the Philippines. Purchase price of materials, machineries and equipment in the Philippines for vessel construction has little disparity as compared to other countries. It is also noted that man-hour charges of workers are much lower. Therefore, the local shipbuilding industry is competitive and has such advantage as compared to other countries. The only disadvantage is the longer building duration. This can be reduced through modern building facilities and methodologies that will consequently further reduce the price of constructing new vessels making the local ship building industry even more competitive.

Table 10.4.2. Cost of Vessel Construction

Unit	MIDDLE (Proposed for Manila-Cebu route)
P mil.	1,570
US$ mil.	28.6

10.4.4 Consideration for Domestic Shipbuilding

For new ship-building by domestic shipyards, the following problems/difficulties shall be solved by the assistance of the parties concerned:

- Modernization of facilities and equipment for new-shipbuilding, especially cranes: assistance of domestic banks (DBP and other banks) is necessary.
- Supply of basic and detail designs of standard Ropax vessels: Assistance of Japanese Shipyard, if necessary.
- Procurement and transportation of materials, machineries, outfittings etc. from foreign countries: assistance of major agent or trading company is necessary.

10.5 Preliminary Design for Dedicated Ropax Terminals at Manila and Cebu Ports

10.5.1 Future Ropax Traffic Demand at Manila and Cebu Ports

Based on the future maritime demand forecast described in Chapter 7, future traffic demand for Ropax services at Ports of Manila and Cebu was estimated. The results are shown in the table below. Demand for fastcrafts servicing short-haul routes to and from Cebu port is not included. Future demand will increase at both Manila and Cebu Ports. However, demand at Cebu port is significant due to the increase of small Ropax operation serving in short-haul routes connecting within the Visayas Area.

Table 10.5.1. Estimated Ropax Traffic Demand at Manila and Cebu Ports

	Year	Manila Port		Cebu Port	
		Yearly	Daily Average	Yearly	Daily Average
Port Calls	2003	4,369	12	5,038	14
	2015	5,854	16	8,818	24
	2030	8,052	22	11,658	32
Cargo (TEU)	2003	360,300	1,000	348,700	970
	2015	583,600	1,620	835,800	2,320
	2030	913,894	2,540	1,391,400	3,860
Passenger	2003	1,292,000	3,600	4,253,000	11,800
	2015	1,375,000	3,800	7,751,000	21,500
	2030	1,547,752	4,300	9,676,400	26,800

10.5.2 Design Concepts of the Proposed Ropax Terminals

Concepts for the design of the proposed Ropax terminal are as follows:

- Provision of common and dedicated terminals for all Ropax operations at Manila and Cebu (like an airport), including berth, passenger terminal building, container yard, parking etc. Said terminals shall have a sufficient capacity of each facility to meet future traffic demand of vessels, passengers and containers.
- Separation of passenger boarding and alighting from that of container cargoes by providing passenger with boarding bridge for safety considerations.

- Provision of fast and efficient operation of container loading and unloading to minimize the berthing time of Ropax vessels.
- Provision of sufficient parking space for rolling vehicles which is estimated to increase in the future under the RRTS concept.

Figure 10.5.1. Major Ropax Terminals in Japan

Osaka South Port-Ferry Terminal

Osaka South Port-Yurikamome Terminal

10.5.3 Preliminary Design of the Proposed Ropax Terminals

Based on the future demand forecast, the following design particulars for the designated Ropax terminals at Manila and Cebu are preliminary examined:

1) Berth

Based on the future number of Ropax vessel calls and containers to be handled at each port, necessary numbers of berths are estimated. There will be 2 berths at Manila Port and 3 berths at Cebu Port. For this, the existing port infrastructure of Manila and Cebu will be fully utilized, though minor improvement will be done, if necessary.

2) Passenger Terminal

Based on the future passenger demand, the necessary floor areas for waiting passengers and ticket booth, check-in area, canteens and administration was roughly estimated, 2,170 m^2 for Manila and 4,600 m^2 for Cebu. Terminal building will be two stories to connect with passenger boarding bridges at the same level.

3) Boarding Bridge

This is necessary for smooth and safe movement of passengers during boarding and alighting. The elevated bridge will be connected directly between the passenger terminal and Ropax vessels.

4) Other Building Facilities

This includes various facilities such as power house, sewerage treatment plan, main gate, guard house, maintenance building and port workers, etc.

5) Container Yard

Necessary area for open container yard is roughly estimated based on the average number of containers to be handled a day. In this case, container freight storage (CFS) for consolidation of commodities is not considered.

6) Parking Area and Public Transport Terminal

Parking area for rolling vehicles such as trucks and cars which will take Ropax vessels and terminal for public transport such as bus and jeepney including drop-off/pick-up area for private vehicles are considered. Based on the forecasted demand,

necessary areas are estimated.

7) Other Utility Facilities

This includes various facilities and equipment such as lighting facilities, water tank, underground reservoir, fire fighting system, safety facilities, storm water drainage, electric works and generators, etc.

8) Others

This includes demolition of existing facilities. It is assumed that 80% of total area will be demolished.

The above-mentioned principal particulars are summarized in Table 10.5.2. Conceptual plans of Ropax terminals for Manila and Cebu are shown in Figure 10.5.2 and Figure 10.5.3, respectively.

