

APPENDIX 22

BUS SERVICE IMPLEMENTATION PLAN

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Appendix A22-6-1 Bus Passenger Demand Forecast

1. Prediction Case

The number of bus users is predicted using the model built by Appendix A20-2-4.

The condition for the prediction is as follows.

-It predicts based on the OD table in 2005. (Population are 1.13 times and number of trip field are 1.2 times.)

-Plan for Four routes plan and nine routes are examined. Route length is extended 2.5 times and 4.4 times, respectively.

The prediction carries out about the following four cases.

Case 1 Plan for four routes with the same operation conditions as the experiment

Case 2 Plan for nine routes with the same operation conditions as the experiment

Case 3 Plan for four routes with the improved operation conditions

(Fare level falls 10% by issue of a coupon ticket and a commuter pass and Access time decreases by installation of the parking lot for bike to the bus stop.)

Case 4 Plan for nine routes with the improved operation conditions

2. Prediction result

The number of passengers in case operation conditions have been improved is predicted to be from 23,000 persons for the four routes to 37,000 persons for nine routes.

	Case1	Case2	Case3	Case4
Bus Passenger Commuting,School Business,Shopping	9,763	15,401	13,920	22,177
Long Distance P	2,220	3,690	2,220	3,690
Airport access	670	670	670	670
Other Passenger (40% of above trip)	5,061	7,904	6,724	10,615
Total	17,714	27,665	23,534	37,152

The ratio of the amusement passengers at the experiment was used for other passengers' ratio.

Table A 22-8-2 Financial Analysis

Unit: US\$ 1,000

Year	Revenue		Revenue TOTAL	Cost			Investment	Revenue TOTAL B	B-C	Dis. Cost (12%)	Dis. Benefit (12%)	Dis. B-Dis. C (12%)
	Fare	Advertisement		Operating Cost	Engineering Cost	Bus Fleet						
2002				400				400	-400	400	0	-400
2003	0	0	0	150	4,800	893		5,843	-5,843	5,217	0	-5,217
2004	1,060	0	1,060	50	6,400	913		8,671	-7,611	6,912	845	-6,067
2005	3,189	351	3,540			0		2,758	782	1,963	2,520	557
2006	3,299	351	3,650					3,328	322	2,115	2,320	205
2007	3,412	351	3,763					3,569	194	2,025	2,135	110
2008	3,529	351	3,880					3,831	49	1,941	1,966	25
2009	3,650	351	4,001					4,114	-113	1,861	1,810	-51
2010	5,393	492	5,885					4,421	1,464	1,786	2,377	591
2011	5,555	492	6,047			0		4,853	1,194	1,750	2,181	431
2012	5,722	492	6,214					5,152	1,062	1,659	2,001	342
2013	5,894	522	6,416		5,760	0		11,589	-5,173	3,332	1,844	-1,487
2014	6,071	562	6,633		7,680	556		14,426	-7,793	3,703	1,703	-2,000
2015	8,755	778	9,533		7,040			7,040	2,493	1,613	2,185	571
2016	8,984	778	9,762		7,757			7,757	2,005	1,587	1,997	410
2017	9,219	778	9,997		8,241			8,241	1,756	1,506	1,826	321
2018	9,461	778	10,239		8,662	0		8,662	1,577	1,413	1,670	257
2019	9,709	778	10,487		9,107			9,107	1,380	1,326	1,527	201
2020	12,810	957	13,767		9,576			9,576	4,191	1,245	1,790	545
2021	13,145	957	14,102		10,070			10,070	4,032	1,169	1,637	468
2022	13,490	957	14,447		10,592			10,592	3,855	1,098	1,498	400
2023	13,843	971	14,814		11,243	0		17,259	-2,445	1,597	1,371	-226
2024	14,206	992	15,198		11,636	961		20,661	-5,463	1,707	1,256	-451
2025	14,578	992	15,570		12,685	-730		1,826	13,744	135	1,149	1,014
	174,974	14,031	189,005	600	28,591	2,593		183,746	5,259	49,061	39,608	-9,453

B/C	0.8073
FIRR %	1.70
NPV (US\$)	-9,453

APPENDIX A22.9 BUS SERVICES IMPLEMENTATION PLAN

Appendix A22.9.1 Project Cost Calculation

The bus service implementation project is to introduce the urban bus services in Phnom Penh in 2005 as the best mode of transport in the public mass transit system. It is to provide 9 bus routes in the metropolitan area with 175 buses as the short-term plan proposed in the Master Plan, to cater for the citizens of Phnom Penh.

The Study proposes implementation of the bus services introduction in 2 phases. This proposal is based on the concept that the introduction of the bus services in 2005 for 9 routes with 175 buses from the starting point without experience of large-scale operation causes risky situation for the operator. Also, it will require a huge investment cost at one time.

The first phase is intended for pilot operation of the bus services for one year in 2004 on 4 routes with 75 buses of small passenger capacities to acquire operational expertise and know-how, and to prepare for 9-route operation starting in 2005. The operation is confined to the CBD areas of the city. During this pilot operation, development and improvement of the legislative structures and other prerequisites to implementation of the short-term plan shall be executed. The expected bus passenger demand is estimated to be 22,900 persons per day.

The second phase is to procure additional 100 buses of larger passenger capacities based on the experience of pilot operation, and add 5 additional routes to cover whole areas of the metropolis. The projected passenger demand is estimated to be approximately 49,400 persons per day.

Based on above implementation phasing, project cost calculation is attempted, and the result is US \$----- with yearly allocation as presented in Table A22.9-1.

Table A22.9-1 Project Cost Estimate and Yearly Allocation
[Cost Unit: US \$ in million]

No.	Project Component	Qty. Unit	Immediate Plan			Short-term Plan			Project Cost Annual Allocation				
			Qty.	Unit Cost	Amount	Qty.	Unit Cost	Amount	2001	2002	2003	2004	2005
1	Bus Fleet Procurement	veh.	75	0.04	3.00								
2	Terminal Improvement	place			0.00								
3	Depot Improvement	place			0.00								
4	Shelter/stop installation	place			0.00								
5	Office Preparation	lot			0.00								
6	Equipment & Facility Total				0.00								
7	Annual Operational Expense				0.00								
8	Direct Cost				0.00								
9	Basic Design	m/m	15	0.04	0.60								
10	PTMU Administrative Consult	m/m				12	0.04	0.48					
11	PPT Operational Consulting	m/m				24	0.03	0.72					
12	Total Project Cost												

Source: The Study Team

Remarks: — Immediate Action Plan for one year pilot operation in 2004 on 4 routes with 75 buses

— Short-term Plan to start operation on 9 routes with 175 buses from 2005

Conversion rate = US \$1.00 = Riel 3,900 = Yen 125.00

veh. = vehicle, m/m = man-month,

Appendix A22.9.2 Development and Streamlining of Legislative Structure

(1) Needs for Laws and Regulations on Land Transport

Under the present legislative structure, it is necessary to develop and streamline the laws and regulations pertaining to the following:

- Laws and regulations to define the land transportation in the urban areas such as:
 - Incorporation of the bus transporter in urban areas, under Ministry of Commerce
 - Definition, formalities and procedures for business license, its renewal, approval of fare rates and so on,
 - Formalities on the articles of association of the bus transporter, and
 - Formalities of the articles of obligations and rights of the bus transporter toward its passengers, etc.
 - Reporting formalities of the bus transporter to the concerned authorities on the operational records, etc.
- Laws and regulations on the traffic safety measures to be taken by the bus operators
- Regulations on the responsibility of the bus operator, such as assignment of operation managers and safety managers.

