

## 4.3 Organization and Management of RBA Highway Maintenance

### 4.3.1 Introduction

The organization and management of the RBA highway maintenance lies within a classical organizational structure. The RBA highway maintenance activities are classified into two main types: highway structural maintenance, and highway routine maintenance. The highway structural maintenance includes highway rehabilitation, pavement surface reshape and overlay, pavement overlays, and surface dressing. The highway routine maintenance includes urgent potholes repair, crack sealing, sign and guard rail repair, vegetation and side slope control, road marking refurbishment, lighting and signal repairs, and other shoulder works.

### 4.3.2 Organization Of Structural Maintenance

For management of the structural maintenance, the procedure used is based on local knowledge of the road network in each district. Each district maintains a highway record which is used to determine the quantities for structural maintenance projects. A structural maintenance program is submitted annually by each district to RBA headquarter based upon ad hoc inspections and local knowledge of the highway network.

An engineer from the RBA central administration visits the district to investigate and discuss the submission, and a written evaluation of each submission is submitted to the head of the central administration for highway operation. The RBA headquarter for traffic census supplies the central administration for highway operation with traffic data for prioritizing the annual RBA structural maintenance program. The central laboratory maintains records of soil, terrain and climate which are used also in evaluating structural maintenance projects submitted by the districts. The districts categorize their annual submissions of structural maintenance projects in accordance with three levels of priority. Priority one, the most important, is applied to roads not treated for at least the last past five years.

The written report on each project submitted to the head of the central administration for highway operation, is followed by a costed prioritized list of projects for the entire RBA highway network prepared mainly on subjective basis, taking into account traffic data and tests from the central RBA offices. The proposed annual structural maintenance program is then submitted to the chairman of RBA, and for the Ministry of Finance for approval. For the Ministry of Finance funded program, any underspending at the end of a fiscal year reverts to the Ministry of Finance which has the effect that all projects must be completed within the financial year, whereas "carry-over" is permitted only for projects funded by the fuel funds or the fees collected from toll roads (see section 4.4.1). Following the allocation of

funds from the three sources, the maintenance program is finalized and the districts are then notified of their accepted projects. The structural maintenance program is solely based on a subjective assessment of needs.

#### 4.3.3 Organization Of Routine Maintenance

The general directors of the districts have the complete authority over the determination of needs for routine maintenance on a subjective basis. There is no published guidance from RBA headquarter on the methods to be adopted by districts to determine their routine maintenance needs. There is no published guidance also on priorities for routine maintenance activities to be adopted when formulating a program, so as to control the spending of the allocated funds. The districts directors of RBA are allocated funds to purchase materials needed for routine maintenance based on characteristics of the districts. The routine maintenance is carried out in each district by the RBA direct labor force. RBA headquarter control the expenditure on materials, but the ministry of finance directly fund wages of the labor force, fuel, and equipment. The control is done by means of regular visits to the districts, and monthly written reports are submitted from each district to the head of the central administration of highway operation. These reports include information about type, source, and quantity of materials consumed.

#### 4.3.4 A Study For A Computerized Road Maintenance Management System For The Inter City Highway Network

Within the framework of a project for improvement of highway maintenance financed from a loan from the World Bank, a study to develop a computerized system for highway maintenance management had been done. The project started at the beginning of 1985 and ended in the year 1990. The project included other important elements concerned with the purchase of road maintenance equipment, upgrading of the RBA training center and central laboratories with the delivery and installation of the needed testing equipments, developing of training programs including the provision with more than thirty training manuals both in English and in Arabic, establishing of a permanent traffic counting program together with the necessary traffic counters and hardware equipments and software, etc. The loan amounted to 26 million US\$, in addition to the local investment cost component.

Within the framework of the above mentioned project, a computerized database highway maintenance management system on an IBM AT was developed during a period of 8 months and delivered to RBA in December 1987. This system could store the data and provide the analysis. However, this system has not been put into implementation since that time due to the lack of well trained operating personnel. The system applies data collected through simple RI methods, and

could also use the data available from the permanent traffic counting program, which was completed in 1990. RBA has started in December 1991 the collection of the RI data necessary for the operation of this computerized system.

There is the need for highway code of practice, highway standards and specification, to operate the system effectively. These should be applied to accurate measurements of characteristics of the highway (road inventory) and their structural condition and traffic use. An explicit threshold values for pavement treatments for structural as well as routine maintenance could then be developed and input to the program to reveal reliable results.

#### 4.4 Current Expenditure On Inter City Highways

##### 4.4.1 Road Maintenance Expenditure

Based on data collected from RBA, following are the total expenditure for road maintenance during the last 5 years, in current prices:

Table 4-4-1 Road Maintenance Expenditure

Year	Expenditure(LE)
1987/1988	34,908,900
1988/1989	56,608,900
1989/1990	83,108,900
1990/1991	100,074,450
1991/1992	121,000,000

The above figures are financed through budgeting from the Ministry of Finance. Added to this, comes the fuel taxation revenue, which amounts to about 22 M.LE annually. Also, revenue from the 4 toll roads adds another 17 M.LE in 1992, which should be expended on the improvement of the level of service and maintenance only on the roads subject to toll.

According to the estimates of the RBA Director, 85% of the total expenditure are assumed for structural maintenance, and 15% for routine maintenance.

##### 4.4.2 Structural Maintenance Expenditure

Structural Maintenance is done by road construction companies. Structural maintenance includes rehabilitation, reshape and overlay, overlays, and surface dressing. There are four public sector specialized road construction companies belonging to the Ministry of Transport, and another 6 private and public sector companies belonging to other ministries working in structural maintenance for the 10 districts of RBA in the fiscal year 1991/1992. These companies have construction capacity more than that utilized in 1992. Reviewing the projects under construction in May 1992 (see Table 4-4-2), it has been found that structural maintenance is performed at the rate of about 900Km per year for the inter city road network of a total link length of 14,088Km under the jurisdiction of RBA.

Average prices for typical structural maintenance works are as follows:

- Rehabilitation works (including earth works with depth of 1.0m, base coarse 25cm, surface asphalt coat, binding coarse 5cm thick, surface asphalt coat, surface coarse 5cm thick); 22.0 LE/m<sup>2</sup>
- Reshape and overlay works (surface asphalt coat, re-

- shape repair of 5cm thick, surface asphalt coat, surface coarse 5cm): 10.0 LE/m<sup>2</sup>
- Overlay coarse (including surface coat, 5cm surface coarse); 5 LE/m<sup>2</sup>

Table 4-4-2 RBA Current Structural Maintenance Projects (1)

No	DISTRICT	GOVERNORATE	Company	NAME OF ROAD
1	CANAL & SINAI	ISMAILIYA	1	ISMAILIYA/FAYED/FANARA/SUEZ
2	WEST DELTA	MARSA MATROUH	1	MARSA MATROUH/SEDI BARANI
3	EXPRESS ROADS	BEHEIRA	1	DESERT WAY(km105-km70)
4	QENA	QENA	1	KEFT/ELFAUAKHEER/ELKOSBER
5	MIDDLE DELTA	BEHEIRA	1	AGRICULTURAL WAYKAFR ELZYAT/ETAI ELBAROUD
6	EAST DELTA	PORT SAID	1	ELDEEBA/ASHTOOM ELGAMEEL
7	CANAL & SINAI	SOUTH SINAI	1	ELTOUR/KATREEN
8	CANAL & SINAI	NORTH SINAI	1	ELKHAROBA/ELKORBA
9	EXPRESS ROADS	BEHEIRA	1	EGY.-ALEX. DESERT(FROM km70 TO km40)
10	RED SEA	RED SEA	1	ELKOSAYR/ELFAWAKHERSECOND STAGE
11	ASYOUT	ASYOUT	2	ASYOUT/DARANKA/ELGHANAYM
12	WEST DELTA	ALEXANDRIA	2	AGRICULTURAL FROMDAMANHOOR TO ABO HOMOUS
13	QENA	QENA	2	ESNA-ELSAIDA WEST DELTA
14	WEST DELTA	MARSA MATROUH	3	SEDI BARANI/ELSALOUM
15	WEST DELTA	ALEXANDRIA	3	AGRICULTURAL WAYITAI ELBROUD/ DAMAHOOR
16	EXPRESS ROADS	ELBEHIERA	3	DESERT WAY(km123-km56) FROM ALEX.
17	EXPRESS ROADS	ELBEHIERA	3	EGY.-ALEX. DESERTFROM(km40-km70)
18	MIDDLE DELTA	KAFR ELSHIEKH	4	SEDI SALEM/DEMRO ELHADADI/TOLOMBAT ELZEANI
19	ASYOUT	ASYOUT	4	ASYOUT/ELKHARGA FROM(km100-km173)
20	WEST DELTA	ELBEHIERA	4	ABO HOMOS/KAFR ELDAWAR
21	ASYOUT	ELWADI ELGIDED	4	NAGA ELDEER/ELDIABAT
22	CENTRAL	ELGIZA	5	ELHARAM/ELWAHAT(SECOND STAGE)
23	CENTRAL	ELGIZA	6	ELHARAM/ELWAHAT(FIRST STAGE)
24	ELCANAL & SINAI	NORTH SINAI	6	BEER ELTAMAD/RAS ELNAKAB
25	ELCANAL & SINAI	NORTH SINAI	6	NAKHL /ELTAMAD
26	CENTRAL	ELGIZA	7	ELHARAM/ELWAHAT(THIRD STAGE)
27	ELCANAL & SINAI	NORTH SINAI	8	SEDR ELHETAN/NAKHL
28	ELCANAL & SINAI	SOUTH SINAI	8	RECONSTRUCTION OFELTOOR/ELSHAT ROAD

Name of Companies:

- 1:Nile Co. for Road and Bridges
- 2:Nile Co. for Roads Construction
- 3:Nile Co. for Construction and Pavement
- 4:Nile Co. for Desert Highways
- 5:Galal El sherif Partners Co.
- 6:Hassan Mohamed el Manaily Co.
- 7:Arab Co. for Construction and Quarries Works
- 8:Arab Contractors Co.

Table 4-4-2 RBA Current Structural Maintenance Projects (2)

No.	ROAD DESCRIPTION				WORK ITEMS (QUANTITIES)						Const. Period (month)	Total Cost (1,000 LE)
	LENGTH (Km)	CRGWY WIDTH (m)	SHOULDER EARTH (m)	SHOULDER PAVED (m)	EARTH WORK (m3)	BASE COARSE WIDENING (m2)	BASE COARSE STRENG (m2)	REPAIR (m2)	BINDING COARSE (MACADAM) (m2)	SURFACE COARSE (1000m2)		
1	86.90	8.00	2.00	0.00	300,000	121,000	750,000	0	664,000	664.0	24.0	11,793.1
2	135.00	7.50	2.00	1.50	420,000	0	711,000	0	1,470,000	1,476.0	18.0	18,016.8
3	35.00	7.50	2.00	2.00	0	0	0	15,000	333,000	333.0	13.5	3,903.0
4	90.00	8.00	2.00	0.00	200,000	700,000	65,000	0	720,000	720.0	20.0	11,263.4
5	16.00	7.50	1.00	2.00	0	0	0	3,000	180,000	155.0	10.0	2,305.3
6	16.00	8.00	2.00	1.50	10,000	0	0	7,000	200,000	200.0	12.0	2,527.3
7	60.00	6.00	2.00	0.00	300,000	0	240,000	0	240,000	240.0	18.0	4,480.0
8	30.00	6.00	0.50	0.00	60,000	0	200,000	0	0	180.0	12.0	2,896.2
9	30.00	7.50	2.00	2.00	12,000	0	0	4,000	290,000	290.0	12.0	2,848.0
10	90.00	8.00	3.00	0.00	220,000	64,600	720,000	0	720,000	720.0	22.0	7,284.5
11	58.00	6.00	2.00	0.00	420,000	0	230,000	0	400,000	400.0	34.0	6,851.4
12	20.00	7.50	1.00	2.00	40,000	0	30,000	0	220,000	190.0	10.0	3,225.6
13	37.50	6.00	2.00	0.00	90,000	0	187,000	2,000	325,000	325.0	15.4	4,626.1
14	95.00	7.50	3.00	3.00	250,000	0	500,000	0	1,050,000	1,050.0	28.5	12,867.0
15	27.00	7.50	1.00	2.00	60,000	0	30,000	8,000	290,000	260.0	12.0	4,042.0
16	67.00	7.50	2.00	2.00	30,000	0	0	13,500	637,000	637.0	21.1	6,279.8
17	30.00	7.50	2.00	2.00	12,000	0	0	5,000	290,000	290.0	12.0	2,948.0
18	21.00	6.00	1.50	0.00	30,000	25,500	110,500	0	132,500	102.0	36.0	2,831.2
19	73.00	7.50	2.00	0.00	450,000	0	550,000	0	500,000	500.0	24.0	11,011.0
20	12.00	7.50	1.00	2.00	20,000	0	6,000	6,000	120,000	114.0	10.0	1,601.6
21	30.00	7.50	3.00	0.00	90,000	0	240,000	0	235,000	235.0	13.0	3,876.1
22	105.00	7.50	3.00	0.00	400,000	0	210,000	50,000	795,000	795.0	45.0	7,078.0
23	102.00	7.50	3.00	0.00	350,000	0	210,000	50,000	775,000	775.0	40.9	6,534.8
24	60.00	7.50	0.00	2.00	498,322	0	375,000	0	945,000	755.0	36.9	18,617.1
25	50.00	7.50	0.00	2.00	630,469	0	350,000	45,000	600,000	600.0	24.2	14,407.8
26	100.00	7.50	3.00	0.00	500,000	0	241,000	50,000	878,750	905.0	53.9	10,275.1
27	56.00	11.50	2.00	0.00	450,000	0	365,000	20,000	335,000	650.0	19.0	9,586.3
28	6.00	0.00	0.00	0.00	73,000	0	50,000	750	70,500	70.5	6.0	1,549.0
Total											603.4	195,525.3