Table 10.5.2. Principal Particulars of Ropax Terminals at Manila and Cebu Ports

Item	Scale/Quantity		Remarks
	Manila	Cebu	
- Total Area (excluding berth and pier)	85,000 m^2	84,000 m^2	
- Improvement of Berth	20,000 m^2	8,000 m^2	Optional
- Passenger Terminal	2,170 m^2	4,600 m^2	
- Pedestrian Bridge	800 m^2	420 m^2	
- Other Building Facilities	1,350 m^2	1,540 m^2	
- Container Yard	25,400 m^2	38,650 m^2	
- Parking and PT Terminal	9,000 m^2	15,800 m^2	
- Others	68,000 m^2	67,200 m^2	80% of total area

10.5.4 Preliminary Cost Estimates

Preliminary cost estimation for Ropax terminals at Manila Cebu was conducted. It is summarized in Table 10.5.3. Total capital cost is P621.4 million for Manila and P791.0 million for Cebu.

Table 10.5.3. Estimated Construction Cost of Ropax Terminals

Item	Manila		Cebu	
	Unit	P million	Unit	P million
A. Direct Cost				
- Passenger Terminal	2,170 m^2	76.0	4,600 m^2	161.0
- Boarding Bridge	800 m^2	56.0	420 m^2	29.4
- Other Building Facilities	1,350 m^2	47.3	1,540 m^2	53.9
- Container Yard	25,400 m^2	50.8	38,650 m^2	77.3
- Parking and PT Terminal	9,000 m^2	13.5	15,800 m^2	23.7
- Other Utility Facilities	Lump-sum	57.3	Lump-sum	55.2
- Others	68,000 m^2	61.2	67,200 m^2	60.5
Total (A)		**362.1**		**461.0**
B. Indirect Cost	30%x(A)	108.6	30%x(A)	138.3
Total (A+B)		**470.7**		**599.3**
C. VAT	10%x(A+B)	47.1	10%x(A+B)	59.9
Total (A+B+C)		**517.8**		**659.2**
D. Others				
- Engineering Service	10%x(A+B+C)	51.8	10%x(A+B+C)	65.9
- Contingency	10%x(A+B+C)	51.8	10%x(A+B+C)	65.9
Grand Total (A+B+C+D)		**P621.4 mil.**		**P 791.0 mil.**
		US$11.3 mil.		**US$14.4 mil.**