For introduction of the bus services in Phnom Penh it is necessary for the MPP, in particular the DPWT, to review all the existing laws and regulations mentioned above, and to streamline all the necessary and concerned articles of laws and regulations.

(2) A Part of Draft Law on Bus Transport Business

The Study worked out a part of the Draft Law on the urban bus transport business in the administrative area of the Municipality of Phnom Penh (MPP) in the Kingdom of Cambodia. The law shall define the nature, functions and responsibilities of urban bus transport business operators and it shall be strictly adhered to by any of the bus operator.

The draft shall be further developed for completion by consultants to be assigned to the proposed Public Transport Management Unit, DPWT.

Article 1: Purpose

This Law intends to regulate sound and safe public bus transport services in the Phnom Penh Metropolitan Area (the Area) governed by the Municipality of Phnom Penh (the MPP), and to establish the adequate means of commuting transport services for the citizens of the Area.

Article 2: Definition

The public bus transport service stated in this Law is defined as the urban passenger transport service by any of the autobus business operator in the Area.

2. The autobus business operator is defined as the businesses operator to transport passengers in the Area meeting with the passenger traffic demands in the Area.

3. The autobus in this Law is defined as the omnibus solely intended for road transport services of the passengers.

Article 3: Specified Business Operation

The autobus business operator is to engage in and cater for the urban bus transport services on the routes set forth and approved by the MPP according to the scheduled timetable.

Article 4: License of Bus Operation

Any entity intending to operate the urban bus transport business as specified in Article 3 is required to obtain the business license by the MPP, in particular, the Transport Office of the Department of Public Works and Transport (MPWT).

2. The license shall be given to the applicant intending to operate the bus transport business on the specified bus routes in the areas governed by the MPP.

3. The license shall also be given to the applicant intending to operate the business to meet with a temporary public traffic demand with a certain limited period.

Article 5: Business License Application Documents

The applicant for bus operation services shall submit the following application documents:

- 1) Business title and the name of its representative person with the business registration certificate,
- 2) Business areas and bus routes in the Area,
- 3) Business operation plan (as specified in the attached form A),
- 4) Financial statements of the applicants (as specified in the attached form B),
- 5) Reason why the bus transport business is needed,
- 6) Organization structure of the business entity and operational management plan.

Article 6: Licensing Formality and Procedures:

The MPP will examine appropriateness of the above application documents with formality and procedures as stipulated below:

- 1) The business is to meet with the bus transport demands of the applied routes,
- 2) The capacity of the business can properly accommodate the traffic demands at time of the commencement of its business operation,
- 3) The applicant entity has an adequate operational and safety plans for executing the business,
- 4) The entity has its own sound financial status for starting the business without any outside assistance, and
- 5) The commencement of the business greatly contributes to the needs of the general public for urban commuting.

Appendix A22.9.3 Bus Operation Management Development Measures

(1) Bus Operator's Responsibilities

The functions and responsibilities of the public bus operator is closely related to the social and economic activities of the general public, the management of the operator shall recognize its responsibilities to the public society in general and to the communities where the operations are extended. These responsibilities and relations to the society are summarized as follows:

1. Public Services of the Bus Transportation Operators:
 - Directly related to the daily life of people
 - Necessity for short distance travel of the general public
 - Amelioration of the traffic congestions by using public buses
 - Contribute to saving of energy conservation

2. Laws and Regulations required for Bus Transport Operators:
 - Catering the needs for strong social needs
 - For protection of the users and for sound development of the operators, need laws/regulations
 - Business License: To be approved by the relevant government authorities
 - Business Plan and termination of service operations
 - Fares and Tariffs: To be approved by the relevant government authorities
 - Articles of Transportation: To be prepared by the operators on service conditions
 - Maintaining of public services
 - Ensuring of the traffic safety
 - Securing of unfair competitions with no-license operators
 - Management monitoring system by concerned authorities

3. Quality Elements of Transport Services:
 - Safety of Transportation: Efforts to reduce traffic accidents by operators
 - Punctuality of Operations: Regular Operation & Departure and Arrival Times
 - Improvement of Travel Speed: Elimination of excess times by better operation planning
 - Economics of Transport: Rationalization of operation to reduce fares/tariffs
 - Convenience of Services: Routes, frequency, capacity, for passengers' convenience
 - Amenity of Services: Better vehicle facilities and driving techniques for comfort
 - Environmental Considerations: Low level emission gas by vehicles

(2) Bus Operation Management Development Measures

Fundamentals

For effective operation of the bus transporter, there are many measures to be introduced and adapted in the daily management of the entity. As is the case with any of the enterprise and corporation, it is vital for the management to adhere business management standards on operations and financing. One of the characteristics of the bus operation is that the item he is selling is represented by seat of the bus that cannot be stocked in the warehouse for resale. Therefore, careful operation planning is specially required.

For development of the operation management, fundamental requirements or bases are presented as follows:

- Keep every operational record in statistical methods, a representative sample of the statistical record of passenger-kilometer of the bus transportation in time series is shown in Table A22.9-2,
- Keep every operational performance record in a manner so that the data is used for improvement of the operation, a typical example of the performance record in time sequence is shown in Table A22.9-3,
- Keep the financial record of the bus transport business to clearly show the details of

revenue, operational and administrative expenses so that the financial position and status can easily grasped and the management can take immediate measures for possible improvement of financial position,

- Apply standard accounting procedure for financial book keeping and prepare Profit and Loss Statement, Balance Sheet and Cash Flow Statement together with backup data of the bus transport business, so that the management executives can understand and grasp the current financial position,

Table A22.9-2 Passenger-Kilometers Transported by Automobiles

NO	Year	Month	Passengers-Kilometers Transported (Unit=1 million persons)									
			Total	By Bus			By Passenger Car					
				Total	Public	Chartered	Own Use	Total	Taxi/Hrs	Own Use	Own Use-L	
1	1989	12 months	845,123	109,130	32,999	41,965	34,196	556,031	15,922	519,351	20,758	
2	1990	12 months	853,060	110,372	33,724	43,617	33,031	575,507	15,639	536,773	23,056	
3	1991	12 months	869,337	108,212	34,694	42,167	31,361	595,481	16,055	548,805	30,621	
4	1992	12 months	889,290	106,637	34,530	43,034	29,073	617,551	15,645	564,654	37,252	
5	1993	12 months	889,873	102,909	33,092	43,077	26,740	626,979	15,466	567,999	43,814	
6	1994	12 months	896,751	99,781	31,883	42,865	25,033	640,384	14,338	576,710	49,336	
7	1995	12 months	917,420	97,288	30,635	43,276	23,377	664,625	13,796	594,712	56,117	
8	1996	12 months	931,721	94,892	29,343	43,035	22,514	684,177	13,277	603,741	64,159	
9	1997	12 months	944,972	92,900	28,285	42,812	21,803	704,127	12,818	618,615	72,694	
10	1998	12 months	954,807	90,433	28,119	42,505	19,809	723,791	12,344	631,502	79,945	
11	1999	12 months	955,563	88,686	26,557	42,837	19,292	733,437	12,115	632,815	88,507	
		April	77,859	7,018	2,411	3,130	1,477	59,185	1,105	51,140	6,919	
		May	79,906	7,879	2,257	4,003	1,619	60,668	1,040	52,592	7,036	
		June	77,919	8,160	2,244	4,078	1,838	58,569	977	50,592	7,000	
		July	83,726	7,936	2,262	3,932	1,802	63,466	1,022	54,899	7,536	
		August	80,506	7,004	2,252	3,489	1,263	62,203	1,001	53,613	7,589	
		September	81,031	7,392	2,248	3,538	1,606	62,524	1,002	54,042	7,480	
		October	82,806	9,085	2,287	5,017	1,781	62,698	978	54,111	7,609	
		November	81,714	8,724	2,204	4,653	1,867	61,589	969	53,243	7,377	
		December	80,949	5,649	2,103	2,162	1,384	63,922	1,071	55,141	7,710	
		January	78,405	6,007	2,101	2,459	1,447	62,192	1,043	53,966	7,183	
		February	71,923	6,853	1,984	3,200	1,669	55,502	899	47,608	7,005	
		March	78,822	6,920	2,200	3,177	1,540	60,942	1,009	51,869	8,069	