4.4.3 Routine Maintenance Expenditure

Routine maintenance is done by RBA own manpower and equipment and district purchased material. Routine maintenance works include repair of road sign, guard rail, culverts and ditches, vegetation and side slope control, road edge sweeping, shoulder good making, road marking painting, bituminous patching, crack sealing and finally emergency base and potholes repairs. Total expenditure for routine maintenance during the month of May 1992 spent by the ten districts of RBA was 1,067,949 LE as given in Table 4-4-6 for the inter city network under their jurisdiction. Quantities by type of work were as follows:

Table 4-4-3 Routine maintenance for carriageway and shoulders

Work Items	Quantities
a. Patching with asphalt mix	15,880 m <sup>2</sup>
b. Cracks filling with bituminous material	444,500 m <sup>2</sup>
c. Removing failed areas	4,030 m <sup>2</sup>
d. Construction of base coarse	3,167 m <sup>2</sup>
e. Construction of surface coarse	2,952 m <sup>2</sup>
f. Completion of shoulders	21,525 m <sup>3</sup>
g. Compaction and reshaping of shoulders	986,000 m <sup>2</sup>
h. Removal of sand and debris	53,760 m <sup>3</sup>
i. Pitching	0 m <sup>3</sup>
j. Removal of artificial humps	25 No

Table 4-4-4 Works for traffic safety

Work Items	Quantities
a. Installation of fixing points	377 No
b. Installation of cats eyes	9,850 No
c. Installation of traffic signs	1,182 No
d. Removal and renewal of signs	233 No
e. Road marking, white	339 Km
f. Road marking, yellow	320 Km
g. Irrigation of trees and median strip	457 Km
h. Plantation	17,350 No
i. Removal and cut of grass	127,000 m <sup>2</sup>
j. Maintenance of median strip	211 Km

Table 4-4-5 Works for bridge maintenance

Work Items	Quantities
a. Maintenance of bridge flour	300 m <sup>2</sup>
b. Painting of bridge parapets	9145 m
c. Painting of curbs and columns	35510 m
d. Bridge cleaning	2145 m <sup>3</sup>
e. Footpath maintenance with mastic asphalt	- m <sup>2</sup>
f. Bridge illumination	5 No
g. Bridge parapets, installation	72 m
h. Bridge parapets, maintenance	360 m

Table 4-4-6 RBA Routine Maintenance Expenditure  
by District

District Name	Total Cost (LE)
1 Central District	149,920
2 Second District, Ismailia	46,481
3 Third District, Zagazig	83,041
4 Fourth District, Tanta	246,783
5 Fifth District, Alx.	159,250
6 Sixth District, Beni Suef	85,209
7 Seventh District, Asyot	128,756
8 Eighth District, Qena	64,105
9 Ninth District, Red Sea	52,202
10 Express Roads	52,202
Total	1,067,949

#### 4.4.4 Road Investment Expenditure

The expenditure on inter city highway maintenance mentioned above, does not include any figures for road development, whether it is expansion of existing roads, or construction of new roads. This type of expenditure is considered as investment projects and are normally financed by the National Investment Bank. Current inter city road investment projects carried out by the Ministry of Transport are illustrated in Table 4-4-7. Examining Table 4-4-7 reveals that the annual investment on inter city road is in the rate of 78 M.LE. Average road construction cost per kilometer could be assumed to be half a million LE, consequently 150Km of new two-lane highways could be assumed to be added to the inter city highway network.

Added to the expenditure mentioned before comes another 54 M.LE spent annually by RBA of the Ministry of Transport for building bridges to serve the expansion on inter city road transport. In the year 1992 there are 15 bridge projects over the river Nile and on main canals and roads.

Also, the Ministry of Development build additional important urban as well as inter city development road projects. Average expenditure on inter city highway development projects in the third 5-year development plan of the Ministry of Development is 60 M.LE per year, covering about 11 projects. These inter city development highway projects are mainly in Sinai, Red Sea, Western Coast, Aswan High Dam and New Valley areas.



Table 4-4-7 RBA Current Investment Projects

DISTRICT	GOV	NAME OF ROAD	ROAD DESCRIPTION			
			ROAD LENGTH	CRGWY WIDTH	SHOUL WIDTH EARTH	SHOUL WIDTH PAVED
			(Km)	(m)	(m)	(m)
1 MIDDLE D	QAL/MIF	AGRI. HWY QUESNA/BERKET ELSABA	18.00	10.50	1.00	1.00
2 MIDDLE D	QAL	BANHA/QUESELSABA (CAIRO DIR.)	18.00	10.50	1.00	1.00
3 MIDDLE D	QAL	BANHA/QUESELSABA (ALEX. DIR.)	18.00	10.50	1.00	1.00
4 WEST D	WDS	MARSA MATRBARANI (TOWWAY)	135.00	7.50	2.00	3.00
5 BENI SWEF	FAY	FAYOUM/CAIRO	44.00	7.50	1.00	2.00
6 BENI SWEF	FAY	CAIRO/FAYODEVIDED(CAIRO DIR.)	37.00	7.50	1.00	2.00
7 ASYOUT	ASY	MINIA/ASYOUT	75.00	7.50	1.00	2.25
8 WEST D	WDS	SIDE BARAN(DEVIDED)	95.00	7.50	3.00	3.00
9 QENA	QEN	MONUMATES LOUXER WEST NILE	18.00	8.00	2.00	0.00
10 CENTRAL	QAL	MOSTOROD/KOBRY ELMONEER	23.00	8.00	2.00	2.00
11 CANAL&SINAI	ISM	ABO SOLTAN(DEVIDED)	32.00	7.50	1.50	0.00

WORK ITEMS (QUANTITIES)							CONST. PERIOD	TOTAL COST	COST/ Km
EARTH WORK	BASE CORSE WID	BASE CORSE STRENGTH	REPRAIR	BINDER CORSE (MACADAM)	SURFACE CORSE	(month)			
(m3)	(m2)	(m2)	(m2)	(m2)	(m2)	(month)	(1,000LE)	(LE/Km)	
1	120,000	186,000	0	8,000	450,000	450,000	40.00	9,287.9	515,994
2	60,000	93,000	0	4,000	225,000	225,000	40.00	4,210.8	233,932
3	60,000	93,000	0	4,000	225,000	225,000	40.00	4,645.5	258,086
4	200,000	1,350,000	0	0	1,285,000	1,285,000	12.00	24,488.5	181,396
5	1,100,000	1,046,000	0	0	996,000	996,000	41.90	23,404.4	531,918
6	475,000	475,000	0	0	450,000	450,000	41.90	10,855.1	293,381
7	4,100,000	940,000	0	0	960,000	960,000	43.40	36,834.6	491,127
8	300,000	950,000	0	0	905,000	905,000	12.00	21,483.2	226,139
9	325,000	65,000	0	0	225,000	175,000	21.00	3,286.3	182,572
10	350,000	202,000	0	16,000	360,000	360,000	34.30	9,561.7	415,726
11	281,000	275,000	0	0	265,000	265,000	28.50	4,764.1	148,878
TOT	7,371,000	5,675,000	0	32,000	6,346,000	6,296,000	355.00	152,822	297,899

#### 4.5 Toll Road System In Egypt

Toll roads in Egypt are established according to Law number 146 of the year 1984, after the doubling of the Cairo/Alexandria desert road and before opening it to traffic. The main objective of the law is to improve the service and to insure the highest safety levels for road users, through improvements financed from the toll fees collected according to the above law. Law 146 of the year 1984 has added a new article to Law number 84 of the year 1968 for public roads. This new article specifies that, it is possible, with respect to express roads which has to be specified by a

decree issued from the cabinet, and which has alternative routes to substitute them, to assume toll fees for their use. This new article is not applied to military, police or ambulance vehicles. Toll fees to be collected from the different vehicles is specified in the law as given in next paragraph.

The toll collected has to be kept in a separate account in the name of RBA. Expenditure from this account is assigned for raising the level of service and the maintenance and operation of the toll roads only. Expenditure has to be regulated by a decree to be issued by the Minister of Transport according to the recommendations of the board of directors of RBA. The law specifies that the administrative expenditure has not to exceed 10% from the annual toll collected.

Toll fees according to vehicle type in August 1992 were as follows.

Table 4-5-1 Toll by Vehicle

Vehicle Type	Toll/Ride
Private car or taxi	1 LE
Pick up, or light truck	2 LE
Bus	2 LE
Single truck	3 LE
Heavy truck	5 LE

Since issuing law 146 in 1984, following roads have been subject to toll after raising their level of service and after have been upgraded. The average monthly revenue in the year 1991/1992 has been calculated over the period July/April of the same fiscal year.

Table 4-5-2 Existing Toll Roads

Name Of Road	Date Opened to Traffic	Average Monthly Revenue(LE)	
		Year 90/91	Year 91/92
1. Cairo/Alex Desert	8/11/84	538,174	556,285
2. Haikstep/Belbis Des.	1/ 7/86	165,048	169,523
3. Cairo/Ismailia/Port-said Desert Road	15/8/89	445,065	452,105
4. Maadi/Kattamia/Ein-El-Soukhna Desert	15/8/89	178,881	196,267
5. El-Fayoum desert	1/7/92	N.A.	N.A.

As an example of the type of expenditure from the toll revenue, following is a list of works financed from toll revenue during the years 1990, 1991 and 1992 for

Cairo/Alexandria desert road.

Patching and strengthening works:

- from Km 70 till Km 105 from Cairo with total cost of 3,244,234 LE
- from Km 105 till Km 70 from Cairo with total cost of 3,903,000 LE
- from Km 40 till Km 70 from Cairo with total cost of 3,108,000 LE
- from Km 70 till Km 40 from Cairo with total cost of 3,133,000 LE
- from Km 123 till Km 56 from Alexandria with total cost of 8,755,100 LE

Level of service improvement works:

- delivery and fixation of ground reflectors (cats eyes) with a total cost of 1,036,625 LE
- construction of level crossings from Km 123 till Km 8 from Alexandria with a cost of 6,027,700 LE
- construction of rest houses and terminals on the road
- construction of steel overhead trusses for traffic signs (21 trusses)
- tree plantation of the median strip and on both sides of the road
- automation of toll station at Pyramid and Ameria
- provision of warning and information traffic signs.

According to the present laws, financing road investment costs through toll charges is not permitted in Egypt. Also, all toll roads in Egypt till now are desert roads with one or more substitute of agricultural road. The general policy in Egypt till now, is to apply toll only after a noticeable improvement has been introduced. As an example for the demonstration of this policy, is the improvement of the El-Fayoum desert road, which has been recently tolled. The cost of doubling and improvement of the road amounted to 43 M.LE for a total length of 93km, and has been financed from the Investment Bank as public expenditure. After all the works of the improvements has been completed, the road has been declared as toll road.

If the government policy is to finance road investment through tolling, then the first road could be the Cairo/Asyout desert road, which has got part of its financing through a Saudi loan.

## CHAPTER 5 PUBLIC PASSENGER TRANSPORT INDUSTRIES

### 5.1 Inter-City Bus

#### 5.1.1 Administration

Current administrative organizations covering the public transport sector (buses and taxis) are stated briefly below. A policy of deregulation has been adapted in the sector and governmental regulations are found minimal.

#### 1) Ministry of Transport, Communications and Maritime Transport

The ministry has no regulatory policies at present over the passenger fares, route licensing, location of terminals, etc. Currently public bus companies are able to increase the fare by 15 % annually. Since 1990 the decision of fare increase of certain routes, areas, or service classes have been matters by the company's management. Improvement and relocation of the bus terminal are determined and implemented by the bus company while the taxi terminals are by the governorate.

#### 2) Traffic Department

Traffic Department in each governorate is institutionally administered by Ministry of Interior. The department issues licenses of vehicles and driving permits as follows at its local offices.

- Vehicle license and mechanical inspections
- Validation license of commercial (transport business) service vehicles
- Driver licenses

The vehicles registered as taxis and buses are summarized in Table 5-1-1. Public buses including intra-governorate service and inter-governorate service have increased at 3.8% per annum during the years 1986-90, while taxis in all kinds increased at 4.0% per annum in the same period.

Table 5-1-1 Registered Taxis and Buses: 1986 - 90

Item	1986	1987	1988	1989	1990	Av Gr
Taxis	166119	175733	184358	191088	195070	( 4.1%)
Pub. buses	9293	9383	9852	10294	10768	( 3.8%)
Priv. buses	16109	16785	17873	15718	17118	( 1.5%)
Tourism buses	1963	2204	2579	3022	3463	(15.3%)
School buses	1076	1162	1286	1375	1463	( 8.0%)
Sub total	19148	20151	21738	20115	22044	( 3.9%)
Total	185267	195884	206096	211203	217114	( 4.0%)

Source : Central Traffic Agency and TPA, 1992

### 3) Terminal Committee

Taxi terminal committee is organized under the city council or the governorate to manage daily terminal operations. At a large terminal operating for 24 hours as Ahmed Helmi of Cairo, a number of staff are working in three shifts. Generally, terminals serve for 14 - 18 hours with minimal staff.

### 4) Holding Company

Under the policy to promote privatization of public enterprises, Holding Companies were promulgated by Public Business Sector Law 203 of June, 1991 and its Executive Regulations in October of the same year. In the case of transport sector, the Inland Transport Holding Company was formulated in the Ministry of Public Business Sector, under which 12 public corporations are affiliated. They are:

Public Corporation	No.
- Bus companies	4
- Trucking companies	5
- Water transport companies	2
- Vehicle repair workshop	1
Total	12

The Inland Transport Holding Company will propose a program to privatize its affiliates. However the program is under examination and not able to know the outline nor the schedule. It is said assets and capitals will be assessed and shares will be sold to private investors in a staged program. After the shift to the private sector, the company will be managed as a typical private enterprise with no subsidies from the government.

#### 5.1.2 Public Bus Companies

##### 1) Bus Operators

Public bus operators serving inter-governorate passenger movement can be classified as the four bus companies and a Super-Jet bus company. They are all or partly owned by the Egyptian Government. Each of the four companies has operational lines in its service area with some lines overlapping with other company. The names of the companies are:

- Upper Egypt Bus Company
- East Delta Bus Company
- Middle Delta Bus Company
- West Delta Bus Company

Daily operation of those buses was said based on a time

schedule determined by each company, but irregular movements were observed at terminals. The Federal Arab Land Transport Co. is now an Egyptian semi-governmental company with the chairman nominated by President. It operates the Super Jet buses, a high priced luxurious express bus service. However, the services are only six international routes and five domestic routes in the total of 58 buses in 1991.