Figure 10.5.2. Conceptual Plan of Ropax Terminal at Manila Port

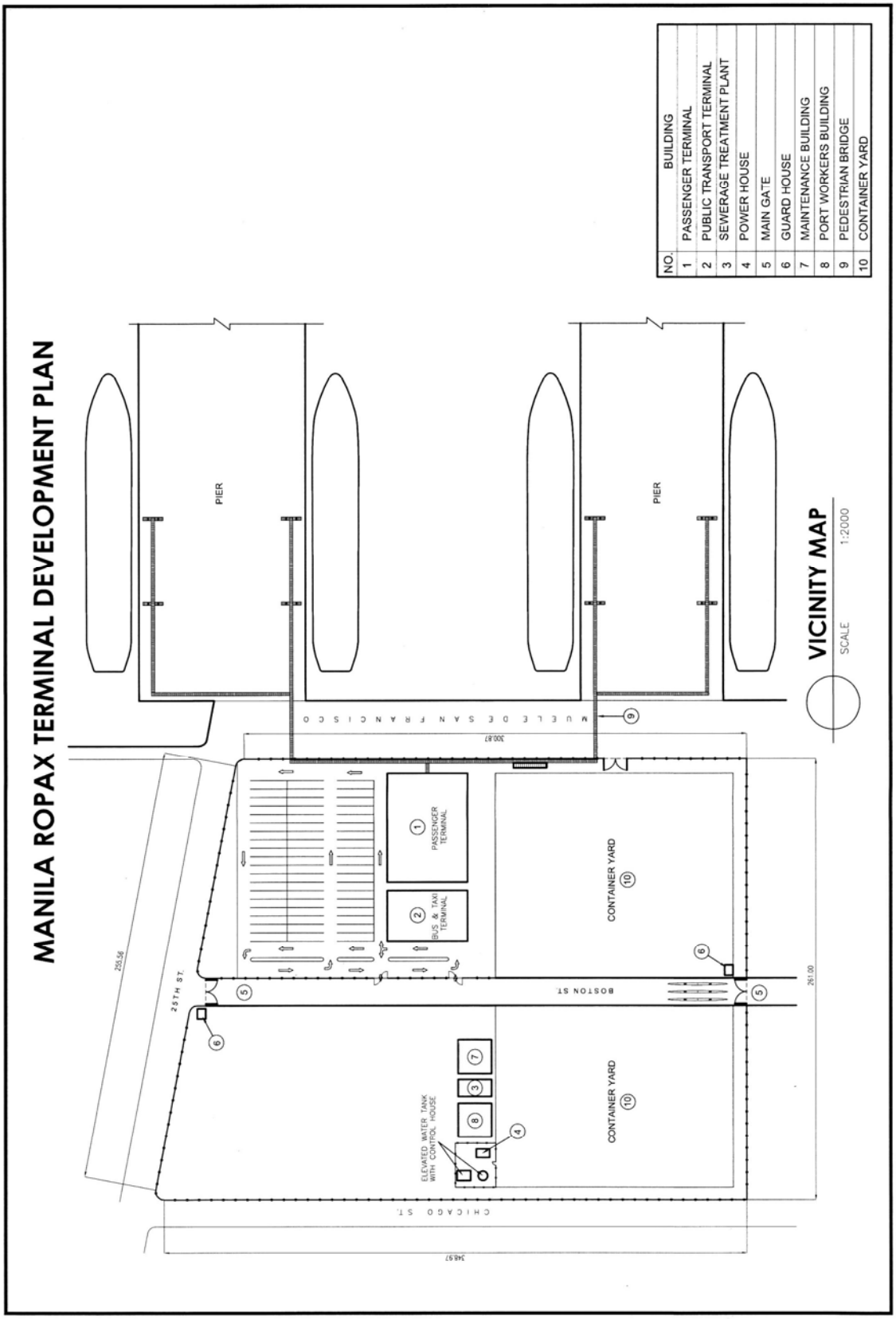
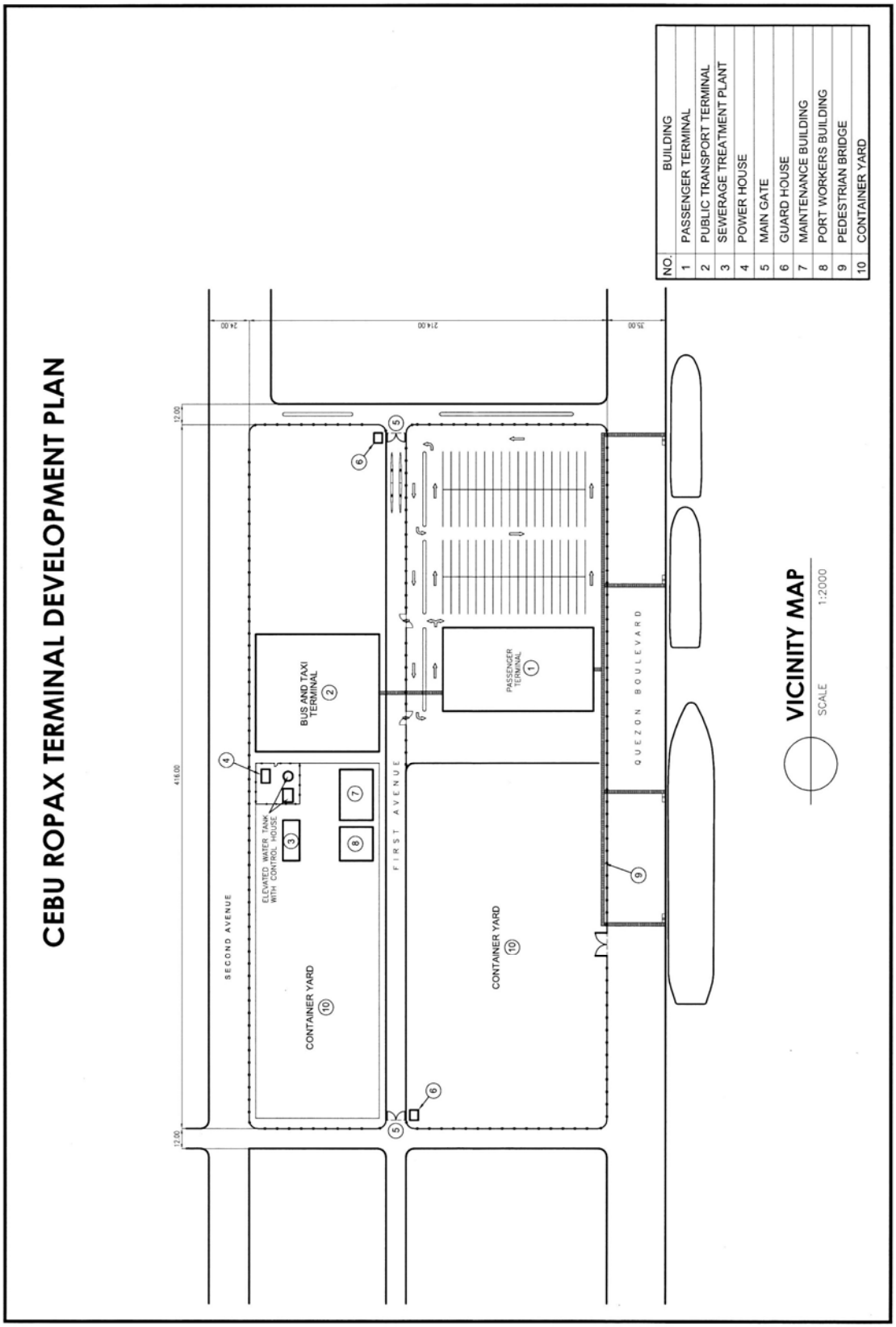


Figure 10.5.3. Conceptual Plan of Ropax Terminal at Cebu Port



10.5.5 Terminal Operation and Management

For the operation of Ropax terminals, an independent organization will be set up. Since Ropax terminal is a revenue generating facility, the private sector may be invited to invest, if they will find such proposition profitable enough.

Revenue and operating cost shall be examined further, and they are estimated with some assumptions as follows:

1) Revenue

Potential revenue sources of Ropax terminal include the following:

- Terminal Fee from Passengers: Currently this is not applied to Ropax passengers. But for the sustainable operation and proper maintenance of the terminal, it should be applied similar to airports.
- Cargo Handling Fee from Ropax operator: Currently this is charged to Ropax operators by the existing cargo handling companies. Of which, 10% of the fee goes to PPA in the case of Manila Port. However, if cargo handling is done by Ropax terminal operator this will be a revenue for the Ropax Terminal operator.
- Other revenue: There will be other potential revenue from parking fee, tenant rental fee and advertisement, etc.

Table 10.5.4. Possible Annual Revenue

Item	Annual Revenue[1)] (P million)		Assumption
	Manila	Cebu	
- Terminal fee from passengers	64-69	213-388	P50/passenger
- Cargo Handling fee	72-108	70-167	P200/TEU
- Other revenues (parking fee only)	8	26-46	P30/vehicle incl. PT
Total	144-185	309-601	

Note: 1) shows the revenue in 2003 and 2015

2) Operation Cost

Operating cost of Ropax terminal will be (1) labor cost, (2) management cost, (3) cargo handling cost, (4) maintenance cost, (5) other costs such as insurance and tax, etc. As shown in the table below, each operation cost is assumed based on the actual practice of Ropax terminals in the Philippines and Japan.