Source: Land Transportation Statistics Summary for 2000, prepared by Information Management Department, Integrated Policy Bureau, Ministry of Land & Transportation in Japan.

Remarks: Passenger-Km transported by cargo vehicles are excluded in this Table.

Table A22.9-3 Operational Performance of Bus Transportation Services

BUS OPERATION SERVICES PERFORMANCE												
No.	Item	Unit	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
A Actual Statistics												
1	No. of Vehicles	veh	64,972	64,469	63,857	63,263	62,568	61,861	61,171	60,354	59,426	58,689
2	Performance Rate	%	85.7	85.7	85.4	85.1	84.8	84.4	84.7	84.5	84.5	84.0
3	Operation Kilometers	1000 km	3,038,390	3,039,816	3,018,431	2,992,589	2,969,970	2,955,635	2,935,727	2,916,750	2,904,569	2,900,487
4	Revenue Kilometers	1000 km	2,785,870	2,786,046	2,770,070	2,740,247	2,717,130	2,702,900	2,670,803	2,650,102	2,646,768	2,634,650
5	No. of Passengers	1000 pax	6,500,489	6,496,094	6,358,294	6,195,844	5,938,505	5,756,231	5,599,617	5,399,848	5,171,516	4,937,130
6	Operational Revenues	million Yen	1,193,909	1,216,663	1,233,184	1,216,118	1,205,256	1,189,332	1,170,042	1,133,086	1,109,413	1,069,592
B Average Operation per day-vehicle												
1	Operation Kilometers	Km	152	152	153	153	154	154	155	156	157	158
2	No. of Passengers	Pax	324	325	322	317	308	300	296	290	279	269
3	Operational Revenues	Yen	59,534	60,896	62,356	62,221	62,456	62,046	61,819	60,759	59,882	58,291
4	Ave. Revenue per Km	Yen/Km	392	401	408	407	406	403	399	389	381	369
5	Ave. Revenue per Pax	Yen/Pax	184	187	194	196	203	207	209	210	215	217
C Average Operation Performance per Transport												
1	Average Capacity	Pax	66	62	68	64	65	65	66	67	66	66
2	Passenger Density	Pax	12.1	12.5	12.5	12.1	11.7	11.3	11.0	10.7	10.6	10.1
3	Passenger Factor	%	18	20	20	19	18	17	17	16	16	15
4	Ave. Revenue per Km	Yen	392.94	400.24	408.55	406.38	405.81	402.39	398.55	388.48	381.95	368.76
5	Ave. Revenue per Pax	Yen	183.66	187.39	193.95	196.28	202.96	206.62	208.95	209.84	214.52	216.64
6	Ave. Km per Pax	Km	5.2	5.3	5.4	5.3	5.4	5.3	5.2	5.2	5.4	5.4

Source: Land Transportation Statistics Summary for 2000, prepared by Information Management Department, Integrated Policy Bureau, Ministry of Land & Transportation in Japan.

Remarks: Passenger-Km transported by cargo vehicles are excluded in this Table.

Formulation of Bus Business Performance Indicators

One of the fundamental key elements for successful operation of the bus transport business, the executives of such entity should be always grasping the past and current financial conditions of bus operations. For this purpose, it is recommended for the management to formulate a set of performance indicators which can be easily and readily evaluate the current situations, in terms of daily operational practices and financial conditions, and to make immediate decisions on practices and running of operations for improved performances. Some of the indicators are presented in Table 22.9-4.

Table A22.9-4 Representative Business Efficiency Indicators

No.	Item	Unit	Equation (Calculation formula)	Remarks
A Transport Efficiency Indicators				
1	Operating Bus Availability Ratio on weekly, monthly and yearly basis	%	$\frac{\text{Accumulative no. of operated buses}}{\text{Total nos. of buses in possession}} \times 100$	greater the better
2	Operating Bus Distance Ratio by route on weekly, monthly and yearly basis	%	$\frac{\text{Total revenue distance of bus in km.}}{\text{Total distance of bus traveled in km.}} \times 100$	greater the better
3	No. of Pax. Transported per day-veh. average per bus-day	person	$\frac{\text{No. of passengers per day}}{\text{Total no. of operated buses per day}}$	greater the better
4	Total revenue distance per day-veh. average revenue distance per day-veh.	km.	$\frac{\text{Total revenue distance of bus per day in km.}}{\text{Total no. of operated buses per day}}$	greater the better
5	Operational revenue per day-veh. average revenue per day-veh.	riel	$\frac{\text{Total operational revenue per day}}{\text{Total no. of operated buses per day}}$	greater the better
6	Operational expense per day-veh. average expense per day-veh.	riel	$\frac{\text{Total operational expense per day}}{\text{Total no. of operated buses per day}}$	greater the better
7	Operational profit per day-veh. average profit per day-veh.	riel	$\frac{\text{Total operational profit per day}}{\text{Total no. of operated buses per day}}$	greater the better (Item No. 5 - 6)
B Financial Efficiency Indicators				
1	Net profit/net worth ratio net worth=liabilities + capital + surplus	%	$\frac{\text{Net profit in the period}}{\text{Net worth in the period}} \times 100$	greater the better
2	Business profit ratio net worth=liabilities + capital + surplus	%	$\frac{(\text{Net profit}+\text{interest-tax}) \text{ in the period}}{\text{Net worth in the period}} \times 100$	greater the better
3	Personnel Expense ratio	%	$\frac{\text{Total personnel expense in the period}}{\text{Total operational revenue in the period}} \times 100$	smaller the better
4	Fuel expense ratio	%	$\frac{\text{Total fuel expense in the period}}{\text{Total operational revenue in the period}} \times 100$	smaller the better
5	Maintenance expense ratio	%	$\frac{\text{Total maintenance expense in the period}}{\text{Total operational revenue in the period}} \times 100$	smaller the better

Source: The Study Team

Remarks: 1. No. = number

2. Pax = passenger

3. Veh. = vehicle, bus

These indicators are bus business management tools to be applied in the operational activities of the bus transporter. With these indicators the management executives can draw up the tables and figures to show actual performance on operation and financial positions as presented in Tables A22.9-5 and A22.9-6.