There are private bus services run by manufacturing factories, offices, schools, etc. to transport workers and students, but they are not included in the public bus service. Chartered buses for tourists are not included also.

In Cairo, Alexandria and other major governorates, public bus service are operated by the governorate. They provide service to the travel within the governorate but a few of those lines cross the border to the neighboring governorates. They are not covered in this public bus survey.

## 2) Performances and Financial Statements of the Four Companies

Each of the four bus companies reports to the Inland Transport Holding Company of its annual operational performances and financial statements covering urban, local and inter city services. Those in 1989/90 and 1990/91 are summarized in Table 5-1-2. The followings are the excerpts of the table:

### (1) Fleet, efficiency and ages

It is understood the daily operation fleet is approximately 2,900 buses out of the total 3,600 buses of the four bus companies maintaining active vehicles at 80 % of that fleet. The fleet was mostly same with that in the previous year.

The annual average km of movement is calculated as 342km per day. It is likely a heavy use of bus like this would result in the bus life of 12 - 15 years maximum.

The vehicle age distribution of them indicates an average of 6.3 years at the end of the 1990/91, in which 43% of them have years of usage more than 9 years. New vehicles of 100 were added in late 1991, and currently at mid-1992 the average years in use would be 7 years.

The companies will need a substantial amount to replace the aged buses because buses used more than 10 years become less efficient and costly caused by frequent repairs and checking.

### (2) Passengers and passenger-km

Passengers of 1,037 millions were carried in 1990/91, a 6% increase from the previous year. The overall ratio of pas-

senger-km over seat-km at 139% is found in the figures of Table 5-1-2.

Table 5-1-2 Operations of Four Bus Companies:  
1989/90 and 1990/91 (1) Performance

Item	East Delta		Upper Egypt		Middle Delta		West Delta		Total	
	89/90	90/91	89/90	90/91	89/90	90/91	89/90	90/91	89/90	90/91
1 Fleet, Operation and Staff										
1.1 Total Fleet Number	1106	1110	1200	1200	834	800	480	490	3620	3600
1.2 Average Operating Fleet	1126	1119	1200	1200	806	797	465	475	3597	3591
1.3 Average Daily Operating Fleet	901	874	955	960	627	630	396	409	2879	2873
1.4 Operation Efficiency (%)	80.0	78.1	79.6	80.0	77.8	79.0	85.2	86.1	80.0	80.0
2 Production										
2.1 Total Bus-Km (1000 Bus.km)	99500	99600	134000	140000	64600	65100	52000	54000	350100	358700
2.2 Pass. Transported (Mill. Pass.)	283	292	430	450	203	230	62	65	978	1037
2.3 Pass.km (Million Pass.km)	5600	5850	7000	7392	4576	5033	2851	2994	20027	21269
2.4 Available Capacity (Mill.Pass.km)	4820	4878	5040	5250	2993	2956	2150	2186	15003	15270
2.5 Availability Ratio (2.3/2.4)	1.162	1.199	1.389	1.408	1.529	1.703	1.326	1.370	1.335	1.393
2.6 Av. Daily Operation Km/Bus	302	312	384	399	282	283	360	362	333	342
3 Employment										
3.1 Operating Employees Number	6530	6467	5494	5414	3888	3906	2235	2245	18147	18032
3.2 Administration Employees Number	1914	1883	1930	1910	966	890	325	320	5135	5003
3.3 Total Employees	8444	8350	7424	7324	4854	4796	2560	2565	23282	23035
3.4 Operating Employees Wages(1000 LE)	16346	18493	20380	21880	12500	12618	7418	8298	56644	61289
3.5 Admin. Employees Wages (1000 LE)	7604	8424	7160	7688	3003	3129	1389	1539	19156	20780
3.6 Total Wages (1000 LE)	23950	26917	27540	29568	15503	15747	8807	9837	75800	82069
3.7 Average Wage / Year (LE)	2836	3224	3710	4037	3194	3283	3440	3835	3256	3563
3.8 Employee/Op.Bus	7.5	7.4	6.2	6.1	6.0	6.0	5.5	5.4	6.5	6.4
4 Ave. Performance /Km										
4.1 Average Revenues /1000km (LE)	638.4	763.8	537.2	569.6	545.5	597.0	469.3	528.8	557.4	622.4
4.2 Average Cost /1000km (LE)	619.3	717.3	487.1	509.0	507.8	537.0	437.6	466.2	521.1	565.5
4.3 Net Surplus/Deficit /1000km (LE)	19.0	46.5	50.1	60.7	37.6	60.0	31.7	62.6	36.2	56.9
5 Ave. Performance /Op.Veh.										
5.1 Average Revenues /Veh. (LE)	56.4	68.0	60.0	66.5	43.7	48.8	52.5	60.1	54.3	62.2
5.2 Average Cost /Veh. (LE)	54.7	63.8	54.4	59.4	40.7	43.9	48.9	53.0	50.7	56.5
5.3 Net Surplus/Deficit /Veh. (LE)	1.7	4.1	5.6	7.1	3.0	4.9	3.5	7.1	3.5	5.7

Table 5-1-2 Operations of Four Bus Companies  
1989/90 and 1990/91 (2) Financial Statement(1/2)

Unit:1000 LE

Item	East Delta		Upper Egypt		Middle Delta		West Delta		Total	
	89/90	90/91	89/90	90/91	89/90	90/91	89/90	90/91	89/90	90/91
1 Assets										
1.1 Fixed Assets	127317	155198	145150	162780	94143	116769	61628	79397	428238	514144
1.2 Current Assets	50276	61365	30364	49124	26145	28111	22823	24924	129608	163524
1.3 Deficit Carried Forward	0	0	0	0	0	0	0	0	0	0
1.4 Total Assets	177593	216563	175514	211904	120288	144880	84451	104321	557846	677668
2 Capital and Liabilities										
2.1 Capital	24782	24782	25433	25433	30540	30540	11219	11219	91974	91974
2.2 Reserves	7342	9759	9738	14361	4619	5189	2890	4137	24589	33446

Table 5-1-2 Operations of Four Bus Companies  
1989/90 and 1990/91 (2) Financial Statement(2/2)

Item	East Delta		Upper Egypt		Middle Delta		West Delta		Total	
	89/90	90/91	89/90	90/91	89/90	90/91	89/90	90/91	89/90	90/91
2.3 Deprecation Allocation	54019	61765	63143	74830	34348	40177	20544	24356	172054	201128
2.4 Other Allocation	924	1141	1658	3713	168	166	4795	5975	7545	10995
2.5 Long Term Loans	74	74	58965	53522	6856	3500	18080	35760	83975	92856
2.6 Other Loans	10011	9541	684	615	4	47	14837	14037	25536	24240
2.7 National Investment Bank	49665	65006	0	0	34715	49096	0	0	84380	114102
2.8 Current Liabilities	30776	44495	15893	39430	9038	16165	12086	8837	67793	108927
2.9 Total Liabilities	177593	216563	175514	211904	120288	144880	84451	104321	557846	677668
3 Revenues										
3.1 Soled Services Value	63519	76076	71981	79749	35238	38867	24404	28557	195142	223249
3.2 Other Revenues	548	244	176	295	508	675	56	87	1288	1301
3.3 Current Revenue	64067	76320	72157	80044	35746	39542	24460	28644	196430	224550
3.4 Total Actual Revenues	66243	78690	73181	82773	38296	40854	26500	29046	204220	231363
4 Expenditures										
4.1 Wages	23950	26917	27540	29568	15503	15747	8807	9837	75800	82069
4.2 Material Requirements	17013	22927	18130	22565	8719	9524	5490	6776	49352	61792
4.3 Services Requirements	2083	2232	1828	2398	916	1087	891	1061	5718	6778
4.4 Others	18841	19414	17841	16811	7669	8602	7569	7501	51920	52328
4.5 Current Expenditure	61887	71490	65339	71342	32807	34960	22757	25175	182790	202967
4.6 Surplus of Current Operations (3.3-4.5)	2180	4830	6818	8702	2939	4582	1703	3469	13640	21583
5 Transfers										
5.1 Current Transfers Revenues	2176	2370	1024	2729	2550	1312	2040	402	7790	6813
5.2 Transfer Expenses	3420	5582	6494	7625	4846	5475	3087	3144	17847	21826
5.3 Deficit of Transfers Operations	-1244	-3212	-5470	-4896	-2296	-4163	-1047	-2742	-10057	-15013
6 Surplus										
6.1 Total Surplus	936	1618	1348	3806	643	419	656	727	3583	6570
6.2 Capital Profits	45	0	0	1025	387	149	51	61	483	1235
6.3 Net Surplus (6.1-6.2)	891	1618	1348	2781	256	270	605	666	3100	5335



### (3) Employees and wages

The total employees were 23,035 persons, and the average wage was LE 3,563 for the year 1990/91 ( LE 297 per month). The average staff of 6.4 per bus seems to show the Egyptian bus companies can be categorized in the group of better productive public bus corporations surveyed by a study of staff of the World Bank, being shown in Table 5-1-3. The table shows some private bus companies have less staff per bus than the public ones.

Upper Egypt Bus Company has developed a driver training course where about 40 new graduates of Technical High Schools are recruited and being trained to be bus drivers. The company maintains they have advantage in knowing the basis of vehicle mechanics taught at the High School.

### (4) Revenues and expenses

Every company reports no deficits in the revenue and cost statement of 1989/90 and 1990/91. Also no direct subsidies from the government are enumerated in these years.

### (5) Depreciation

Depreciation allocations of buses and other assets are enumerated on the balance sheets and the total of the allocation was LE 201,128,000 at the end of 1990/91. An amount of LE 29,074,000 was added in the depreciation allocation in 1990/91 from the previous year. Of this amount 70 % is for buses and 30 % is for other assets; and with a price of LE 230,000 is assumed for a common bus, the bus purchase in using the allocation can be calculated as in the followings.

$$\begin{aligned} \text{LE } 29,074,000 * 0.7 &= \text{LE } 20,352,000 \\ \text{LE } 20,352,000 / 230,000 &= 88 \text{ buses} \end{aligned}$$

If the existing fleet is the result of equal amount bought every year in the past and the average bus age is assumed at 12 years, the buses to be replaced in each year can be supposed as  $3600/12 = 300$  per year, which is more than 3 times larger than the above 88 buses. If higher priced buses with air conditions and better facilities are to be recruited the number of buses purchasable by using the allocation would be less than 88 vehicles.

As discussed above, it is evident the existing amount of deprecation allocation in the financial statement is not sufficient for the replacement of aged buses. Depreciation allocation was based on the prices of purchase which is not same as the current level. The amount of allocation as well as revenue have been not sufficient in the past. They should be restructured in the coming years, which might show deficits in reality, and needs of fare raises.

### 5.1.3 Bus Line Network

Each bus company has its exclusive service area which are divided into several divisions. Buses are allocated to those divisions and put into daily maintenance works. They are then mobilized into operation according to the time table of the division. Fig. 5-1-1 shows the roads on which buses are operated. Competitive influence among the bus companies are negligible, since each company has its main operation areas not overlapping each other. There are some routes overlapping under an agreement of two bus companies, with which they supply the same quality and service on the route. Data of bus trips and routes were shown by each bus company and the total trips are accumulated on road sections as in Fig.5-1-1. It seems the service covers most of main roads of the country.

Table 5-1-4 is the summary of lines and trips in categorized services. Average numbers of round trips per line is also calculated.

Table 5-1-4 Summary of Bus Lines and Trips, 1991

Level of Service		Middle Delta	West Delta	Upper Egypt	East Delta	Total
1 Deluxe	Line (a)	55	91	38	221	405
	Trip (b)	562.00	458.00	76.00	1,005.35	2,101.35
	(b/a)	10.22	5.03	2.00	4.55	5.19
2 Express	Line (a)	120	27	88	163	398
	Trip (b)	1,398.00	141.50	544.00	1,122.33	3,205.83
	(b/a)	11.65	5.24	6.18	6.89	8.05
3 Common	Line (a)	116	28	207		351
	Trip (b)	1,811.00	142.00	1,277.00		3,230.00
	(b/a)	15.61	5.07	6.17		9.20
4 Circulation	Line (a)	31				31
	Trip (b)	340.00				340.00
	(b/a)	10.97				10.97
Total	Line (a)	322	146	333	384	1185
	Trip (b)	4,111.00	741.50	1,897.00	2,127.68	8,877.18
	(b/a)	12.77	5.08	5.70	5.54	7.49
Fleet	Veh.	797	475	1,150	1,110	3,532
Trips/Fleet		5.16	1.56	1.65	1.92	2.51

### 5.1.4 Service

Service of the four bus companies are basically divided into two classes, each having its own fare rates. Generally the express service charges a higher rate by 30% over the common service.