Table 10.5.5. Estimated Annual Operation Cost

Item	Annual Operation Cost[1)] (P million)		Assumption
	Manila	Cebu	
- Labor Cost	43-56	93-180	30% of annual revenue
- Management Cost	14-19	31-60	10% of annual revenue
- Cargo Handling Cost	36-54	35-84	50% of arrastre fee
- Maintenance Cost	6	8	1% of capital cost
- Other Costs	22-28	46-90	15% of annual revenue
Total	121-163	213-422	

Note: 1) shows the cost in 2003 and 2015

10.6 Economic and Financial Analysis

10.6.1 Economic Analysis for the Proposed New Generation Ropax Vessels

(1) FUTURE DEMAND

Future transport demand between Manila and Cebu is summarized in Table 10.6.1.

Table 10.6.1. Transport Demand of Manila-Cebu Route

		2005	2015	2030
Passenger (pax)	Manila-Cebu	207,500	120,000	64,500
	Cebu-Manila	207,500	120,000	64,500
	Total	415,000	240,000	129,000
Cargo (TEU)	Manila-Cebu	63,000	105,000	158,000
	Cebu-Manila	27,000	45,000	67,000
	Total	90,000	150,000	225,000

(2) ALTERNATIVE CASES

For the economic analysis, the following cases are assumed:

- Base case: The current condition of operation is assumed; e.g. the typical vessel characteristics in terms of vessel age, vessel size will be continuously employed in the future as well. The number of vessels will increase to meet with the future demand.
- New Ropax case: All the vessels operated in the route are assumed to be replaced by newly built vessels proposed in this study.

Table 10.6.2. Assumed Ropax for Alternative Cases

Description	Base Case	New Ropax Case
GT	10,000	8,000
Ship Age	28	0
Length (m)	143.5	142
Breadth (m)	22.5	23
Depth (m)	8.8	6.5
Draft (m)	4.7	5.5
Speed (knot)	18	21
Passenger Capacity (pax)	2,000	1,000
Cargo Capacity (TEU)	170	170

Note: GT is expressed by Japanese measurement method

(3) TRANSPORT COST

The transport cost required to meet the above future demand is estimated for each alternative cases by using the unit transport cost figured out from the operation report to MARINA from shipping companies as shown in the Chapter 7.

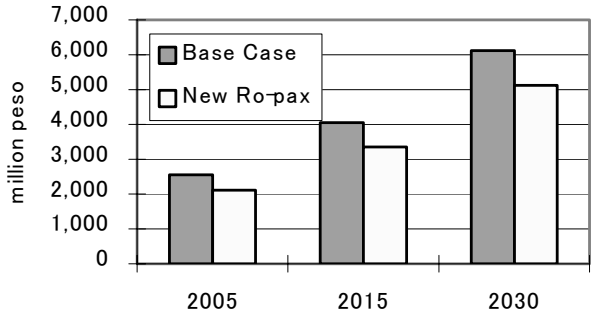
The relationships between ship age and commissionable days, repair cost are also taken into account. Due to the difference in transport efficiency, the older vessel requires more units, hence more transport cost. The total transport costs by alternative cases are illustrated in Figure 10.6.1.

The difference of the cost to the Base Case indicates the benefit accrued from the replacement by corresponding vessels. As a result of the replacement, the following

economic benefits are expected in addition to the transport cost savings.

- Passenger time cost savings
- Upgrading of maritime transport safety

Figure 10.6.1. Total Transport Cost by Alternative Case



(4) PROCUREMENT COST

The ship procurement cost is estimated based on the assumption that vessels will be replaced by same age of vessel after its useful life of 35 years. As the average age of Ropax is 28 years old at present, the replacement will be required after 7 years. The unit cost of the aged vessel is much less compared to the younger vessel; however more frequent replacement of parts and higher maintenance cost is expected. In the Base Case, the aged vessels are assumed to be continuously procured for the evaluation period.

On the other hand, the unit price of new vessel is much higher, but would be used for longer periods. The total procurement cost required during the period 2006 to 2030 in each case is estimated as shown in Table 10.6.3.

Table 10.6.3. Procurement Cost (million pesos)

Case	Unit Price	Procurement Cost	Present Value
Base Case	186.2	6,889	1,913
New Ropax Case	1,570.0	12,560	5,835

Note: Present value is the value discounted at 15% p.a.

The difference of the procurement cost compared to the Base Case will be the economic cost of the new Ropax case.

(5) PRELIMINARY EVALUATION

By comparing the benefits and costs by case, the evaluation indicators are obtained as shown in Table 10.6.4. In case of the new Ropax case, B/C Ratio with discount rate of 15% is estimated to be 1.04, and EIRR is to be 15.6%, indicating that the replacement is feasible from the national economic viewpoint.

Table 10.6.4. Economic Evaluation Indicators

B/C Ratio	1.04
NPV (P million)	163.0
EIRR	15.6%

10.6.2 Financial Analysis for the Proposed New Generation Ropax Vessels

The main purpose of financial analysis in this study is to examine the financial viability of the new Ropax replacement for the trunk liner operation.

(1) ASSUMPTIONS

For undertaking financial analysis, the following conditions are assumed.

1) Vessel Type

As a vessel type to be introduced into Manila-Cebu route, those described in the economic analysis above are assumed to be examined.