Table A22.9-5 Financial Indices on Bus Transport Operations

Category	No.	Financial Index	1996	1997	1998
Indices on Profit & loss (%)	1	Rate of Return on Total Capital	-1.66	-1.81	-1.67
	2	Rate of Return on Own Capital	-6.77	-7.18	-6.55
	3	Rate of Return on Bus Operations	-9.68	-11.43	-10.37
	4	Operational Profit vs Operational Expenses including Related Business(foods, drinks, etc)	97.10	98.47	97.95
	5	Operational Profit vs Operational Expenses excluding Related Business	108.63	110.64	109.35
	6	Rate of Depreciation	6.87	6.88	6.80
	7	Rate of Taxes	1.20	1.21	1.09
	8	Rate of Loan Charges	1.63	1.52	1.53
Indices on Assets & Capital (%)	1	Rate of Fixed Assets	345.98	340.21	338.05
	2	Rate of Fixed Assets vs Long Term Capital	106.01	104.87	104.44
	3	Rate of Current Assets vs Current Liabilities	75.10	77.69	79.62
	4	Rate of Current Bank Accounts	42.22	41.09	40.04
	5	Rate of Current Liabilities	81.05	72.79	68.83
	6	Rate of Fixed Liabilities	226.37	224.45	224.47
	7	Rate of Fixed Liabilities vs Long Term Capital	69.36	69.18	69.35
Indices on Turnover (times)	1	Turnover Rate of Total Capital	0.25	0.24	0.23
	2	Turnover Rate of Own Capital	1.01	0.96	0.91
	3	Turnover Rate of Current Assets	2.95	3.20	3.31
	4	Turnover Rate of Fixed Assets	0.32	0.31	0.30
	5	Turnover Rate of Accounts Receivable	15.20	12.83	11.91
	6	Turnover Rate of Tangible Fixed Assets	1.66	1.61	1.57
Share of Balance Sheet Composition (%)	1	Rate of Current Assets	14.96	14.24	13.93
	2	Rate of Current Commercial Assets	8.40	7.53	7.00
	3	Rate of Fixed Assets	84.92	85.64	85.96
	4	Rate of Tangible Fixed Assets	76.76	76.78	76.81
	5	Rate of Building Assets	11.53	5.08	6.10
	6	Rate of Intangible Assets	0.62	0.92	0.85
	7	Rate of Investment	7.54	7.94	8.30
	8	Rate of Carried over Assets	0.12	0.12	0.11
	9	Rate of Current Liabilities	19.89	18.32	17.50
	10	Rate of Long term Liabilities	55.57	56.51	57.07
	11	Rate of Retirement Allowances Savings	2.51	2.24	2.07
	12	Rate of Capital	22.56	23.19	23.40
	13	Rate of Required Savings	7.48	7.91	8.13
	14	Rate of Earnings	-5.50	-5.93	-6.10
Indices on Cost & Expenses (%)	1	Rate of Operation Cost	93.38	93.42	93.62
	2	Rate of Personnel Expenses	69.30	69.34	69.37
	3	Rate of Fuel Costs	5.18	5.07	4.73
	4	Rate of Vehicle Repairs	3.48	3.52	3.72
	5	Rate of Depreciation	6.16	6.06	6.06
	6	Sales and Administrative Expenses	6.62	6.58	6.38
	7	Total	100.00	100.00	100.00
	8	Rate of Total Personnel Expenses	73.91	73.99	73.98
	9	Rate of Total Other Expenses	26.09	26.01	26.02
Indices on Revenue, Expenses & Profit/Loss (Yen)	(Per Vehicle Kilometer)				
	1	Operational Revenue	413.20	404.61	398.48
	2	Operational Profit vs Operational Expenses	-35.65	-43.05	-37.25
	3	Total Expenses	448.86	447.66	435.73
	4	Operational Expenses	419.16	418.20	407.93
	5	Personnel Expenses	311.06	310.40	302.26
	6	Fuel Expenses	23.26	22.68	20.59
	7	Vehicle Repairs	15.62	15.76	16.20
	8	Depreciation	27.67	27.12	26.39
	9	Sales and Administrative Expenses	29.70	29.46	27.80
	(Per Vehicle Day)				
	1	Operational Revenue	62,006	62,006	61,340
2	Operational Expenses	68,443	68,603	67,074	
3	Operational Profit or Loss	-5,437	-6,597	-5,734	

Source: [Bus Business Operational Indices] prepared by General Affairs Sect. Automobile Transport Dept. Ministry of Land and Transportation

Table A22.9-6 Financial Data on Bus Transport Business In Japan 1997 - 1999

No.	Item	Unit	Composition of Expenses in %														
			Corporate Size with 1 - 30 veh.			Corporates with 31 - 100 veh.			Corporates with 101 - 300 veh.			Corporates with over 301 veh.			Total Average		
			1997	1998	1999	1997	1998	1999	1997	1998	1999	1997	1998	1999	1997	1998	1999
I	Operational Expenses	%	87.77	88.23	87.96	90.79	91.14	90.77	91.12	91.30	91.33	91.07	91.10	91.24	91.05	91.12	91.21
1	Personnel Expenses	%	63.35	63.37	61.94	66.55	66.98	65.19	65.95	65.17	63.95	66.61	66.58	65.60	66.47	66.31	65.23
2	Fuel Expenses	%	6.91	6.71	7.16	6.28	5.9	6.15	6.05	5.86	6.21	5.31	4.92	5.18	5.5	5.15	5.42
	gasoline	%	-	-	-	0.01	0.01	0.01	-	-	-	-	-	-	-	-	-
	diesel oil	%	6.75	6.55	7.01	6.13	5.75	6.00	5.93	5.73	6.08	5.22	4.83	5.09	5.40	5.05	5.32
	LPG or LNG	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Others (Lub.)	%	0.16	0.16	0.15	0.14	0.14	0.14	0.12	0.13	0.13	0.09	0.09	0.09	0.10	0.10	0.10
3	Repair Expenses	%	4.62	4.98	5.33	3.68	3.88	3.93	4.24	4.52	4.64	3.78	3.96	4.00	3.87	4.07	4.13
	Vehicles	%	4.45	4.79	5.17	3.46	3.66	3.72	4.08	4.34	4.47	3.43	3.62	3.67	3.57	3.76	3.84
	Others	%	0.17	0.19	0.16	0.22	0.22	0.21	0.16	0.18	0.17	0.35	0.34	0.33	0.30	0.31	0.29
4	Depreciation on Assets	%	5.05	4.91	4.75	4.02	3.92	4.54	5.16	5.14	5.00	5.82	5.77	5.84	5.61	5.57	5.62
	Vehicles	%	4.23	3.97	3.81	3.20	2.95	3.42	4.19	4.13	4.01	4.62	4.49	4.45	4.47	4.36	4.32
	Others	%	0.86	0.94	0.94	0.82	0.97	1.12	0.97	1.01	0.99	1.20	1.28	1.39	1.14	1.21	1.30
5	Insurance Premium	%	1.13	1.18	1.25	0.92	1.02	1.02	0.86	0.90	0.99	0.50	0.52	0.52	0.59	0.61	0.64
6	Facilities Rentals	%	0.88	0.92	0.9	1.53	1.69	1.68	1.18	1.33	1.51	0.85	0.87	0.90	0.94	0.99	1.05
7	Taxes on Assets	%	0.83	0.84	0.86	1.00	1.08	1.05	0.97	1.02	1.08	1.06	1.09	1.14	1.04	1.08	1.13
8	Other Opex. Expenses	%	4.96	5.32	5.77	6.81	6.67	7.17	6.71	7.36	7.95	7.14	7.39	8.06	7.03	7.34	7.99
II	General & Adm. Expenses	%	10.18	9.72	9.84	7.48	7.36	7.30	6.86	6.58	6.60	7.37	7.07	7.13	7.29	7.01	7.06
1	Personnel Expenses	%	6.73	6.30	6.34	5.17	5.40	5.33	4.96	4.83	4.76	5.14	5.06	5.09	5.11	5.04	5.05
2	Depreciation on Assets	%	0.13	0.25	0.31	0.12	0.09	0.10	0.10	0.11	0.12	0.21	0.22	0.26	0.18	0.20	0.23
3	Facilities Rentals	%	0.15	0.14	0.11	0.21	0.22	0.23	0.16	0.15	0.16	0.16	0.16	0.17	0.17	0.16	0.17
4	Taxes	%	0.40	0.22	0.28	0.36	0.19	0.16	0.36	0.22	0.20	0.37	0.19	0.21	0.37	0.20	0.21
5	Other Adm. Expenses	%	2.77	2.81	2.80	1.62	1.46	1.48	1.28	1.27	1.36	1.49	1.44	1.40	1.46	1.41	1.40
III	Total Direct Business Expenses	%	97.95	97.95	97.80	98.27	98.50	98.07	97.98	97.88	97.93	98.44	98.17	98.37	98.34	98.13	98.27
	(Personnel Expenses)	%	70.08	69.67	68.28	71.72	72.38	70.52	70.91	70	68.71	71.75	71.64	70.69	71.58	71.35	70.28
	(Other Expenses)	%	27.87	28.28	29.52	26.55	26.12	27.55	27.07	27.88	29.22	26.69	26.53	27.68	26.76	26.78	27.99
IV	Extraordinary Expenses	%	2.05	2.05	2.2	1.73	1.50	1.93	2.02	2.12	2.07	1.56	1.83	1.63	1.66	1.87	1.73
1	Financial Expenses (loan int.)	%	1.59	1.56	1.78	1.07	1.18	1.38	1.56	1.60	1.48	1.11	1.16	1.16	1.20	1.25	1.24
2	Others	%	0.46	0.49	0.42	0.66	0.32	0.55	0.46	0.52	0.59	0.45	0.67	0.47	0.46	0.62	0.49
V	Total Business Expenses	%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Land Transportation Statistics Summary for 2000, prepared by Information Management Department, Integrated Policy Bureau, Ministry of Land & Transportation in J.