- Common (ordinary service)

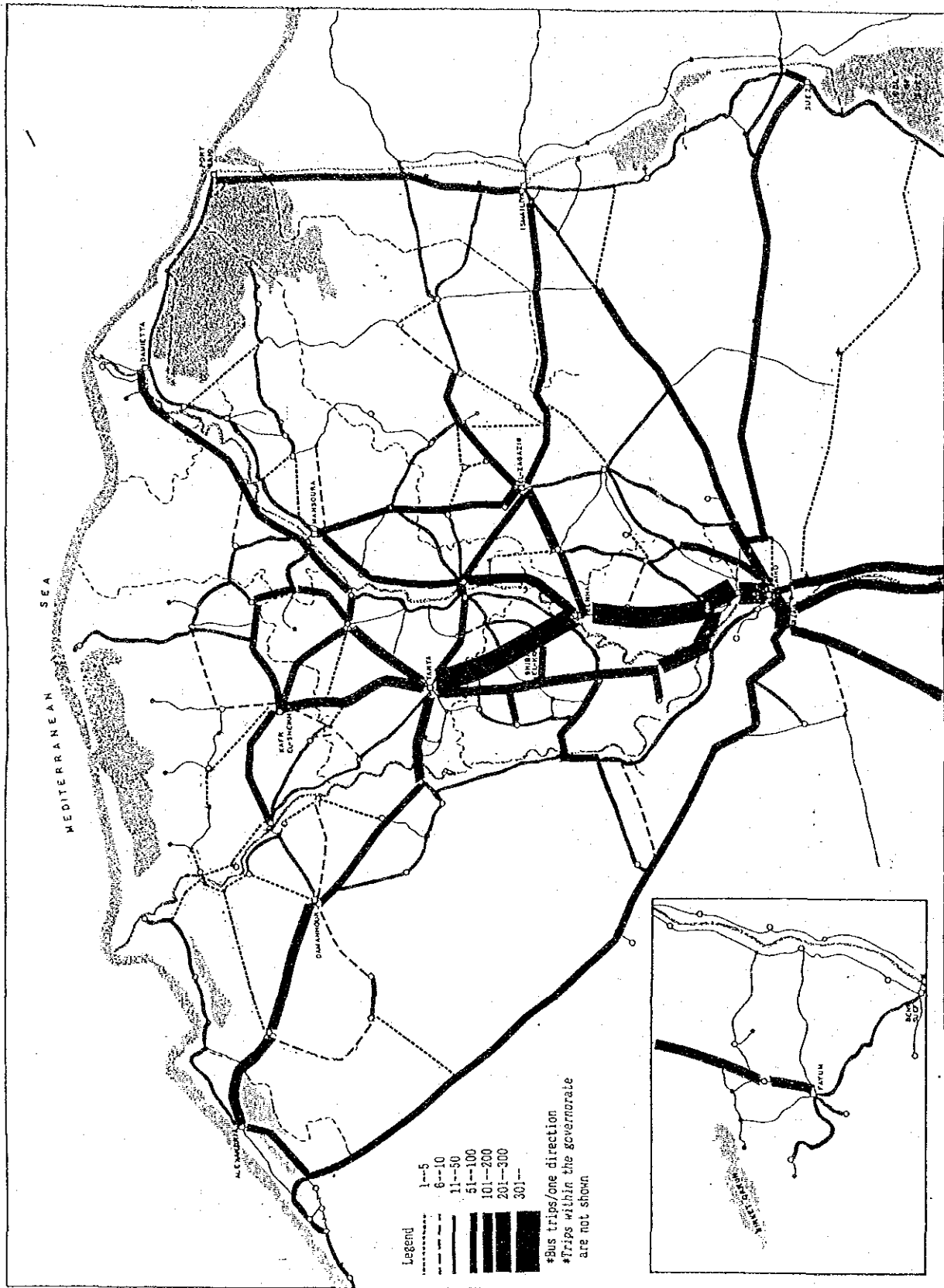


Fig.5-1-1 Intergovernorate Bus Trips (1)

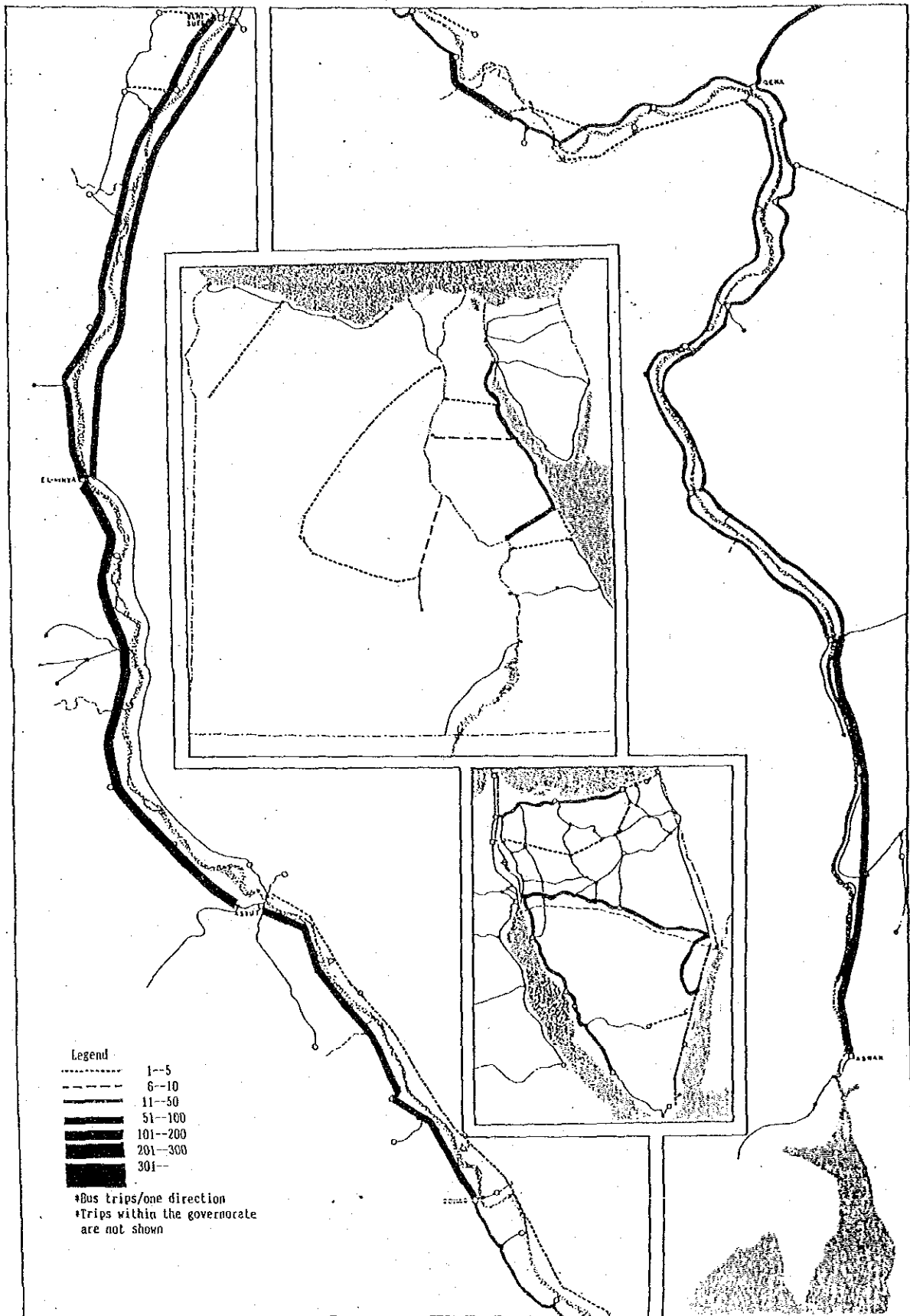


Fig.5-1-1 Intergovernorate Bus Trips (2)

- Express (no AC and no seat reservation)

Express service is expanded into the following luxurious service with additional fares, where the express service fare of the line (E) is the base and the fares on luxurious services are added on.

- a. Seat reservation            E \* 25 %
- b. Air conditioned            E \* 25 %
- c. Video and toilet            E \* 15 %
- d. Sales tax { E+E\*(a+b+c) } \* 5 %

Examples of the bus fare in different services are in Table 5-1-5.

Table 5-1-5 Bus Passenger Fares of Selected Routes (1)

Line/Company	km	Pass.Fare (LE/Psn)			
		Normal/ Econ.	Express	Deluxe	AC Golden Arrow
<b>1 Upper Egypt Bus Company</b>					
Cairo - Fayoum	115		2.50		
Cairo - Minya	250		5.50		7.00
Cairo - Safaga (Red Sea)	620				18.00
Cairo - Asyut	380		8.25		14.00
Cairo - Aswan	905		20.00		43.75
Sohag - Suez	620				18.75
Abu Qurqas (Minya) - Alex.	490				15.00
Dakla (New Vally) - Cairo	850		19.00		25.00
Asyut - Alex.	605				18.50
Sohag - Cairo	485		10.50		10.25
Fayoum - Sennouris (Minya)	30	0.40			
Sohag - Gerga (Sohag)	20	0.40			
Minya - Dairut (Asyut)	70	1.00			
Minya - Maghagh (Minya)	67	0.95			
Tahta (Sohag) - Tema (Sohag)	45	0.65			
<b>2 East Delta Bus co.</b>					
Cairo - Faquos (Sarkia)	125			3.50	
Cairo - Matariya (Dakahlia)	205				6.00
Cairo - Ismailia	139				5.00 5.25
Cairo - Damietta	191				9.00 11.00
Cairo - Suez	134				4.50 4.75
Cairo - Mansoura	127			5.50	6.00 6.50
Cairo - Ras El Bar	212				13.00 14.00
Zagazig - Cairo	85				3.00
Zagazig - Newaiba (S. Sinai)	610				31.50
Zagazig (Sharkia) - Alex.	210				5.25
Zagazig - Mansoura	55		1.75	1.75	
Port Said - Cairo	224				8.50 10.00
Port Said - Alex.	311				10.00 14.00
Ismailia - Qena	762				22.00
Mit Ghamr - Cairo	80				2.75
Benha - Cairo	65		1.25		
Benha - Kanater	38	0.60			
Damietta - Ras El Bar	18	0.50			
Ismailia - Fayed (Ismailia)	37	0.75			
<b>3 West Delta Bus Co.</b>					
Alex. - Cairo (Air Port)	250				11.00
Alex. - Matrouh	293				12.90
Alex. - Qena	805				35.40
Alex. - Hurghada (Red Sea)	815				35.90
Alex. - Mansoura - Port Said	356				15.66
Alex. - Cairo - Suez	396				17.40
Alex. - Kafr El Sheik	120	2.20	2.90		
Alex. - Edco - Rashid	73	1.30	1.75		

Table 5-1-5 Bus Passenger Fares of Selected Routes (2)

Line/Company	km	Pass.Fare (LB/Psn)		
		Normal/ Econ.	Express	Deluxe AC Golden Arrow
Damanhour-Kom Hamad-Cairo	172	3.10	4.15	
4 Middle Delta Bus Co.				
Cairo - Shebeen El Kom	70		1.50	2.60
Cairo - Shebeen El Kom	80	1.50		
Zefta-Shubra Bable-Mahala	35	0.60	0.75	
Tanta Mahalet Roh - Mahala	28	0.50	0.60	
Balteem - Mansoura	90	1.65	2.00	
Cairo - Tanob(Minufyia)	105			4.33
Cairo - Tanta	95		2.05	3.55
Samannoud - Zefta - Cairo	115		2.20	3.81
Mahala - Beyala - Balteem	95	1.65	2.00	
Cairo - Mahala	130		2.65	5.00
Sherbin - Belkas - Cairo	210		3.50	6.06
Sidi Salem - Cairo	165		2.85	4.93
Cairo - Mahala - Balteem	220		4.40	7.62
Kafr El Sheikh-Tanta-Arish	400			19.00
(Abrel Monem Ryad) - Balteem	225			10.00
Kafr El Sheikh - Suez	275			12.00
Cairo - Mansoura - Port Said	240			5.25
Mansoura - Mahala - Alex.	180			4.50

#### 5.1.5 Cost Performance

In order to discuss the financial revenue-cost relationship of the bus operation, each of four classes of the service is studied: economy(local), express, DX-AC, and super DX-AC.

##### (1) Revenue

The revenue of a bus per day on a route is estimated based on the following conditions.

##### -1 Passenger fares

The fare to be paid by a passenger for a distance in each class are shown in Table 5-1-5, through which the parameters of the fare model formulas are determined by the linear regression analysis. The result of the regression is shown below in Table 5-1-6 and Fig 5-1-2.

Table 5-1-6 Parameters of Bus Fare Model

Class	a	b	r <sup>2</sup>
Common	0.01795	-0.0328	0.98
Express	0.02191	0.0833	0.98
DX-AC	0.03157	0.7666	0.85
Super DX	0.04564	-0.2512	0.98

Fare (LE) = a \* (Distance km) + b

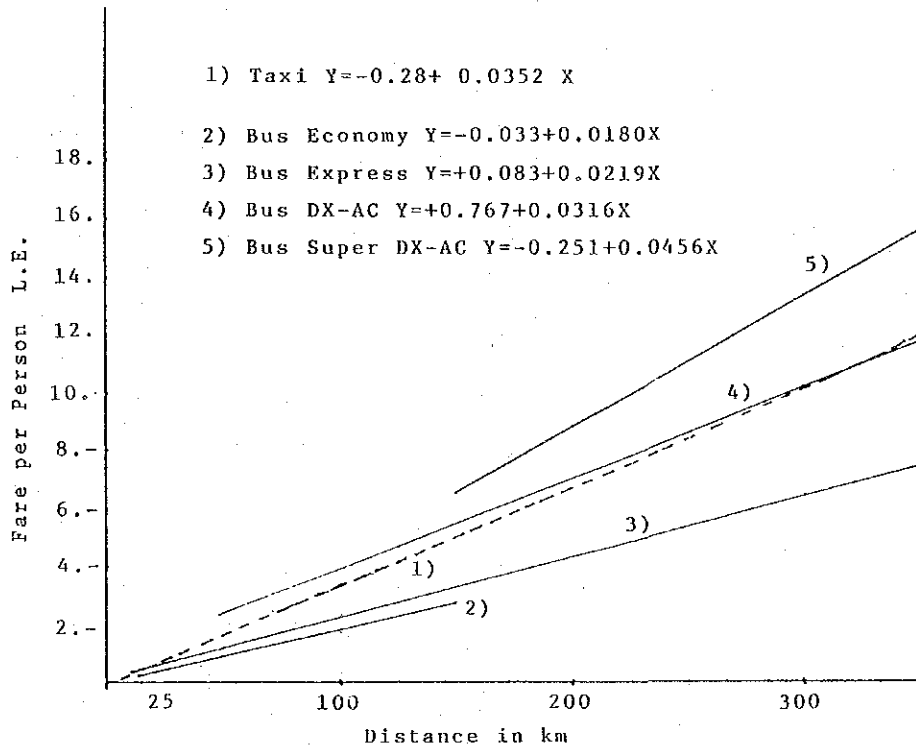


Fig. 5-1-2 Fare and Distance of Buses and Taxis

-2 Average occupants and movements

In order to estimate the revenue per day of a route in different classes, occupants and representative movements are determined as in Table 5-1-7.