2) Procurement Method

As ship procurement method, the following two ways are considered:

- Ordinary ship purchase by using long term loan
  - Equity-Loan ratio is tentatively assumed to be 20%:80%
  - As for the long term loan, the following conditions are assumed:
  - Commercial bank case: Repayment period: 5 yrs with interest rate of 13% p.a.
  - JBIC sub-loan case: Repayment period: 10years with interest rate of 10.7% p.a. and grace of 1 year.
- Lease purchase through NMEC
  - The lease period is assumed as 10 years.
  - The lease charge will include the interest of 10% p.a.
  - 10% of procurement cost will be required as a lease deposit, which will be the residual value of the asset at the end of the term.

3) Tariff Rate

The current tariff rate for the route is assumed. In correspondence with GDP growth, the affordability of freight rate is expected to increase in the future, particularly for the specific cargo suitable for Ropax service. According to the Medium-Term Development Plan 2004-2010, the future GDP growth is projected to be 4-8% p.a. The freight rate is assumed to increase at the half rate of GDP, 2.0% p.a. taking the lowest GDP projection.

- Passenger Fare: Average P1650/pax (P1500 for economy, P3600 for first class)
- Freight rate: P24,000/TEU

4) Vessel Operation Cost

The operation costs of the proposed Ropax vessels are assuming the cost parameters of existing representative vessels as show in Table 7.3.2. Operational cost parameters of the proposed new Ropax vessel assumed in the financial analysis are summarized in the table below.

Table 10.6.5. Operation Cost Parameters of the Proposed New Ropax Vessel

Cost Parameters	Unit	Cost
Fixed Operation Cost	Million Peso/year	82.2
Running Cost	Peso/n.m.	4,939
Call Cost	Peso/call	1,600
Repair Cost	Million Peso/year	5.4
Cargo Handling Cost	Peso/MT	80
Depreciation Cost	Million Peso/year	7.9

5) Other Conditions

In the case of new ships, the ship building period is assumed to be 2 years from 2007 to 2008. Therefore, the operation of new ships will start by 2009.

- Inflation rate is assumed to be 5.3% p.a., which is the average rate during the past five years.
- Load factor is assumed to be same as the current average: 20% for passenger and 60% for cargo.

(2) VESSEL OPERATION

As the vessel speed of the New Ropax to be introduced is 21 knots, slightly higher than the existing, the time required for one trip between Manila-Cebu will be 19 hours. In addition, port stay time is expected to be reduced by employing more efficient cargo handling system such as real RoRo system etc.

Accordingly the new Ropax operation of 3.5 round trips per week will be assumed.

(3) EVALUATION INDICATORS IN CASES OF ORDINARY SHIP PURCHASE

Based upon the assumptions stated above, the operation cost and revenue are estimated. As a result of the cash flow analysis, the financial evaluation indicators are calculated as shown in Table 10.6.6, indicating as follows.

- In case of new Ropax, FIRR is estimated to be 16.2%. Therefore, the project has a potential for profitability.
- If commercial loan is applied, the Return on Equity (ROE) is extremely low, and the Debt Service Coverage Ratio (DSCR) is also very low, requiring large amount of short term loan for the repayment of long term loan. If JBIC loan is applied ROE will be improved up to 14.8%, however, which may be profitable for ship operator.

Table 10.6.6. Financial Evaluation Indicators of Ship Purchase Case

Case	Commercial Loan	JBIC Sub-loan
FIRR	16.2%	16.2%
ROE	2.3%	14.8%
DSCR (1st year)	19%	50%
DSCR (Min.)	16%	49%
FBR (1st Year)	117%	117%
FBR (Min.)	117%	117%
Max Short-term Loan (P Mil.)	1,005	524

(4) EVALUATION INDICATORS OF LEASE-PURCHASE CASE

When Lease-purchase method through NMEC is applied, the operator is not required to obtain long term loan from banking institutions, and will be able to procure a Ropax by only paying monthly vessel lease charge and leasing deposit of 10% at the starting

time without any other collateral. Hence, compared to the simple application of JBIC sub-loan, the financial evaluation indicator shows more preferable conditions. Higher ROE of 16.4% is expected.

Table 10.6.7. Financial Indicators of Lease Purchase Case

FIRR	16.2%
ROE	16.7%
DSCR (1st year)	49%
DSCR (Min.)	47%
FBR (1st Year)	117%
FBR (Min.)	117%
Max Short-term Loan (P Mil.)	201

Cash flow of the new Ropax vessel operation including revenues, expenditures and other financial parameters is shown in Table 10.6.8.

(5) SENSITIVITY ANALYSIS

The results of the analysis above are suggesting that the procurement of new Ropax will be financially viable by applying either JBIC sub-loan or lease-purchase scheme.

Since analysis is including various assumptions, the sensitivity of selected factors will be examined as follows:

1) Reduction of Vessel Procurement Cost

Figure 10.6.2 shows the sensitivity of new Ropax vessel procurement cost to FIRR and ROE by vessel procurement method.

Even if the procurement cost is increased as much as 10%, FIRR is estimated to remain more than 15% and ROE is more than 10% in the case of NMEC lease and JBIC loan.

On the contrary, if the procurement cost is reduced, ROE becomes higher therefore the operation of new Ropax will be more profitable: if the procurement cost can be reduced as much as 30%, the cash flow reaches at a sustainable level even in case of using commercial loan.