Appendix A22.9.4 Establishment of Public Transport Management Unit

(1) Supervision and Technical Guidance by Administrative Agencies

There are two (2) administrative organs, a proposed Public Transport Management Unit (PTMU) in the Transport Office (TO) and Project Management Unit (PMU), a task force team to be organized by the professional staff of the Public Works Office (PWO) in the DPWT, are directly involved in the bus services implementation project.

The functions and organizational structures of the DPWT, Transport Office and Public Works Office are described hereunder as the extract of the Declaration on Establishment and Responsibilities of the DPWT, MPP dated January 24 2000. The organization charts of the TO and PWO as of July 2001 are shown in Figures A22.9-1 & A22.9-2.

Establishment and Responsibilities of the DPWT, MPP

Reference: Proposal No.55. LS, dated Jan 24 2000, DPWT, MPP

Article 1: Department of Public Works and Transport (DPWT) in MPP is under supervision, management, administration, technical skills of Ministry of Public Works and Transport (MPWT), and is under supervision and carrying out the work of MPP.

Article 2: DPWT has the following functions:

- 1) In charge of administration and general affairs of DPWT,
- 2) Apply technical skills to carry out the work of infrastructure of road and bridge, transport, drainage, dike, canal, riverbank, watershed, pumping station, garden, plants, public lighting and city cleaning,
- 3) Manage modes of land transport and water transport in Phnom Penh,
- 4) Maintain and use the public properties on road, bridge, river embankment, park, fringe dike, public lighting, signal light, road marking, terminal, port, ferry port, and clean the city, and take care of orderliness of public garden,
- 5) Manage documents of technical standard,
- 6) Manage and monitor all professional activities, distribute the technical skills, and create development-program in the fields of public works and transport in MPP,
- 7) Join in the field of economy with a view to find income to put in to national budget,
- 8) Manage all kind of automobile garage,
- 9) Manage water ways to assure a safety in water transportation,
- 10) Manage river, lake, pond, tributary and watershed,
- 11) Enhance the training of human resource, and
- 12) Report to and propose idea to the decision by the MPWT.

Article 3: DPWT is led by 1 director and some deputy directors as assistants depending on necessity.

Article 4: DPWT has organizational structure as follows:

- 1) Administration, Personnel and Human Resources Office,
- 2) Planning - Accounting Office,
- 3) Public Works Office,
- 4) Transportation Office,
- 5) Road and Bridge Division,
- 6) Round Division,
- 7) Dike and River Bank Division,
- 8) Public Lighting Division,
- 9) Public Garden, Plants Division,
- 10) Solid Waste Management Division,
- 11) Drainage and Sewerage Division, and
- 12) Public Works and Transport Offices at Districts.

Article 5: Each office is led by 1 chief and some deputy chiefs as assistants depending on necessity.

2) The chief of district office and the chief of division are equal to deputy chief of office of DPWT,

3) Each district office and division is led by 1 chief and some deputy chiefs as assistants depending on necessity.

The Functions of the Public Works Office (PWO):

In accordance with Article 6 of the Declaration, the PWO has following tasks:

- 1) Create technical standards in the field of public works and transport,
- 2) Propose plan to install the traffic signs on the roads that have already been constructed in the MPP,
- 3) Study development projects in the field of public works and transport for short term and long term,
- 4) Propose plan of maintenance works for public building, road, bridge, dike, river bank, garden and lighting,
- 5) Organize training courses on technical skills and send the officials to attend the course,
- 6) Contact with the international agencies to develop the urban infrastructure in public works and transport field,
- 7) Supervise and instruct the work-site in the field of public works within MPP, and
- 8) Report what was done, what is being planned, to the executives every week, month, three-month, semester and year.

The Functions of the Transportation Office (TO):

The functions and responsibilities of the TO as stipulated in the Declaration are as follows:

- 1) Manage all kinds of modes of transport, provide the motorcycle plates, control safety of vehicles, provide the traffic act to the taxi/bus by identification of the Ministry,
- 2) Manage, take care and propose to arrange names of the roads and to arrange traffic signs,
- 3) Manage and organize the orderliness of terminals, ports and ferry jetties,
- 4) Register the means of transport properly,
- 5) Manage and inspect the automobile garages,
- 6) Manage warehouses, and vehicle shops, and
- 7) Report what was done and what is being planned to the executives every week, month, three-month, semester and year.

(2) Establishment of Proposed Public Transport Management Unit (PTMU):

Organization and Staffing

The Public Transport Management Unit is to be newly established under supervision of the Deputy Director in charge of Transport Office, DPWT with a organization structure consisting of financial management, operational management and maintenance management to supervise and control all the land transportation in the Phnom Penh metropolis, as shown in Figure A22.9-3, with staffing of 5 persons in 2004, and about 8 persons in 2005.