-3 Revenue per day

The revenue of a bus per day by distance and by class are tabulated from which selected cases are shown in Table 5-1-8 afterward.

(2) Cost

A bus company has its branch offices covering its licensed area. Each office is responsible for its branch area. Vehi-



cles are not allocated to a particular route because of accidents, absent of drivers, occasional changes in passengers, and so on. It is common travel routes of a bus are not fixed over a week or a month. No data are available to show these actual movements. Under the circumstances, the cost estimates are conducted as follows. No terminal fee is levied on the buses departing the terminal since the terminal is managed by a bus company and the cost of terminal management is included in the overhead cost of the company. The overhead cost is a component of VOC per km.

Table 5-1-7 Bus Occupancy and Movements

	Common	Express	DX-AC	Sp. seats
1. Average occupants				
-1 Seats	52	48	44	40
-2 Occupants	42	38	35	32
-3 Occupancy -2/1	80 %	80 %	80 %	80 %
2. Averaged Movements				
-1 Annual km	67400	126400	178200	211000
-2 Daily km	185	350	490	580
-3 Net service km/dy	150	280	370	405
-4 Net service hours	7.0	7.0	5.7	5.8
-5 Travel speed km/h	22.0	40.0	65.0	70.0

Source: 1) From bus companies

Remarks; 1. Average occupants are determined by using the data commonly used by staff of bus companies

2-1 and 2-2 Average annual km is tabulated through the data. Rout distances in the common class are relatively shorter than other classes.

Express and DX-AC buses have their routes in medium and long distances, and the different daily kms of these classes are caused by mid-way stoppings.

Special seat (Super-DX) service does not stop on the way, having a longest distance of travel.

2-3...2-5 These figures are determined by studying available information from bus companies, which were thought mostly same with other countries. Here, the following definitions are used :-

net service km is 85%-70% of the daily km, and does not include non-passenger service movements. Net service hours do not include hours of waiting, repairing/checking, and non-revenue movements.

#### -1 Financial VOC

The basic vehicle operation costs are discussed in Chapter 9. These basic costs are divided into different classes each with variable (distance related) cost and fixed (time related) cost. Relative ratios of cost difference among the service classes are determined after studying data from the bus companies and they are shown in Table 5-1-8.

Table 5-1-8 Financial VOC by Class

Class	Fixed VOC		Variable VOC	
	LE/year	Ratio	LE/km	Ratio
Common	52553	1.00	0.213	1.00
Express	63064	1.20	0.213	1.00
DX-AC	89340	1.70	0.256	1.20
Super DX	127297	2.42	0.263	1.23

-2 Cost per day

Financial variable VOC is multiplied to the route distance km and trips per day to have a financial variable cost of a bus on a route in one day. Financial fixed VOC per day is obtained by dividing the annual cost by 365. The total of variable and fixed costs is the financial cost of the bus per one day. They are in Table 5-1-8.

(3) Revenue and Cost

Table 5-1-9 shows also the revenue, cost, and its balance of a bus engaged on a route service in one day.

Table 5-1-9 Revenue and Cost Comparison: Buses

Class	Distance km	Revenue	Cost	Ratio
		LE/day	LE/day	R/C
Common	75	113.27	176.78	0.64
Express	125	240.11	232.42	1.03
AC-DX	175	415.06	339.62	1.22
Super DX	175	574.31	455.54	1.26
AC-DX	275	413.00	339.62	1.26
Super DX	275	581.09	455.54	1.26

It is found in the table that the revenue is not sufficient to cover the financial operation cost in lower priced services of buses, while higher priced classes generate certain surplus over the cost. These findings would support the policies of bus companies which strengthen higher priced service in recent years. Currently bus companies provide discount/exemption services to students, policemen, military persons etc. as shown in Table 5-1-10. They are mostly in common, express and deluxe services and they have been not compensated by any government agencies. The amount of discount/exemption is not confirmed, but managers of bus companies estimate at 12-18 % of the revenue in those classes. If these service with no compensation are taken into account in the above revenue-cost performance of common and express services, the revenue would be less and the ratios in those low fare classes in Table 5-1-9 would be less favorable.

Table 5-1-10 Bus Fare Reduction / Exemption  
( in % )

	Commo	Exp/Dx	Dx-AC	Spec.Sts
Central Gov. Staff	-	-	-	-
Governorate staff	-	-	-	-
Policemen	50	50	-	-
Military Persons	50	50	-	-
Students	40	40	40	-
Children -12 yrs.	50	50	-	-
Others:				
Jury(justices)	50	50	-	-
Journalists	50	50	-	-
Handicapped & blind	50	50	-	-
Retired & Inj.(military)	100	100	100	-

Source:Upper Egypt, Middle Delta & East Delta Bus Companies  
( February, 1993)

Notes: Persons in MOT are given reduction and exemption of the fare. The extent of reduction & exemption depends on their post & Agency in MOT. Number of these staff are quite small in the passenger volumes carried.

## 5.2 Inter-City Taxi

### 5.2.1 Vehicles

Generally the inter city taxi vehicle is owned privately and driven by himself as owner/driver. But, there are some owners who rent them to others with negotiated conditions and fees. In any case the driver needs the degree 3 professional driving license and the vehicle with a taxi license and a mechanical inspection certificate. The previous Table 5-1-1 shows changes in the vehicles registered as taxis and buses of the country from 1986 to 1990. Peugeot 504 with 7 seats have been used while microbuses with 10-16 seats increased their share in the recent years. No separate data of inter-city taxis are available. Taxis in the total increased at 4.1% per annum during those five years. Inter-city taxis would have increased probably at the similar growth tendency, and they were 74,200 in 1984, according to the Study of Inter City Taxi Services (ECOGIM and HFA, 1985), and if the above rate is applied the number would be 102,300 in 1992.

Majority of the inter-city taxis are Peugeot 504 of 7 seats for passengers. Micro buses of 11 - 16 seats is said to have increased its share in the inter-city taxis approaching to a 40 or 50 %, but no statistical data are available. The vehicle type is selected by the owner from his expectation in the taxi business.

The followings are practices in regulating the number of the taxis:

- Licensed taxi fleet on main routes in the delta area are determined by meetings of the inter-city taxi terminal managers, and the number of taxis is subject of revision every year.
- Taxis on local routes and in the Upper Egypt region where passenger demands are less, vehicle allocation by terminals in the governorates are much flexible. Drivers are able to shift their movement from a route to the other depending in changes in demand and queuing at the terminal.

### 5.2.2 Taxi network

The network of inter-city taxis is much more dense than buses. Small scale terminals are located most of the Markaz centers and the network extends on the national roads and local roads. Taxis go straight to the destination terminal, however some of long distance taxis stop at a road-side restaurant for tea and meals. Appendix 3 shows the inter-city taxi terminals surveyed in this study.

### 5.2.3 Services

There is no time table nor interval schedule of taxi departure. When passengers are full on the seats the taxi leaves the terminal.

Current passenger fares from Cairo and Giza to other cities are shown in Table 5-2-1 together with departure fees (carta fee) of the terminal. There is no difference of the fare per seat between the Peugeot and the Microbus on the same line. However, there is additional fare of LE 0.5 - 2.0 per seat when the travel goes night lately, depending on the negotiation with the driver.

Table 5-2-1 Taxi Passenger Fares and Taxi Terminal Fee

From CAIRO To	Dist (km)	Pass. Fare (LE)		Ter. Fee(LE)		From CAIRO To	Dist (km)	Pass. Fare (LE)		Ter. Fee(LE)	
		Peugeot	MicorBus	Peugeot	MicorBus			Peugeot	MicorBus		
Ahmed Helmi Terminal						Alexandria	220	8.00			2.00
Shebin El Kanater	30	0.75			0.50	Sabtiah Terminal					
Benha	50	1.25	0.50	0.75		Suez	134	4.00			1.90
Quesna	58	1.50	0.30	0.45		Ismailyia	139	4.50			2.00
Menyet El Kamh	65	2.00	0.35	0.45		El Qantara	170	6.00			2.60
Berket El Saba	65	1.75	0.45	0.65		Damietta	191	6.00			2.50
Shebin El Kom	70	2.25	0.60	0.75		Alexandria	220	8.00			3.00
Belbes	71	2.00	0.30	0.40		Port Said	240	7.50			3.00
Minuf	75	2.25	0.60	0.75		Arish	373	15.00			3.80
Zefta	80	3.25	0.40	0.60		Khazendara Terminal					
Mit Ghamr	80	3.25	0.40	0.60		Ashmoun	45	1.75			
Santa	85	3.50	1.00			Telwanah	50	1.50			
Zagazig	85	2.50	0.45	0.60		Bagour	52	1.75	0.75		1.00
El Shuhada	88	2.75	0.60	0.85		Shinshour	55	1.75			1.20
Tala	90	2.75	0.60	0.75		Minuf	63	2.25	1.20		1.50
Abu Hamad	91	3.00	0.90			Mezallat Terminal					
Tanta	95	3.50	1.00			Shebin El Kanater	30	0.75			0.50
Diarb Negm	105	3.00	0.50			Aghour	32	1.10			1.00
Moderyet El Tahrir	110	2.00	1.00			Toukh	38	1.15			1.00
Abu Kebir	110	4.00	1.00			Monieb Terminal					
Kafr El Zayat	115	4.00	1.00			Beni Suef	115	4.50			0.60
Senbellawen	115	3.00	0.50			Maghagha	183	5.50			0.65
Mahala	120	4.00	1.00			Beni Mazar	198	6.00			0.70
Faqous	124	4.50	1.50			Samalot	222	7.00			0.75
Mansoura	127	5.50	0.60			Minya	250	8.00			0.85
Kafr El Sheikh	135	3.45	1.55	2.40		Abu Herkas	275	8.50			0.85
Belkas	150	6.00	0.75			Mallawi	303	8.50			0.85
Sherbin	152	6.00	0.75			Dairut	320	12.00			1.00
Beyala	155	3.45	1.55	2.40		Asyut	385	14.00			1.00
Dekernis	155	6.00	0.75			Sohag	485	17.00			1.25
Desouk	167	3.45	1.55	2.40		Qena	585	20.00			1.50
Damanhour	172	6.00	1.00			Fayoum Terminal(Faisal)					
Manzalla	200	6.00	2.00			Fayoum Governorate	105	4.00	0.40		0.40
Abu El Matameer	200	7.00	1.50				125	4.00	0.40		0.40

## 5.2.4 Cost Performance of Inter-city Peugeot Taxi

### 1) Owners/Drivers

Interviews on 42 taxi drivers were conducted in terminals in Cairo and Giza to find general or average pattern of operations. From a variety of answers excluding unrealistic ones, the followings are summed up to indicate operational characteristics:

#### (1) Work hours

##### A. Short distance, 60 - 100km

Activity	Hour
Start terminal in waiting	1 hr.
Travel (going)	1.5 - 2 hr.
End terminal in waiting	1 - 2 hr.
Travel (return)	1.5 - 2 hr.
Total	5 - 7 hr.

When they make two round trips, the whole work hours will be 10-14 hours per day.

##### B. Medium distances, 100 -150km

Activity	Hour
Start terminal in waiting	1-2 hr.
Travel (going)	2-3 hr.
End terminal in waiting	2-4 hr.
Travel (return)	2-3 hr.
Total	7-12 hr.

When they make two round trips per day, the working hours will be 14 - 24 hours. Drivers say they can not continue this long hour work for days because of his physical fatigue and mechanical checking.

##### C. Long distances, 180km

Activity	Hour
Start terminal in waiting	2- 3 hr.
Travel (going)	3- 4 hr.
End terminal in waiting	3- 5 hr.
Travel (return)	3- 4 hr.
Total	11-16 hr.

One round trip per day seems a typical movement in such a distance as Cairo - Alexandria, Cairo - Damietta, and others.

(2) Annual Travel Distance in km

Working days per month or year are hard to confirm since they have not shown any records of running distances. Daily trip frequency, hours of queuing, monthly variations and others influence the annual travel distances in km. The followings are the estimates of the study team.

- Short distances  
80 km \* 2 ways \* 2 round trips  
\* 5 days \* 52 weeks = 83,200 km/yr
- Medium distances  
125 km \* 2 ways \* 1.33 r.t. trips  
\* 5 days \* 52 weeks = 86,450 km/yr
- Long distances  
180 km \* 2 ways \* 1 r.t. trip  
\* 5 days \* 52 weeks = 93,600 km/yr

(3) Annual Revenue

Passenger fares are determined by distance, but there are minor difference among the corridors. Also, lower rates are applied for long distances where deluxe bus service or rapid trains are competing with taxis. The annual revenue of a taxi is:

- Short distances  
LE 4.00 (for 80 km)\* 6 persons \* 2 ways \* 2 r.t.  
\* 5 days \* 52 weeks = LE 24960 / yr
- Medium distances  
LE 6.00 (for 125 km)\* 6 pns \* 2 ways \* 1.33 r.t.  
\* 5 days \* 52 weeks = LE 24898 / yr
- Long distances  
LE 9.00 (for 180 km )\* 6 pns \* 1 way \* 1 r.t.  
\* 5 days \* 52 weeks = LE 28080 / yr

If the 5 working days become 6 working days, or the number of round trips increases by 20%, the income of short distances would be LE 17,472 which is approximated to the middle distance group. Accordingly the middle distances can be taken to represent a typical pattern of the inter-city taxi operation.

(4) Operation cost

Expenditures of taxi operation were hard to receive through the interviewing. The followings are the assessment of the answered data and edited for the case of the middle distance operation.

- Terminal fee  
LE 5.00 \* 2 ways \* 1.33 r.t. \* 5 days  
\* 52 weeks = 3,458
- Fuel  
LE 0.90 \* ( 86,450 km / 7km/l) =11,115

- lubricant	10% of the fuel cost	= 1,112
- Tires	2.5 times of replacement per year	= 1,440
- Maintenance and repairing		= 1,800
- License, taxes, union fee, etc.		= 300
Total current expenditures per year		LE 19,225

(5) Gross surplus and depreciation allowance

The above revenues and expenditures show a balance as follows:

- Cost	LE 19,225
- Revenues	LE 24,960
- Surplus	LE 5,735

Of the above balance in cash, the owner/driver has to accumulate some amount for vehicle replacement. Suppose the monthly expense of his household is LE 350, the annual expense is LE 4,200. Then the remaining amount of LE 1,535 is for depreciation allowance per year. It is not a well paid sector and the situation causes the owner to use old vehicles for long period. It is likely difficult to have a new car in the inter-city taxi service if the above enumeration indicate a general tendency for all distances.