Figure 10.6.2. Influence of Vessel Procurement Cost to FIRR and ROE

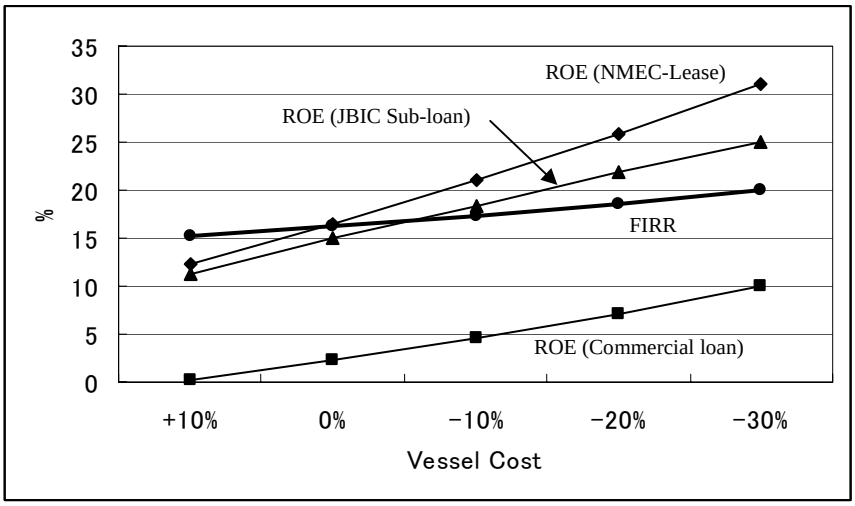


Table 10.6.8. Cash Flow of New Ropax Vessel Operation (NMEC Case)

PROFIT LOSS STATEMENT		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1.OPERATING REVENUE																				
1)Tariff REVENUE	0	0	0	1,114	1,184	1,257	1,334	1,417	1,504	1,597	1,695	1,799	1,910	2,027	2,151	2,283	2,422	2,570	2,726	2,892
2)INTEREST																				
2.OPERATING EXPENSE																				
1)OPERATING COST	0	0	0	951	993	1,037	1,083	1,131	1,180	1,232	1,286	1,342	1,401	1,462	1,526	1,592	1,661	1,733	1,807	1,885
2)DEPRECIATION	0	0	0	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	0	0
3.OPERATING PROFIT	0	0	0	52	78	108	140	174	212	253	297	345	397	453	513	579	649	725	919	1,007
4.OTHER EXPENSES	0	0	0	248	257	263	268	269	268	262	252	248	248	0	0	0	0	0	0	0
1)FINANCIAL COST																				
-LEASE CHARGE	0	0	0	248	248	248	248	248	248	248	248	248	248	0	0	0	0	0	0	0
-INTEREST FOR SHORT TERM		0	0	0	9	15	20	21	19	14	4	0	0	0	0	0	0	0	0	0
2)SALES TAX	0																			
5.NET PROFIT BEFORE TAX	0	0	0	-197	-178	-156	-128	-95	-56	-9	45	97	148	453	513	579	649	725	919	1,007
6.INCOME TAX	0	0	0	0	0	0	0	0	0	0	14	31	47	145	164	185	208	232	294	322
7.NET PROFIT AFTER TAX	0	0	0	-197	-178	-156	-128	-95	-56	-9	31	66	101	308	349	393	441	493	625	685
8.DIVIDENTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9.RETAINED EARNINGS	0	0	0	-197	-178	-156	-128	-95	-56	-9	31	66	101	308	349	393	441	493	625	685

CASH FLOW STATEMENT		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1.SOURCE OF FUNDS	0	122	55	0	85	151	195	211	194	138	157	209	260	565	625	691	761	837	919	1,007
1)NET PROFIT BEFORE TAX	0	0	0	-197	-178	-156	-128	-95	-56	-9	45	97	148	453	513	579	649	725	919	1,007
2)DEPRECIATION	0	0	0	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	0	0
3)SHORT TERM LOAN				85	151	195	211	194	138	35										
4)LONG TERM LOAN																				
5)PAID UP EQUITY	0	122	55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.APPLICATION OF FUNDS	0	122	55	0	85	151	195	211	194	138	49	31	47	145	164	185	208	232	294	322
1)DEPOSIT	0	122	55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2)REPAYMENT OF SHORT LOAN		0	0	0	85	151	195	211	194	138	35	0	0	0	0	0	0	0	0	0
3)REPAYMENT OF LONG LOAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4)INCOME TAX	0	0	0	0	0	0	0	0	0	0	14	31	47	145	164	185	208	232	294	322
5)DIVIDENTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.CASH SURPLUS(SINGLE YR)	0	0	0	0	-0	0	-0	-0	0	-0	108	178	213	420	461	505	553	605	625	685
4.CASH SURPLUS(ACCUML.)	0	0	0	0	-0	0	0	-0	-0	-0	107	285	498	918	1,379	1,884	2,437	3,043	3,667	4,352

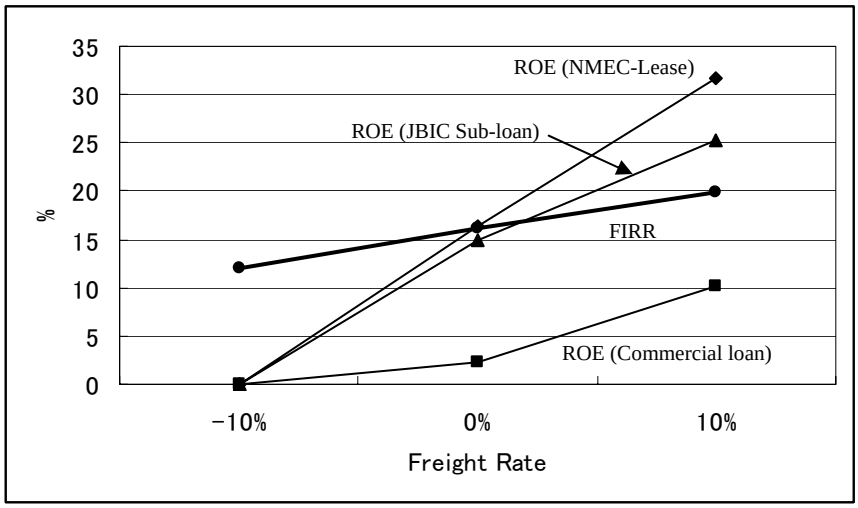
Unit: Million Pesos

2) Increase of Freight Rate

Figure 10.6.3 shows the influence of freight rate to FIRR and ROEs by vessel procurement method without changing passenger fare. If the freight rate for cargo is reduced as much as 10%, it is decreased from 24,000 peso/TEU at present to 21,600 peso/TEU. FIRR remains at 12%, while ROE become 0% even if NMEC lease or JBIC loan is applied.