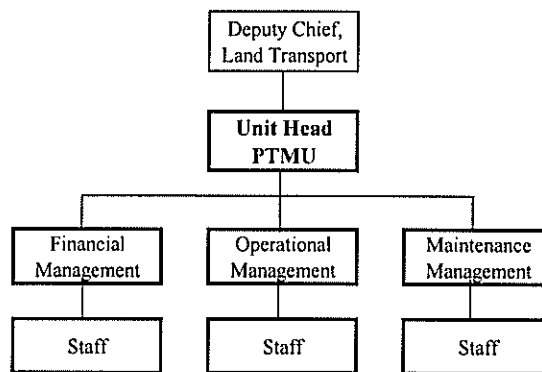
Functions and Responsibilities

The PTMU is to assume the following functions and responsibilities with the guidance of an expatriate consultant:

- To review applicable laws and regulations on bus transport services and related aspects, and to work out drafts of such regulations as necessary prior to commencement of the bus services;
 - Passenger route bus transportation business (for route bus service with timetable),
 - Passenger chartered bus transportation business (for tourism purpose),
 - Taxi and chauffer-driven car transportation business (for urban taxi and hired taxi),

- General cargo truck transportation business (for truck of either regular route or on-demand),
- Mini-truck delivery business (for door-to-door delivery service),
- Articles of association of the bus transporter (for business incorporation), and
- Articles of bus passenger transportation (on operator's obligations and rights to passengers).
- To monitor and evaluate all the management aspects of bus operators including the Transport Authority of Phnom Penh, and to advise, recommend and instruct those points that need improvement,
- To evaluate applications for bus tariff rates by both public and private sector operators, and approve them or advise revision, and
- To work out the manuals on management of bus operation and maintenance for distribution to the operators to follow, with the purposes to improve and maintain the level of service, operational efficiency, safety of passengers, drivers and conductors.

Figure A22.9-3 Organization Chart of Public Transport Management Unit, TO, DPWT



Source: The Study Team

Remarks: Staff consists of 5 persons in 2004 & 8 persons in 2005

Appendix A22.9.5 Bus Operation and Maintenance Manuals (Duty of Operation Manager)

It is vital for the public bus operators to ensure transport of the bus passengers safely, punctually and speedily. The cause of traffic accidents are generally attributed to 3 major components; persons, vehicle and road, which are mixed with complexity.

For this purpose it is the imperative responsibility of the operators to appoint highly qualified “Bus Operation Managers” to plan, improve and develop the measures to maintain the operational efficiency of the bus transport services. The functions and duties of the operation manager are presented as follows:

Operation Management of Bus Services

The bus operators shall fully understand importance of the issues stipulated below and shall try their very best for their fulfillment

- To understand importance of public bus transport services and to observe related laws and regulations pertaining to bus operation business,
- To observe laws and regulations for prevention of traffic accidents,
- To maintain and improve quality of bus transport services, and
- Importance of Transport Management

Functions and Duties of the Operation Manager

The operation manager is one of the most important key staff of the bus operator, and his knowledge, skill and performance efficiency will greatly contribute to the overall earning of the business entity. The functions and duties of the operation manager in the business entity engaging in bus transport services are divided into 3 categories as stipulated below:

(1) Planning Works on:

- Preparation of “Standard Operation Diagram” and “Daily Works Standards”,
- Assignment schedule of drivers, conductors and inspectors,
- Placement schedule of route guidance maps and fare rates charts at the terminals, ticketing offices and shelters,
- Standard reporting and remedial procedures of the drivers and conductors in emergency and traffic accidents, and application and usage of the first-aid-kits,
- Display standards inside the operational vehicles
- Manuals for the drivers and conductors to refuse ride of the passengers, and
- Provision of the rest and refreshment facilities for drivers and conductors.

(1) Daily Works on:

- Preparation of daily work schedules for all the operational routes,
- Issue the transport orders to the assigned drivers and conductors,
- Monitor and record working hours and operational distance of each bus,
- Check the daily report prepared by the assigned drivers and conductors,
- Check the maintenance record of each operational vehicle by maintenance division,
- Check the fare ticket sales record and execute statistical analysis,
- Check the report on sanitary conditions of the vehicles before and after operation, and
- Give instruction to the drivers and conductors for work performance improvement.

(2) Ad-hoc Works on:

- Investigation to the causes, in case of delay,
- On-site supervision and management at time of accident, and
- Management of irregular bus service operations in abnormal weather.

Additional Basic Knowledge Required for Operation Manager

In addition to the operational management expertise as described above, the operation manager is required to have or acquire the basic knowledge of the following fields:

- Aptitude diagnosis to be used for recruiting the employees,
- Vehicle maintenance management,
- Facility maintenance management,
- Traffic safety measures,
- Health control management for prevention of accident by health conditions, first-aid treatment to the casualties at traffic accidents, and prevention of drug abuses, and
- Use of fire extinguisher, etc.

Appendix 22.9.6 PPT's Past Experience and Current Operations

(1) History

The Phnom Penh Transport Authority (PPT) was first established in 1983 as an autonomous body under supervision of the Ministry of Public Works and Transport (MPWT), named as the Transport Authority of Cambodia. The objective of the authority is to promote friendly relationship between Cambodia and Viet Nam (VN) by catering for regular bus services between Phnom Penh and Ho Chi Minh.

The authority was transferred from the MPWT to the Department of Public Works and Transport (DPWT) of the Municipality of Phnom Penh (MPP) in 1993 after general election, and renamed as the Phnom Penh Transport Authority (PPT), with the same purpose to continue friendly relations with VN. It is observed that the international bus service is not a matter of business operation, but a political arrangement, and should be maintained regardless of operational records.

(2) Articles of Association

The Articles of Association of the PPT was set forth by a sub-decree in March 31 2000. The key components of articles of association are noted as follows:

Objectives

- To Maintain friendly relationship between the 2 countries,
- To raise the revenue (foreign currency) to MPP, and
- As a long goal, after completion of the Asians Highway, increase the level of bus services in operational frequency and bus fleet (quality and size)

Key Components

- The PPT can operate transport of passengers and cargoes by various modes of transport, such as bus, boat, ferry and ship. Cargo transport stands for container, general cargo and bulk cargo transportation.
- The PPT can raise the capital from the MPP in terms of physical assets (bus fleet and spare parts) and non-physical assets like free rental of the MPP land lots, etc. At the start of the international bus service in April 2000, the PPT was provided by with a bus and spare parts with the worth of US \$3,300 and the land lots for US \$150,000, together with the operational fund for payment of the staff salaries from the MPP.
- The PPT can get the funds for capital increase and operational expenses depending on the necessity of the transport operations, which shall be approved by the MPP Governor.
- A Management Committee of the PPT is to be established, with the committee members consisting of the following:
 - Governor or his representative (chairman),
 - Director of the TAPP,
 - A representative from the Department of Economy of Finance, MPP,
 - A representative from the Department of Planning, MPP,
 - A representative from the DPWT, MPP,
 - A representative from the Cabinet Office, MPP, and
 - A representative from the citizens of Phnom Penh City.
- The functions of the Management Committee are to;
 - Propose development plans and programs of the PPT on transport operations according to the regulations and schedules of the MPP,
 - Formulate budget plan and program for new investment,
 - Decide the amount of surplus as a fund to be kept for reinvestment,
 - Review and approve the appropriateness of the annual statement of accounts of the PPT.
- The functions and responsibilities of the Director, PPT are to:
 - Monitor and manage all the activities of the PPT,
 - Organize the meetings of Management Committee,
 - Implement the guidelines and decisions made by the Committee,

- Make reports on the activities and annual statement of accounts of the PPT,
 - Employ and dismiss the staff in accordance with the labor law,
 - Be responsible for management of the assets (bus fleet and land property) of the PPT, and
 - Appoint one or more deputy director(s), and in the absence of the director, delegate his responsibilities to the deputy director(s).
- The amount of the net earning (profit) yielded by the PPT business operations, if any, shall be calculated each year, which shall be used first to fill in to cover the losses of the previous year, second to be kept for reinvestment, and third to be paid to the MPP, and
 - Salaries of the PPT staff shall be decided by the MPP.