One factor to note is a number of taxis not using the terminal. They collect passengers at road side with less hours to wait than the terminal without paying the fee. Consequently, a pattern of revenues and expenditures would be substantially different from the above presentation, though exact performance is hard to identify.

2) General Performance

As given in Chapter 9, the taxi's fares per person were shown by a linear regression formula related to distances of travel.

$$\text{Fare(LE)} = 0.053 * \text{Distance(km)} - 0.28 \quad r^2 = 0.964$$

Using this model and assuming the average occupants observed at the terminals, revenue of a trip by taxi can be calculated. The daily round trips differ among the routes because of different distances. The number of trips per day was determined by assuming hours on roads and average speed. Revenue per day by a Peugeot taxi for different distances is shown in Table 5-2-2, indicating the daily revenue is in the range of LE 60-73.



Table 5-2-2 Financial Revenue and Cost (Peugeot taxi)

	b	c	d	e	f	g	h	i	j	k	
Distanc	Fare	Revenue	Round	Revenue	Costs ( financial )				Balance		
km	(LE/prn	AvOc	5.6	day	VaCt/tr	VaCt/da	FiCt/day	Term	Fe	Total	e-j
25.00	1.05	5.85	5.00	58.52	3.59	35.95	25.83	8.36	70.14	-11.62	
75.00	3.70	20.69	1.67	68.97	10.78	35.95	25.83	9.85	71.63	-2.66	
125.00	6.35	35.53	1.00	71.06	17.97	35.95	25.83	10.15	71.93	-0.87	
175.00	9.00	50.37	0.71	71.96	25.16	35.95	25.83	10.28	72.06	-0.10	
225.00	11.65	65.21	0.56	72.46	32.35	35.95	25.83	10.35	72.13	0.33	
275.00	14.30	80.05	0.45	72.77	39.54	35.95	25.83	10.40	72.17	0.60	
325.00	16.95	94.89	0.38	72.99	46.73	35.95	25.83	10.43	72.21	0.79	
425.00	22.25	124.57	0.29	73.28	61.11	35.95	25.83	10.47	72.25	1.03	

Notes: b The fare per person is calculated by the model  $F(LE)=0.035*(km)-0.28$  described in Fig. 5.1.2 of Chapter 5.

c Revenue per trip uses the average occupants of 5.6 persons (80%)

d Round trips are determined by assuming the net hours on roads at 10 hours\*0.5 =5 hrs, where work hours in a day are 10 hours and the remaining 5 hours are for waiting, maintenance, and non-service movements. Average speed of 50k/h for short distances and 60k/h for longer distances are used for estimate the no. of round trips.

f Original variable VOC was 0.1106/km, which is revised by 30% because of occupants' weight. For the Fixed VOC 300 days a year is used.

g Terminal fee per departure is assumed at 80% of the fare per person, which is suggested by drivers at terminals.

The variable VOC means those related to the distance of running such as fuel, tyres, maintenance & repair, while the fixed cost includes depreciation & interest, driver's wage and overhead cost including insurance and licensing fee. Basic financial cost of a Peugeot is shown below:

Variable cost	110.60	LE/ 1000 km
Fixed cost	7750.00	LE/ year
	(25.83	LE/ day)

Using the above variable cost and the distance of traveling a cost per day is estimated, and to be added is the terminal fee paid by the driver at terminals of both sides. The fixed cost per day is added to the above costs resulting in the financial VOC per day.

The estimates of revenue, cost and the balance for selected distances are quoted from Appendix Table 5-2-2 and shown in Table 5-2-3 which indicates deficits in revenue-cost for short distances. In medium and longer distances, they are balanced mostly.

Table 5-2-3 Revenue and Cost Comparison: Peugeot Taxi  
( LE /Day )

km	Revenue	Cost	Balance	Rev/Cost	Rev*1.15 /Cost
25	58.52	70.14	-11.62	0.83	0.96
75	68.97	71.63	-2.66	0.96	1.11
125	71.06	71.93	-0.87	0.99	1.14
225	72.46	72.13	0.33	1.00	1.16
325	72.99	72.21	0.78	1.01	1.16

However, in the fixed cost calculation, the price of a used vehicle was applied since it is a practice to use the used Peugeot in inter-city taxi service. Taxi owners and drivers say the price of a new car is more than two times higher than a used one and they cannot use the high priced new one in the current market situation. In addition financial practice to get loans from banks and other sources are not common, and a high interest rate of 20% or more is charged if they try to get a loan.

It seems taxi owners/drivers adjust their operation in the market by depressing income (wage revenue), keeping the car to use for a longer period, operation from road-sides or engage other informal works, and so on. A 15% up of the fare as shown in the Table 5-2-3 as well as reduction of excessive taxis on some routes are part of solutions. Those discussions are based on the Peugeot taxis. Micro buses are also used in inter city service, but their fares and cost per seat are mostly same as the Peugeot and the revenue cost performance would be no difference.

### 5.3 Cost Comparison of Taxi and Bus Service

#### 5.3.1 Cost Comparison of Taxi and Bus

Inter-city public passenger transport demand is served by buses and taxis, where buses are divided into several classes ranging from economy (common) class to super deluxe-air conditioned class. When the demand becomes larger than a certain level the cost per seat-km of bus operation is said less than that of Peugeot taxi of 7 seats, and the use of buses are recommendable for those volumes. In the past, ENTS II and III recommended to use buses for inter-city service rather than the Peugeot typed taxis because of cost efficiency and of effective road space utilization.

As the bus companies supplied detailed data of operation, and surveys on taxi drivers and terminal movement of vehicles were conducted, a cost comparative study between bus and taxi can be presented as follows.

When transport demand is shown by the interzonal movement matrices, the matrices can be classified by distance and by passenger volume. They are categorized by a distance interval of 50km and the demand by 50, 100, 200, ... passengers. In each distance and the volume, the cost of transport by taxi and by bus are estimated and compared which is less. The comparisons were made to cover a range of volumes trying to find a turning point at which the cost of bus service is less than that of taxi.

#### 5.3.2 Settings and Analysis

Hourly distribution of public transport passengers at the terminals were studied in June/July, 1992 and the result showed an average 9.7% per hour during the morning hours of 7:00 - 13:00, and 7% per hour during the afternoon 13:00 - 19:00. No explicit peak hour percentage, which can be seen often in urban traffic movement, was found in the data. These percentages are used for the cost study.

It is assumed passengers come to the terminal from his origin location at a constant interval within the above percentage; it means a longer interval in minutes when the demand is small, while a shorter interval when the demand is large.

Departure of vehicle is set when the passengers come up to the average occupants observed at the departure from terminals.

Taxi (Peugeot and micro-buses)	5.6 persons
Bus (large buses of inter-city service)	30.4 persons

The traveled vehicle comes back from the destination terminal after waiting for the same number of occupants.

During the time of a round trip of the first vehicle, subsequent ones start at the calculated interval and the number of the departures are considered the number of vehicles required on the route. After the return of the first taxi or bus, the departing vehicles repeat the round trips and no new vehicles are added on the line. In the afternoon hours the demand is less than the morning and those operated in the morning can work with a larger waiting minutes.

Number of the departing vehicles can be calculated for the morning 6 hours assuming a regular interval.

When the demand is less as in many cases of the afternoon operation, waiting time is larger than the morning hours. In the afternoon operation, the departures are tabulated in the same way as in the morning operation.

When the demand is not sufficient to fill in the average occupants in the 6 hours, one trip is assumed for that 6-hour period and another one in the afternoon.

Travel distances in km from the origin terminal to the destination of the route are tabulated through which the economic variable VOC is estimated. The unit variable VOC per km was updated for 1992. Waiting time at the terminal and running time on the route is valued by the fixed cost of VOC. 365 days a year and 12 hours a day is used for the calculation of economic fixed VOC per day.

The costs of Peugeot and micro-bus are averaged to show the cost of inter-city taxi, and that of a large bus and a Lux-AC bus are used to estimate the cost of express, DX-AC and Super DX-AC buses by taking into account the percent composition of vehicle-trip-km of the classes of the bus companies which are edited to estimate the averaged fares per person.

Taxi variable VOC (economic)	0.16 /km
fixed VOC (economic)	23.98 /day

Bus Weighted by Veh.-trip-seats	
variable VOC (economic)	0.31 /km
fixed VOC (economic)	198.32 /km

The total of VVOC and FVOC of the route is divided by the passengers on both directions to have the averaged cost of transport of a passenger. The economic cost per passenger is calculated for different distances and passenger volumes, through which the turning points are found. The turning point means the cost of bus becomes less than taxi in relation with passengers and distances.

### 5.3.3 Service Re-classification

The turning points are summarized in Table 5-3-1 by route distance.

Table 5-3-1 Turning Points with Demand in Persons

Distance	Volume
25 km	700
75	260
125	90
175	80
225	60
275	40
325	30
425	30

A regression analysis was applied to have a curve of the re-classification. The result is shown in Fig. 5-3-1 and the formula is shown as:

$$y = 17250.05 * 1/x \quad (r^2 = 0.985)$$

where  $y$ : demand in passengers of one way  
 $x$ : distance in km

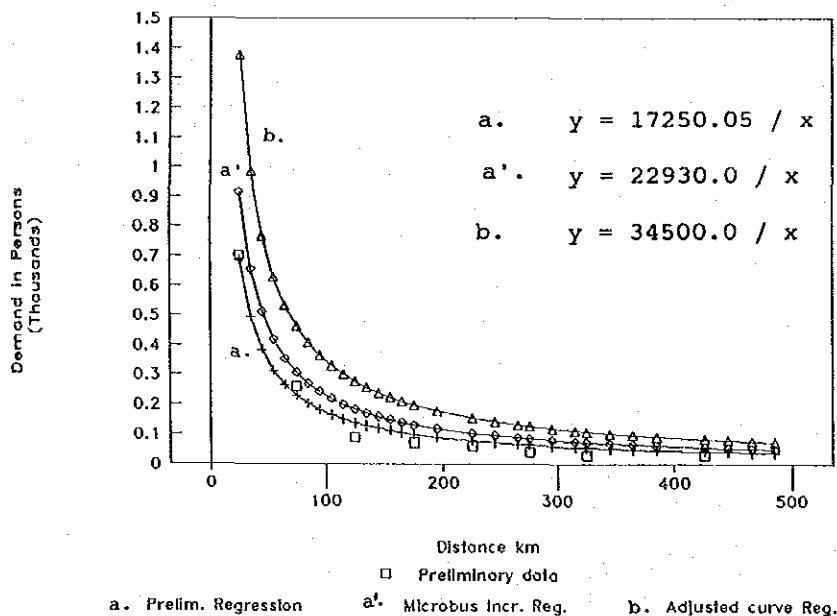


Fig. 5-3-1 Service Reclassification Curves

In Fig. 5-3-1, the a' curve is estimated by the assumption that Peugeot and microbus shares will be 33 % and 67 % which would move up the use of taxis a little as in the figure.

However, the validity of the above parameter need be checked

since the actual operations are much complex and influenced by various factors which cannot be incorporated in the above data and formula. The checking is described in the following subsection 5.3.4.

#### 5.3.4 The case in 1992

The traffic surveys conducted in June-July 1992 have resulted in the O-D matrices of passengers movements. They are classified into the directional volumes of persons per day on buses and taxis based on the present usage of the modes. The zones are 188 in total. The total trips of 188 zones are shown as the "existing case" in Table 5-3-2 .

In order to adjust the above parameter to be close to the actual pattern, a number of trial were conducted to determine a parameter which would indicate the calculated inter-zonal distribution patterns be close to the realistic one in 1992. The parameter was determined after repetition of trials and is shown below.

The model with the adjusted parameter (Fig.5-3-1 b)

$$y = 34500.0 * 1/x$$

where y: demand in passengers of one way  
x: distance in km

It was found a few large city zones in 1992 were in need of another adjustment since they have several terminals each with determined routes in operation. Multiple terminal number is allocated in these zones instead of dividing the zones as noted in Table 5-3-2. All Other zones are designated to have one terminal of bus and taxi respectively. The reclassification estimate includes this terminal numbers together with the parameter of the adjusted one. A comparative table is summarized in Table 5-3-3. These indicate the reclassification should be done at each zone pair because it would result in savings in the economic VOC, while the reclassification will result in changes of only 3% shift in passengers from taxis to buses.