On the other hand, if freight rate is raised as much as 10%, the cash flow will be much better and will be at sustainable level with an FIRR of 19.2% and ROE of 10.2% even if Commercial loan is applied.

Figure 10.6.3. Sensitivity of Freight Rate Increase



10.6.3 Summary of Evaluation for the Proposed New Generation Ropax Vessels

Through the economic and financial analysis, the following points are identified.

- The replacement of the existing Ropax vessels to new vessel will be sufficiently beneficial from the viewpoint of national economy.
- The procurement of newly built Ropax will bring about a profitable cash flow in the case that either lease-purchase scheme through NMEC or JBIC sub-loan is employed.
- As the results of the sensitivity analysis, the following alternative conditions have been examined:

  - Changes in vessel procurement cost: Reduction of vessel procurement cost will effect significantly the financial viability of new Ropax vessel replacement. Although financial viability is already high in the cases of lease-purchase by NMEC and JBIC-loan, the case of commercial loan will also be viable if the vessel cost will be reduced by 30%.

  - Changes in freight rate: Freight rate is also a very sensitive factor for profitability. The high procurement cost for new Ropax might be covered by freight rate by providing better services in terms of reliability, safety and total logistic system.

10.6.4 Preliminary Evaluation of the Proposed Ropax Terminals at Manila and Cebu

(1) ASSUMPTIONS

In this section, the cash flow of the terminal will be examined from the standpoint of the independent organization set up for the operation. In addition to the above operation/management scheme, the following terms and conditions are assumed for the financial analysis.

- Equity-Loan ratio is assumed as 20%: 80%
- The loan condition is assumed as follows:
  - Commercial Loan: repayment period 5 yrs with interest rate of 12% p.a.
  - JBIC Loan: repayment period 10 yrs with interest rate of 10.7% and 3 yrs grace.
- Terminal operation is scheduled to be started in 2007, assuming that the terminal construction is implemented in 2006.
- Inflation rate is assumed to be 5.3% p.a., which is the average rate during the past five years.

(2) MANILA ROPAX TERMINAL

As a result of financial analysis, FIRR and ROE are estimated to be 10% and 0% respectively under the above assumptions.

Table 10.6.9. Financial Evaluation Indicators

	MNL Terminal	
Case	Com. Loan	JBIC Sub-loan
FIRR	10.0%	10.0%
ROE	0.0%	0.0%
DCSR (1st Year)	13.0%	22.0%
DCSR (Min)	7.0%	8.0%
FBR (1st Year)	113.0%	120.0%
FBR (Min)	105.0%	116.0%
Max. Short Term Loan (Million Peso)	Expanding year by year	Expanding year by year

In order to improve the ROE, several changes in the fee for passengers and cargo for terminal use are examined as follows. In case of raising passenger fee, both FIRR, ROE will increase. For improving the profitability in terms of ROE, the passenger fee should be raised to at least 120 pesos/passenger. In case of cargo charge increase without changing passenger fee, the ROE will not be sufficient even if it is increased 3 times higher, ROE will still be at the level of 0%. This is because the handling cost and other cost are assumed to increase corresponding to cargo revenue.

Figure 10.6.4. FIRR and ROE by Different Passenger Fee

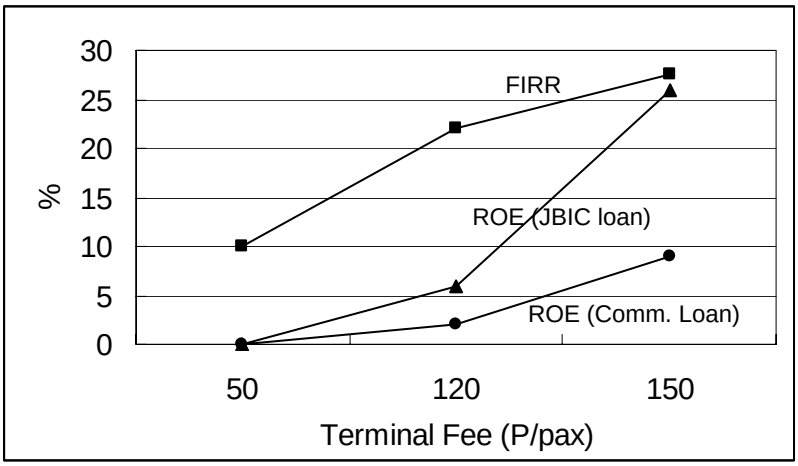


Table 10.6.10. FIRR and ROE by Different Cargo Fee

Cargo Fee (Peso/TEU)	FIRR	ROE	
		Comm. Loan	JBIC Loan
300	10.0%	0%	0%
600	12.5%	0%	0%
900	15.3%	0%	0%

(3) CEBU ROPAX TERMINAL

In the case of Cebu terminal, both indicators are sufficiently high under the given conditions. Therefore, the terminal operation will be financially justified without any increase of terminal fees.