Current Bus Service Operation by PPT

The year 2000

The PPT started an international bus service between Phnom Penh (PHN) and Ho Chi Minh (HCM) in April 2000 in a joint operation with the Vietnamese counterpart three times a week round trip basis. The 6 months operation was suspended in September that year with the road sections on RN 1 being damaged and destroyed by flooding in the rainy season (in September). For this service, the PPT provided 1 bus with the capacity of 25 passengers, and VN side uses 1 bus with 15-passenger capacity. The number of actual passengers on the Cambodian bus ranged from 9 to 10 persons per trip to and from HCM. There was no bus stop between PHN and HCM (non-stop operation) with a one-way fare for \$20.00, while the fare of private operators was \$16.00. The PPT was considering about the reduction of fare to compete with the private sector, but it was not realized. The PPT was not only getting the normal passengers, but also if needed, it was carrying patients and other persons requiring urgent transfer to and from HCM city and vice versa. The PPT had permission by the Ministry of Interior to enter into and travel from VN, based on the treaty between the 2 countries. On each trip the driver should carry with the letter of entry-permit.

According to the information by the Transport Office of the DPWT, the PPT's operation for 6 months in 2000 was executed under the conditions that it was favored with free use of the office building and land for the terminal and depot located in the premise of the DPWT, and the salary of 2 managerial staff is paid by the DPWT. The PPT suffered from operational loss amounting to only \$408.00 for 6 months operation in 2000 having its revenue for US \$2,712 and the operational expenses being US \$3,125.

The Year 2001

The international service resumed in May this year in a three-month contract-out basis to a private bus operator, Ho Wah Genting Transport Co., Ltd (HWG). The contract is for the PPT to get loyalty being 10% of all the fare revenues of the operator and to pay immigration and customs charges at the border. The revenue to the PPT is estimated to be around US \$200 per month. The HWG is to operate for three months from May on three round trips a week basis on Tuesday, Thursday and Saturday with a bus of 24-passenger capacity. The fares were reduced to US \$ 16.00 and US \$10.00 for adult and child under 12-years old. The average number of passengers from PHN to HCM is 17 persons on a round trip basis. After termination of the contract, the TAPP and the HWG will discuss further on continuation of the service and on operational conditions.

Apart from the international bus service, the PPT is directly operating inter-city bus operations with its 3 old buses (1 x 25-seater and 2 x 12-seater) on PHN (main terminal at Central Market) and Kampong Cham route. The one-way fare is Riel 6,000 on a distance of about 125 km. The PPT should pay Riel 1,000 per passenger for use of HWG's Central Market terminal out of the fare, to make net fare of Riel 5,000.

The operational record of the PPT on these two routes is currently resulted in a plus side and the surplus is kept for reinvestment to purchase a new bus.

Staffing as of July 2001

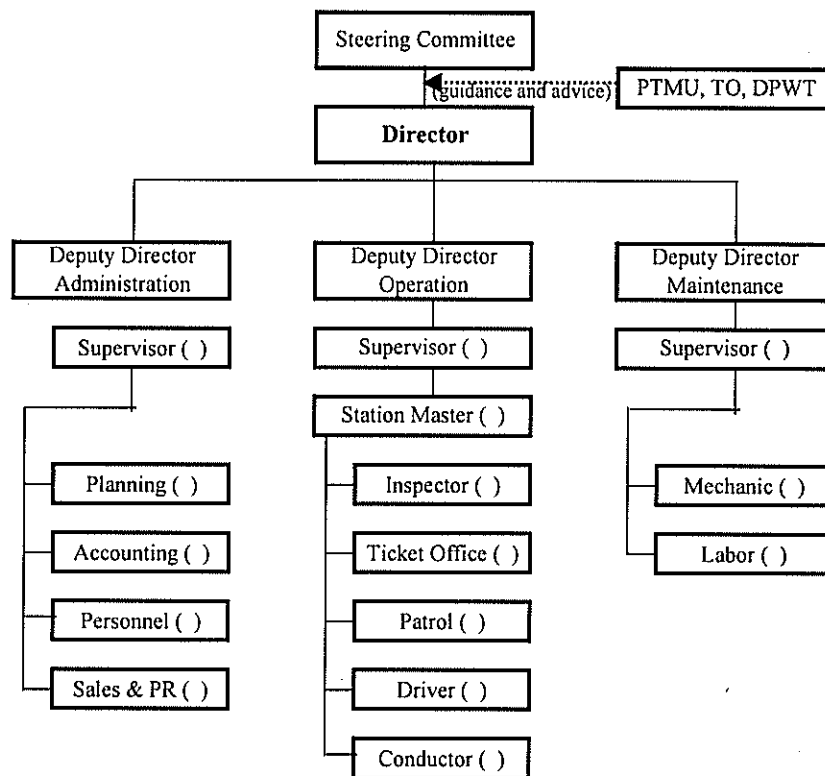
In 2000 the PPT's staffing consisted of 9 persons, comprising 2 managerial staff (1 director and 1 chief accountant dispatched from the DPWT), and 7 employees on a contract basis including drivers, co-drivers. The contract-based employees might have had a chance to be permanently employed by the PPT depending on the productivity and performance factors.

The current staffing of the PPT as of July 2001 consists of 10 persons, of which 3 managerial staff belonging to the DPWT (1 director, 1 deputy director and 1 chief accountant). Rests of the staff are employed on a contract basis (1 cashier, 3 drivers, 1 co-driver, 1 ticket office and 1 security guard).

For realization of the intra-urban bus services, it is strongly recommended that the PPT should be reinforced and restructured to set up the organizational and managerial structures so as to fully compete with the private bus operators with strict cost consciousness. For this purpose, an expatriate consultant having profound and extensive experience of intra-urban bus operations is needed to work together with the management executives of the PPT from the start of the bus operation proposed in an Immediate Action Plan in 2004.

The proposed organization chart of the PPT in 2005 is shown in Figure A22.9-4.

Figure 22.9-4 Proposed Organization Chart, PPT in 2005



Source: The Study Team

Remarks: Suggested organizational structure for 9 routes with 175 buses in the year 2005

A22.4 BUS PASSENGER DEMAND FORECAST

A22.4.1 PREDICTION CASE

The number of bus users is predicted using the model built by Appendix A20-2-4.

The condition for the prediction is as follows.

-It predicts based on the OD table in 2005. (Population are 1.13 times and number of trip field are 1.2 times.)

-Plan for Four routes plan and nine routes are examined. Route length is extended 2.5 times and 4.4 times, respectively.

The prediction carries out about the following four cases.