Table 5-3-2 Trips by Bus & Taxi, 1992

	Bus Pass. Gen.			Bus pass. At.			Taxi pass. Gen.			Taxi pass. At.		
	Estim	Actual	E/A	Estim	Actual	E/A	Estim	Actual	E/A	Estim	Actual	E/A
CAI	62669	78021	0.80	68063	79437	0.86	82936	67584	1.23	80546	69172	1.16
GIZ	18407	23127	0.80	16712	19054	0.88	18235	13515	1.35	17878	15336	1.15
QAL	23929	14866	1.61	25661	15031	1.71	10862	19925	0.55	9936	20566	0.48
SKS	18421	36213	0.51	13655	32882	0.42	47223	29431	1.60	47631	28404	1.68
SKN	10458	14759	0.71	10509	15774	0.67	16226	11925	1.36	16714	11449	1.46
DKE	33616	35139	0.96	36461	37531	0.97	29347	27824	1.05	30435	29365	1.04
DKW	1026	4328	0.24	2448	4555	0.54	7874	4572	1.72	7319	5212	1.40
DAM	12379	12776	0.97	12685	12241	1.04	10453	10056	1.04	10221	10665	0.96
PTS	11483	5536	2.07	10922	5655	1.93	2172	8119	0.27	2508	7775	0.32
ISM	10537	7193	1.46	11754	9122	1.29	7113	10457	0.68	6865	9497	0.72
SUZ	3555	4428	0.80	3868	4390	0.88	3611	2738	1.32	4903	4381	1.12
MIF	20711	22006	0.94	30542	30025	1.02	25415	24120	1.05	26914	27431	0.98
GHS	31095	24896	1.25	14487	15456	0.94	15524	21723	0.71	17277	16308	1.06
GHN	14219	15721	0.90	9370	11834	0.79	7345	5843	1.26	8300	5836	1.42
KAF	16981	15150	1.12	14094	13460	1.05	15724	17555	0.90	13895	14529	0.96
BHS	7100	8035	0.88	5177	8921	0.58	10756	9821	1.10	13071	9327	1.40
BHN	37130	21347	1.74	34063	16141	2.11	6249	22032	0.28	6990	24912	0.28
ALX	42269	25195	1.68	51638	33857	1.53	10636	27710	0.38	9001	26782	0.34
WDS	9630	11554	0.83	11815	11835	1.00	4551	2627	1.73	3813	3793	1.01
SIN	306	3647	0.08	1056	4048	0.26	5266	1925	2.74	5127	2135	2.40
FAY	13561	11543	1.17	12864	11028	1.17	4874	6892	0.71	4979	6815	0.73
BES	11769	11496	1.02	12240	13323	0.92	7697	7970	0.97	7860	6777	1.16
MYA	5229	7737	0.68	6457	8893	0.73	8337	5829	1.43	7522	5086	1.48
ASY	8695	6008	1.45	8905	6208	1.43	6162	8849	0.70	5500	8197	0.67
NEW	407	415	0.98	219	237	0.92	293	285	1.03	136	118	1.15
SOH	7107	4258	1.67	7439	5220	1.43	5123	7972	0.64	5382	7601	0.71
QEN	8591	5861	1.47	8051	5514	1.46	5336	8066	0.66	4707	7244	0.65
ASW	3716	1593	2.33	3338	972	3.43	960	3083	0.31	889	3255	0.27
RED	1292	1847	0.70	1795	2051	0.88	1953	1398	1.40	2134	1878	1.14
TOT	446288	434695	1.03	446288	434695	1.03	378253	389846	0.97	378253	389846	0.97

Notes : Actual means the results of the survey, 1992

Estimated means the estimated trips by using the model in Fig 5-3-1 b. with the following terminal number handling:

A few large cities have several terminals each with particular routes of taxis and buses. They are not one terminal in one zone, and the demand is larger than other zones because of large population.

In order to have influence of multiple terminals, the following zones and number of terminals are taken in the reclassification estimates.

Zone	1	Cairo	9
	19	Zagazig	3
	55	Tanta	3
	83	Alexandria	3

In all other zones one terminal is designated in each zone.

Table 5-3-3 Bus and Taxi service: Existing and Reclassification , 1992

	Buses	Taxis	Total
1. Existing Case			
Passengers	434,700	389,800	82,4500
2. Reclassified Case			
Passengers	446,300	378,200	824,500
3. Reclassified/Existing			
Passengers	+11,600	-11,600	0.00
	( 1.03	0.97	1.00)

Theoretically, buses are less costly when daily demand is more than 34,500 passenger-Km, if calculating based on the present data. Actually, present demand for public transport are classified on OD basis as shown in Fig. 5-3-2.

Table 5-3-4 Present Bus and Taxi Passenger-Km (Passenger-Km/day)

	economical use	uneconomical use	Total
Bus	25,779.0	51,909.4	77,688.4
Taxi	45,820.4	22,083.5	67,903.9
Total	71,599.4	73,992.9	145,592.3

Many bus passengers are transported by less economical mode. This suggested the importance of more services by small sized vehicles such as taxi and mini-bus. This should be noted for reformation of bus routes after the privatization of bus companies.

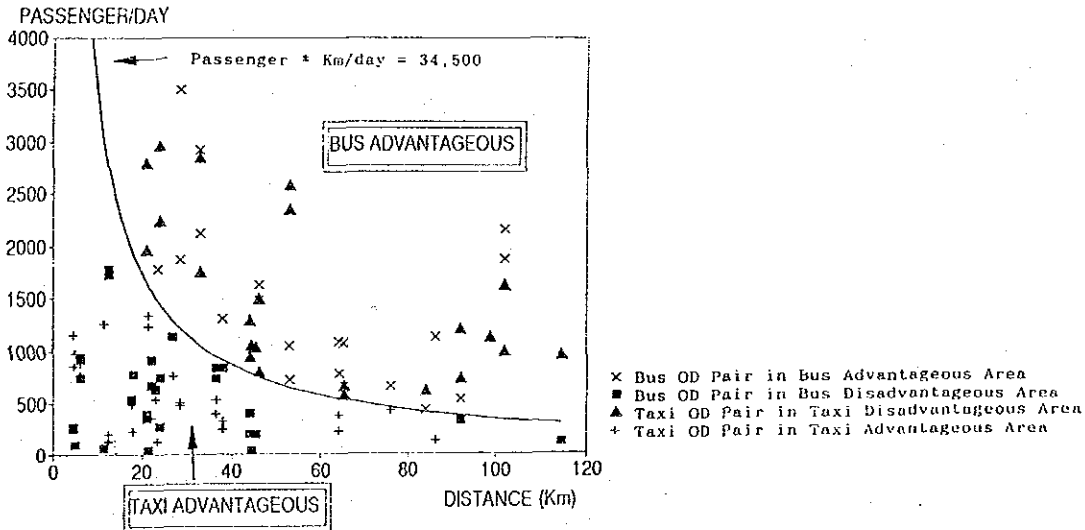


Fig. 5-3-2 Bus/Taxi OD Pair Distribution



When the above method is used in the estimate of passengers on both modes for the future years, a factor that minibuses will increase and Peugeot type will reduce the shares should be taken into account. This point is discussed in 16.2 of Chapter 16.

## 5.4. Terminals

### 5.4.1 Surveyed Terminals

Terminals used by inter-city taxis and buses were surveyed all over the country. The names of those terminals and their locations are listed in Appendix-3. The surveys covered two aspects; one was inventory of the existing facilities filed by a survey team member, and the other was counting of vehicles and passengers. Surveys were conducted in a weekday of June and July from 7 am to 9 pm (14 hours) with some of them extended the hours to 7 am in the next morning (24 hours).

### 5.4.2. Results

#### 1) General

##### (1) Terminal facilities

Survey data were compiled after coding the answers and the results were edited into tables through which the followings are found.

Generally the bus terminals have a few modest buildings in which managerial rooms, ticket corners, waiting rooms of travelers are installed. Platforms/booths for boarding are covered by shelters in most cases.

On the other hand taxi terminals have one or two small huts of managerial staff, and taxis are queuing according to the classified destination. Shelters for taxis parking are found in the majority of terminals. Passenger facilities are in poor/fair conditions, only some of them having toilets, waiting corners with shelters. Tables of fares for destinations cities and other announcement are rarely shown in the terminals.

##### (2) Management

The bus company has owned and managed the terminals for buses in their operation, like Khasendara terminal on Shubra street of Cairo. But in some cities the land is rented by governorate to a bus company and the company has constructed ticket booths and other facilities by its own funds. An example is found at Ahmed Helmi terminal of Cairo, where the four companies have rented the site and each company has constructed facilities at one's corner. However, the terminal area is under reconstruction to have better facilities since April 1993. Since all bus companies are underway to privatization which will be realized in a few years, the terminals will be managed quite the same way as they are today: owned and operated by the bus company. As mentioned in 5.1 of this chapter previously, terminal fee is not levied on the departing buses and the terminal cost is included in the

overhead cost of the company.

Taxi terminals are owned by governorates who own the land, construct the facilities and do the management. In most cases the management is done by the terminal committee of the governorate administration, but there are some where the management is commissioned to drivers' union. The terminal committee is composed of officers concerned and includes a union representative. Staff in charge of daily operation are 3 - 20 persons per shift in most cases. At Ahamed Helmi taxi terminal in Cairo, the largest traffic concentration of the country, the number of the staff is 80 per shift and 3 shifts per day.

Every taxi using the terminal stands in line waiting for passengers and pays a fee to the management staff at the departing gate. He receives a carta which may be necessary to show at check points on the border of markaz or governorate. The fee differs because of the distance to the destination city is different. Peugeot taxi (7 seats) pay less fee than micro bus taxi (10-16 seats). Fees are in Table 5-2-1. The revenue is said to cover the expenditures of the terminal operation but not sufficient to recover the initial investment cost. Maintenance of ground conditions are poor: patching and leveling, removing garbage, lighting in the night are not well done. It is generally found service facilities and traffic management at the taxi terminals are worse than the bus terminals.

## 2) Findings

Tables 5-4-1 and 5-4-2 present the number of departures of vehicle trips and passengers and arrivals of them at each terminals. In the case of buses the largest departures were at 01 Ahmed Helmi of Cairo, followed by 64 Main Collector of Tanta, while the smallest departures were at 20 Maghagha in Minya which uses the roadside as the terminal. In the case of inter city taxis, the largest departing trips were at 101 Ahmed Helmi, followed by 150 Midan Mahat Misr of Alexandria, and the smallest trips were at 213 Damanhour terminal in Kafre el Dawar.

Table 5-4-1 Departure and Arrival at Bus Terminals (1)

Terminal Code	Departure		Arrival		Terminal Code	Departure		Arrival	
	Veh.	Pass.	Veh.	Pass.		Veh.	Pass.	Veh.	Pass.
1	350	12,294	361	14,041	39	152	7,022	107	1,392
2	142	3,428	173	5,772	40	148	5,360	136	3,998
3	33	1,102	34	1,104	41	62	1,983	85	2,386
4	237	8,864	211	4,015	42	17	493	11	322
5	54	1,903	39	1,407	43	15	397	16	514
7	34	734	24	721	44	37	1,400	45	1,833
8	10	480	9	401	45	34	1,022	35	828
9	166	5,718	154	4,978	46	22	958	18	784
10	28	294	28	191	47	24	715	24	620
11	137	6,292	142	6,011	48	23	825	22	771
12	66	2,798	65	2,191	49	102	3,792	104	4,236
13	14	452	13	497	50	26	837	26	1,065
14	66	1,748	58	1,786	51	14	762	16	644
15	71	2,199	74	2,946	52	60	2,110	69	2,097
16	64	2,143	60	1,172	54	95	3,276	80	1,805
18	45	1,775	31	1,164	55	86	3,296	77	1,983
19	11	321	4	135	56	47	842	52	411
20	6	192	0	0	57	112	3,452	93	3,404
21	67	2,750	74	2,657	58	158	5,262	157	5,596
22	20	223	20	185	59	39	783	39	747
23	43	1,338	51	2,136	60	122	1,567	104	556
24	10	98	11	111	61	52	1,163	166	3,565
25	51	1,901	64	1,971	62	83	2,064	83	1,855
26	117	5,244	147	4,768	63	93	4,265	90	4,117
28	58	1,354	61	1,682	64	336	9,321	363	7,091
29	43	1,329	23	462	65	13	353	25	374
30	30	1,075	25	830	67	10	196	1	4
31	31	922	14	379	71	31	707	38	1,304
32	54	1,360	53	1,638	100	163	4,860	199	5,245
33	52	1,600	69	2,372	703	28	967	29	885
34	79	3,417	64	443	712	11	314	10	266
35	34	1,429	32	1,331					
36	24	1,282	10	404	Total	4,675	155,969	4,725	138,483
37	48	2,092	46	1,849	Av Occ.		33.4		29.3
38	165	5,454	161	6,035					

Table 5-4-2 Departure and Arrival at Taxi Terminal (2)

Termi nal Code	Departure		Arrival		Termi nal Code	Departure		Arrival	
	Veh	pass.	Veh	pass.		Veh	pass.	Veh	pass.
101	1,650	14,745	1,641	12,621	150	1,444	11,584	1,621	10,463
102	786	5,895	722	3,715	151	438	5,119	626	4,904
103	182	1,636	194	538	152	214	2,075	220	2,040
104	269	2,376	208	1,663	153	32	481	28	237
105	397	3,682	418	3,200	154	79	773	47	485
106	457	3,687	209	1,762	155	722	5,092	508	3,220
107	219	2,177	243	1,736	157	124	989	127	855
108	97	615	96	883	158	986	11,445	859	6,675
109	306	3,878	294	3,132	159	1,030	9,053	808	6,332
110	63	696	63	718	160	39	280	39	20
111	129	1,407	137	1,002	161	64	428	61	257
112	789	4,401	694	1,335	162	698	8,361	718	5,379
114	89	895	96	196	163	204	1,754	192	1,461
115	329	4,270	378	1,527	164	200	1,919	205	1,554
116	30	289	31	72	165	420	4,561	393	3,340
117	260	1,828	456	3,288	166	329	3,095	278	2,295
118	292	1,938	331	2,480	167	201	1,862	123	939
119	81	803	139	1,314	168	185	1,900	207	1,897
120	43	464	42	339	169	1,158	12,044	999	9,832
121	249	3,154	218	1,631	170	137	948	131	706
123	277	3,478	331	3,177	171	122	852	165	1,141
124	204	2,171	211	1,996	172	679	7,941	1,430	15,964
125	192	2,617	168	1,675	173	226	1,518	306	2,152
126	120	1,440	112	1,040	174	87	891	60	551
127	228	2,995	225	2,014	175	132	1,464	117	651
128	91	989	97	416	176	116	616	119	594
130	54	600	60	584	177	133	552	148	248
131	263	1,417	255	1,597	178	284	2,738	247	2,080
133	69	457	69	186	179	96	951	67	303
134	294	3,862	257	1,636	180	98	797	87	442
135	79	491	57	127	181	97	977	96	782
136	20	126	14	86	182	131	1,230	118	1,119
137	138	1,312	111	938	183	45	315	28	196
138	213	1,452	237	606	184	107	1,011	158	1,461
139	859	8,895	457	4,317	185	124	915	127	706
140	88	672	85	502	186	33	238	45	265
141	260	1,671	228	1,805	187	95	1,163	120	1,232
142	133	1,034	115	508	188	205	1,976	148	1,225
143	300	2,950	304	2,814	213	10	72	5	21
144	137	1,042	136	696	214	353	3,724	404	4,143
145	69	759	70	156	216	176	2,049	165	1,718
146	221	2,019	212	1,653	217	148	1,783	194	1,274
147	95	854	102	810					
148	96	919	80	678	Total	123,465	220,931	23,192	174,464
149	47	337	45	116	Av. Occ		9.42		7.52

Table 5-4-3 shows the existing conditions of main facilities and their percentage compositions of the terminals surveyed. Selected findings are:-

- \* Terminal grounds are paved at 58 % in buses and 59 % in taxis.
- \* Vehicle parking and waiting areas have sheds at 28 % in buses and 55 % in taxis.
- \* Operation/carta rooms(huts) are 92 % in buses and 79 % in taxis.
- \* WC toilets are 45 % of bus terminals and 35 % of taxi terminals.
- \* Maps/guide plates are only 3 % in buses and 2 % in taxis terminals.