Table 10.6.11. Financial Indicators for Cebu Terminal

	Cebu Terminal	
Case	Com. Loan	JBIC Sub-loan
FIRR	20.6%	20.1%
ROE	10.0%	14.5%
DCSR (1st Year)	56.0%	52.0%
DCSR (Min)	29.0%	52.0%
FBR (1st Year)	140.0%	140.0%
FBR (Min)	132.0%	132.0%
Max. Short Term Loan (Million Peso)	406	118

10.7 Conclusions and Recommendations

(1) CONCLUSION

Improvement of Ropax service for trunk liner routes is very important. The existing old vessels have to be modernized to increase its operation efficiency and safety. As symbolized by the recent maritime incidents caused by engine explosion, it is necessary to expeditiously modernize the vessels and implement proper

maintenance.

In the Study, as a pilot project, development of shipping service and operation by introduction of new-generation Ropax vessel is proposed for the Manila-Cebu route. In addition, the development of dedicated Ropax terminals at Manila and Cebu is also proposed to support efficient and safe operation of the Ropax service.

As a result of the study, a framework of the project is shown in Figure 10.7.1. Major findings of the study are summarized as follows:

- Manila-Cebu route is serving the largest maritime traffic demand among trunk liner Ropax routes and is strategically important route connecting between the National Capital Region and Cebu as the second largest metropolitan area as well as economic centre of Visayas Region. It is important to reinforce the service and operation of this route and to expand to other trunk liner routes.

- Introduction of new Ropax vessels in the Manila-Cebu route is economically and financially feasible under the given conditions such as estimated ship cost, ship operation cost, transport costs and fare revenues. The results show that EIRR is 15.6% and FIRR is 16.2%. Particularly, utilization of lease purchase scheme by NMEC is significantly effective for high ROE of operators.

- Development of dedicated Ropax terminals is financially feasible for Cebu but not for Manila under the given conditions such as construction costs, operation costs and revenues. However, the proposed terminal in Manila will be profitable, if the terminal fee for passengers or cargo handling fee is slightly increased.

Figure 10.7.1. Framework and Schedule of the Pilot Project

Item		Present 2005	2006	2007	2008	2009	2010	2015	----	2020	----	2025	----	2030
Development of New Ropax Vessels			4 vessels											
			Prep.	D/D	Construction		Start service			In Service				
									1 vessel					
									Construction			In Service		
													1 vessel	
												Construction		In Servi
Development of Ropax Terminals (Manila & Cebu)			Prep.	D/D	Construction		Start service			In Service				
Service														
- Frequency	trip/week	24	24	24	24	28	28	28	----	35	----	35	----	42
- Working Ratio	%	80	80	80	80	90	90	90	----	90	----	90	----	90
Operation														
- Navigation Speed	knot	17-20	17-20	17-20	17-20	20-21	20-21	20-21	----	20-21	----	20-21	----	20-21
- Navigation Time	hour/trip	20-23	20-23	20-23	20-23	19-20	19-20	19-20	----	19-20	----	19-20	----	19-20
- Cargo Handling Time	hour/port	5-25				4-5	4-5	4-5	----	4-5	----	4-5	----	4-5
- Cycle hours	hour/RT	50-96				48	48	48	----	48	----	48	----	48
- No. of vessels assigned		10				4	4	4	----	5	----	5	----	6
- No. of new vessels assigned		0	0	0	0	4	4	4	----	5	----	5	----	6
Demand														
- Passenger	'000pax/yr	415						240	----		----		----	129
- Containerizable Cargo	'000MT/yr	1,350						2,240	----		----		----	3,370
	'000TEU/yr	90						149	----		----		----	225
Performance - Load Factor														
- Passneger (both direction)	%	17.5						18.3	----		----		----	6.6
- Container (both direction)	%	53.0						67.0	----		----		----	67.2
(MNL-CEB)	%	63.6						93.8	----		----		----	94.1
(CEB-MNL)	%	38.2						40.2	----		----		----	40.3

(2) NECESSARY IMPLEMENTATION MODALITIES

1) Role of MARINA

In the implementation of the project, MARINA, as the agency in charge of maritime industry development, should be the coordinator among stakeholders such as Ropax operators, PPA and CPA etc. It is necessary to coordinate on the following matters: scheduling of partnership operation among Ropax operators, development of the dedicated Ropax terminal in Manila and Cebu, transfer of Ropax operation from the existing port areas to new terminal, and technical and financial supports for domestic ship building industry.

2) Development of New-generation Ropax Vessel

There should be financial and technical supports coming from the government and the private sector to domestic shipyards, since they have poor actual performance in new shipbuilding. The fields of support will be the improvement of facilities, procurement of materials and equipment and technical capacity.

The construction cost of new Ropax vessels is expensive for the shipping operators. As it is shown in the financial analysis in the previous section, it is recommended to have the Ropax vessels through JBIC sub-loan or NMEC's lease-purchase scheme to make the operation profitable. Therefore, NMEC in coordination with MARINA should function in order to contribute for the development of trunk liner Ropax service as well as for the modernization of domestic shipping fleets.

3) Increase of Load Factor

In order to increase the operational profitability of new Ropax vessels, it is recommended that effort be exerted by Ropax operators to increase the load factor, especially on cargo demand on the Cebu-Manila link.

4) Development of the Dedicated Ropax Terminals

It is recommended that the proposed Ropax terminals at Manila and Cebu will be constructed by PPA and CPA by utilizing ODA source, since the investment capital is huge. It could then be operated under public and private partnership arrangements. Therefore, the terminal plan will be properly incorporated in the master plan of the two ports.