Case 1 Plan for four routes with the same operation conditions as the experiment

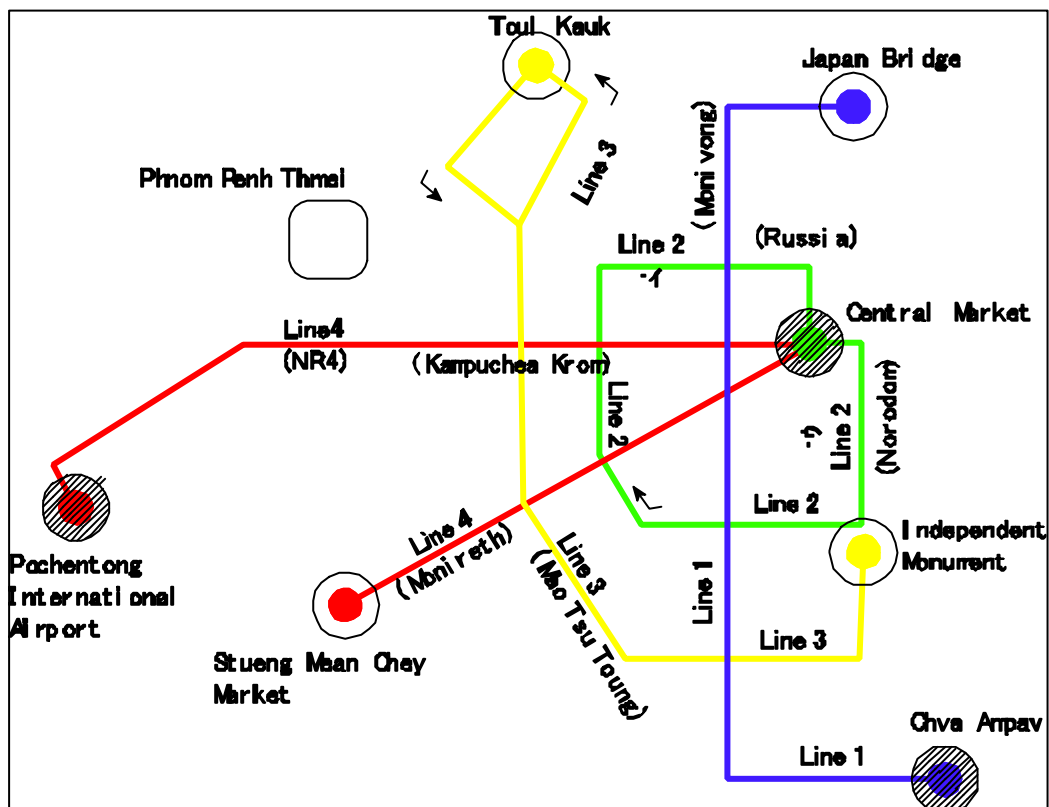
Case 2 Plan for nine routes with the same operation conditions as the experiment

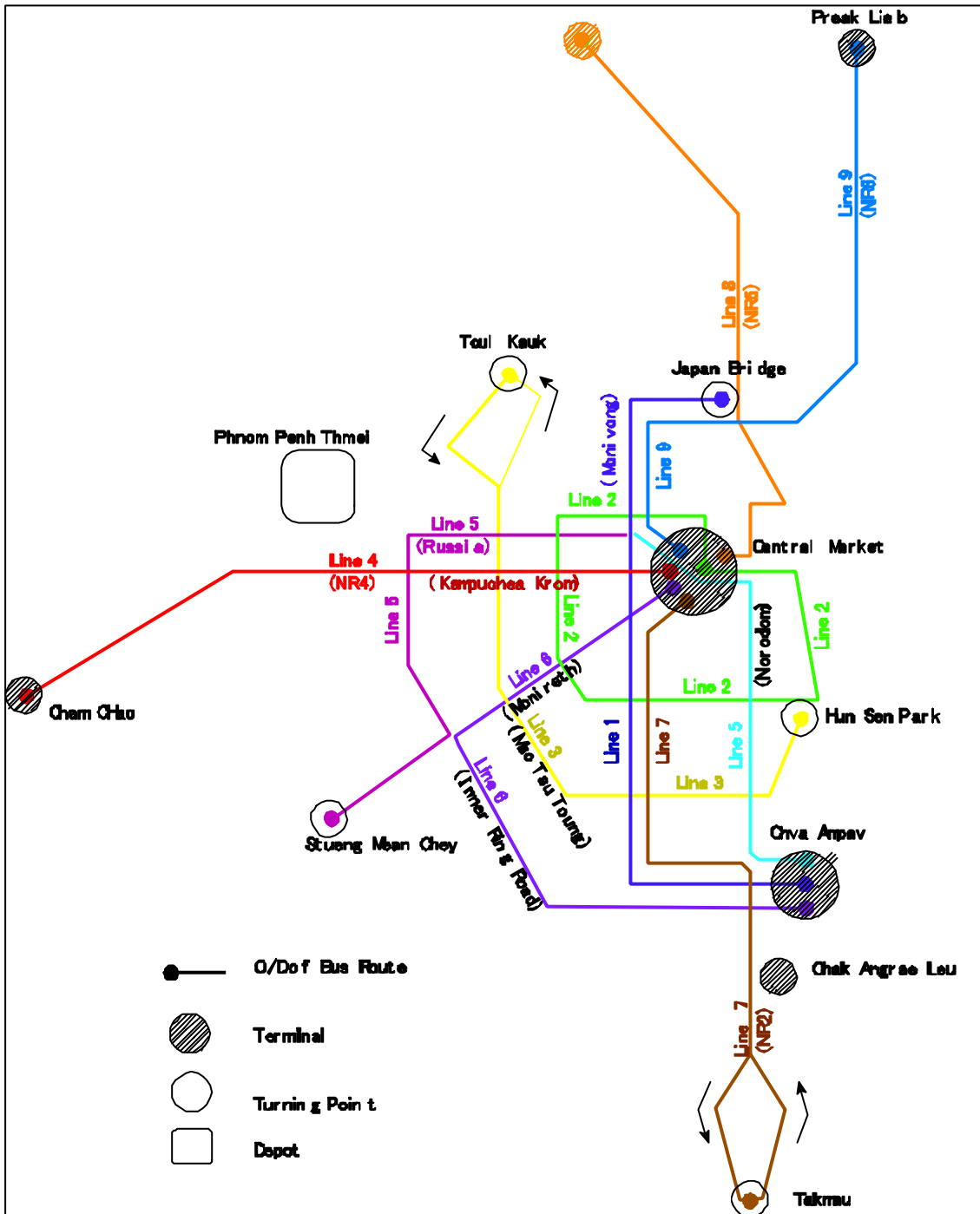
Case 3 Plan for four routes with the improved operation conditions

(Fare level falls 10% by issue of a coupon ticket and a commuter pass and Access time decreases by installation of the parking lot for bike to the bus stop.)

Case 4 Plan for nine routes with the improved operation conditions

Bus Route





A22.4.2 PREDICTION RESULT

The number of passengers in case operation conditions have been improved is predicted to be from 23,000 persons for the four routes to 37,000 persons for nine routes.

	Case1	Case2	Case3	Case4
Bus Passenger Commuting,School Business,Shopping	9,763	15,401	13,920	22,177
Long Distance P	2,220	3,690	2,220	3,690
Airport access	670	670	670	670
Other Passenger (40% of above trip)	5,061	7,904	6,724	10,615
Total	17,714	27,665	23,534	37,152

The ratio of the amusement passengers at the experiment was used for other passengers' ratio.