Table 5-4-3 Bus and Taxi Terminal Facilities

Facilities	Number			Percentage		
	Yes	No	Total	Yes	No	Total
<b>Buses</b>						
1. Pavement						
Area	57	41	98	58.2	41.8	100.0
Pass. platfm	33	65	98	33.7	66.3	100.0
2. Operation Facilities						
Veh. sheds	27	71	98	27.6	72.4	100.0
Operat. room	90	8	98	91.8	8.2	100.0
Ticket/carta	76	22	98	77.6	22.4	100.0
3. Passenger Faci						
Wait room	43	55	98	43.9	56.1	100.0
Cafe/Resta/sh	55	43	98	56.1	43.9	100.0
Toilet	44	54	98	44.9	55.1	100.0
Mosque	28	70	98	28.6	71.4	100.0
4. Access Facil.						
AccessRd pave	80	18	98	81.6	18.4	100.0
Map/Info Plat	3	95	98	3.1	96.9	100.0
<b>Taxis</b>						
1. Pavement						
Area	59	62	121	48.8	51.2	100.0
Pass. platfm	7	114	121	5.8	94.2	100.0
2. Operation Facilities						
Veh. sheds	66	55	121	54.5	45.5	100.0
Operat. room	60	61	121	49.6	50.4	100.0
Ticket/carta	95	26	121	78.5	21.5	100.0
3. Passenger Faci						
Wait room	11	110	121	9.1	90.9	100.0
Cafe/Resta/sh	59	62	121	48.8	51.2	100.0
Toilet	42	79	121	34.7	65.3	100.0
Mosque	28	93	121	23.1	76.9	100.0
4. Access Facil.						
AccessRd pave	98	23	121	81.0	19.0	100.0
Map/Info Plat	2	119	121	1.7	98.3	100.0

Surveyed in June-July, 1992

#### (1) Area and facilities

The sizes of the terminal area were classified into several groups according to its scale. The service facilities of the terminal are found to have no certain tendency that service are better when the scale is larger. An example is found in Table 5-4-4 which show the percentage share of the terminal having ground pavement in each classified group. In all bus

terminals have a larger percentage of paved ground than taxi terminals.

Table 5-4-4 Terminal Area and Facilities (1) Bus

Bus Terminal Facility	Area in m2									Total
	-200	-500	-1000	-1550	-2000	-3000	-4000	-6000	6000-	
1 Area Paved	2	21	10	6	4	7	1	6	0	57
(%)	66.7	61.5	52.6	75	50	77.8	33.3	85.7	0	61.2
2 Platform Pv	2	13	5	4	3	2	1	3	0	33
(%)	66.7	48.7	57.9	62.5	37.5	77.8	33.3	71.4	0	53
3 Veh. sheds	1	5	7	4	2	4	2	2	0	27
(%)	0	12.8	10.5	50	25	44.4	66.7	28.6	0	21.4
4 Wait Room	1	14	8	4	5	4	3	3	1	43
(%)	33.3	35.9	42.1	50	62.5	44.4	100	42.9	50	43.9
5 Ticket Off	1	24	16	14	5	6	3	5	2	76
(%)	33.3	61.5	84.2	87.5	62.5	66.7	100	71.4	100	70.4
6 Info. Off	1	20	13	5	4	4	3	6	0	56
(%)	33.3	51.3	68.4	62.5	50	44.4	100	85.7	0	57.1
7 Operat Off	2	34	17	9	8	9	3	7	1	90
(%)	66.7	87.2	89.5	87.5	100	100	100	100	50	89.8
8 Shops/Resta.	0	3	2	1	1	0	0	1	0	8
(%)	0	7.7	10.5	12.5	12.5	0	0	14.3	0	8.2
9 Mosque	0	5	5	5	4	5	1	3	0	28
(%)	0	17.9	36.8	62.5	50	77.8	33.3	57.1	0	35.7
10 Clocks	0	1	1	1	0	1	1	2	0	7
(%)	0	2.6	5.3	12.5	0	11.1	33.3	28.6	0	7.1
11 Pub. Telep	1	17	10	3	3	5	2	5	1	47
(%)	33.3	43.6	52.6	37.5	37.5	55.6	66.7	71.4	50	48
12 Map/Guide	1	1	0	0	0	0	1	0	0	3
(%)	33.3	2.6	0	0	0	0	33.3	0	0	3.1
13 Direct Bds	0	1	2	1	2	0	0	2	0	8
(%)	0	2.6	10.5	12.5	25	0	0	28.6	0	8.2
14 Cafeteria	0	12	12	7	6	7	3	6	2	55
(%)	0	38.5	63.2	87.5	75	77.8	100	85.7	100	59.2
15 Toilets	0	9	11	5	5	7	2	4	1	44
(%)	0	30.8	57.9	62.5	62.5	77.8	66.7	71.4	50	49
Total	3	39	19	8	8	9	3	7	2	98

Table 5-4-4 Terminal Areas and Facilities (2) Taxi

Taxi Terminal Facility	Area in m2									
	-200	-500	-1000	-1550	-2000	-3000	-4000	-6000	6000-	Total
1 Area Paved	5	13	19	7	4	5	2	3	1	59
(%)	45.5	43.3	48.7	53.8	50.0	50.0	40.0	100.0	50.0	48.8
2 Parking paved	5	15	19	7	4	5	2	3	1	61
(%)	45.5	50.0	48.7	53.8	50.0	50.0	40.0	100.0	50.0	50.4
3 Time table	0	1	0	0	0	0	0	0	0	1
(%)	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
4 Platform	0	1	1	0	0	2	1	1	1	7
(%)	0.0	3.3	2.6	0.0	0.0	20.0	20.0	33.3	50.0	5.8
5 Ticket Off	1	7	16	3	3	4	3	3	1	41
(%)	9.1	23.3	41.0	23.1	37.5	40.0	60.0	100.0	50.0	33.9
6 Info. Off	1	9	11	2	5	3	2	2	0	35
(%)	9.1	30.0	28.2	15.4	62.5	30.0	40.0	66.7	0.0	28.9
7 Operat Off	8	18	33	11	7	9	5	2	2	95
(%)	72.7	60.0	84.6	84.6	87.5	90.0	100.0	66.7	100.0	78.5
8 Shops/Resta.	0	2	6	0	2	1	0	1	1	13
(%)	0.0	6.7	15.4	0.0	25.0	10.0	0.0	33.3	50.0	10.7
9 Mosque	1	3	8	4	1	4	3	2	2	28
(%)	9.1	10.0	20.5	30.8	12.5	40.0	60.0	66.7	100.0	23.1
10 Clocks	0	0	2	0	0	0	0	0	0	2
(%)	0.0	0.0	5.1	0.0	0.0	0.0	0.0	0.0	0.0	1.7
11 Pub. Telep	0	4	8	3	1	3	2	2	1	24
(%)	0.0	13.3	20.5	23.1	12.5	30.0	40.0	66.7	50.0	19.8
12 Map/Guide	0	1	0	0	1	0	0	0	0	2
(%)	0.0	3.3	0.0	0.0	12.5	0.0	0.0	0.0	0.0	1.7
13 Direct Bds	0	2	4	2	2	0	2	1	0	13
(%)	0.0	6.7	10.3	15.4	25.0	0.0	40.0	33.3	0.0	10.7
14 Cafeteria	4	9	23	8	1	7	5	0	2	59
(%)	36.4	30.0	59.0	61.5	12.5	70.0	100.0	0.0	100.0	48.8
15 Toilets	3	8	9	8	2	5	5	1	1	42
(%)	27.3	26.7	23.1	61.5	25.0	50.0	100.0	33.3	50.0	34.7
Total	11	30	39	13	8	10	5	3	2	121

(2) Approach roads

Roads approaching to the terminal are mostly surfaced. Shops and restaurants are located along these roads, not within the terminal compound in most cases.

(3) Facilities

Facilities for passengers seem in general not in satisfactory and comfortable conditions. Time table and fare table, wall-clocks, public telephone booths, directional guide maps and boards are often found not installed in the terminals.



(4) Access modes.

Transfer facility and means of access to the terminal are located generally not in the terminal area. Parking space of private cars and local taxi parking/terminal are few within these inter-city terminal areas. Transfer to local public service are done on adjacent roadsides.

(5) Hourly distribution of departures and arrivals

Hourly distribution of the total vehicles and passengers of all terminals are in Figs. 5-4-1 and 5-4-2. It is found the percent share per hour during the hours from 7:00 to 15:00 is mostly the same in buses and taxis at around 8 - 11% of the 24 hour total volume, and 6-3% in the afternoon from 16:00 to 19:00.

(6) Simultaneous occurrence analysis

A simultaneous occurrence probability analysis for facilities in terminals was conducted as shown in Figs. 5-4-3 and 5-4-4. The X axis shows the facility items in a descending order of simultaneous occurrence and Y axis is percentage share of realization of each facility. The order of occurrence is not same between the taxi and the bus terminals. While taxi terminals have facilities for passengers and vehicles, operational ones are also found additionally in bus terminals. However, these percentages are not satisfiable levels to be used by passengers, staff and drivers. Improvements in facility conditions to have nice atmosphere are considered necessary.

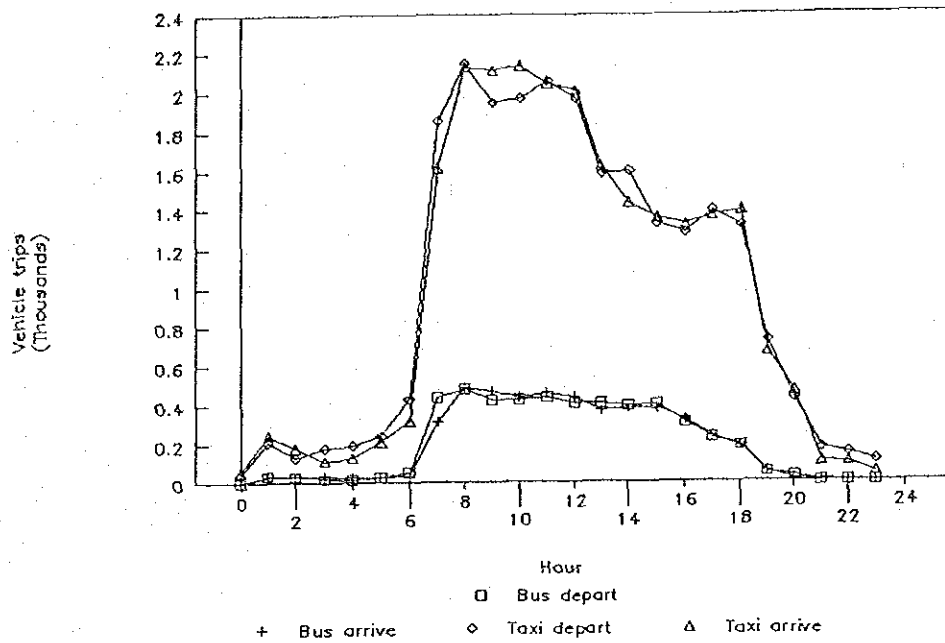


Fig. 5-4-1 Hourly Vehicle Fluctuation at Terminals

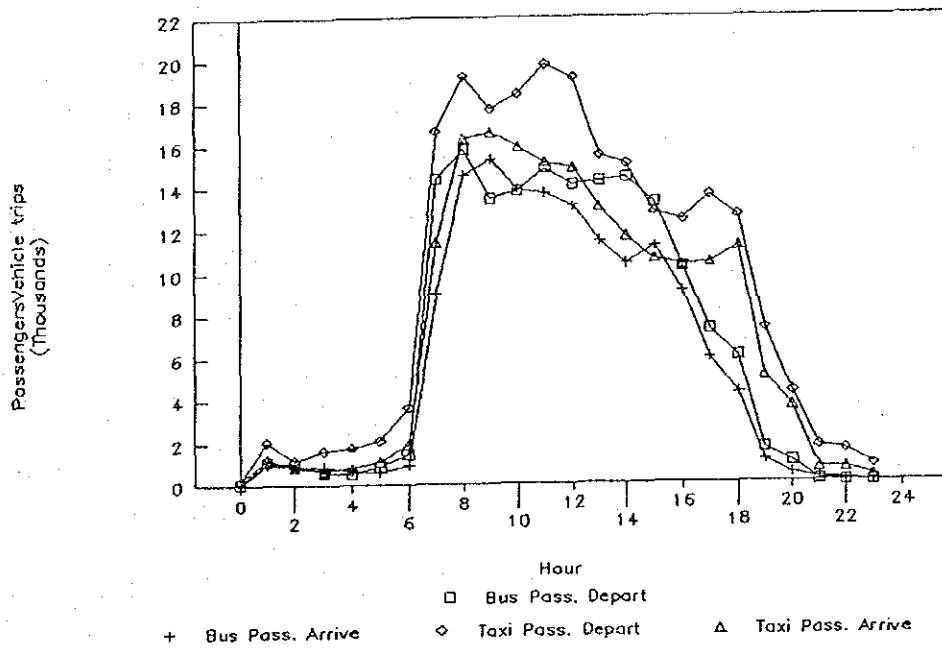


Fig. 5-4-2 Hourly Passenger Fluctuation at Terminals

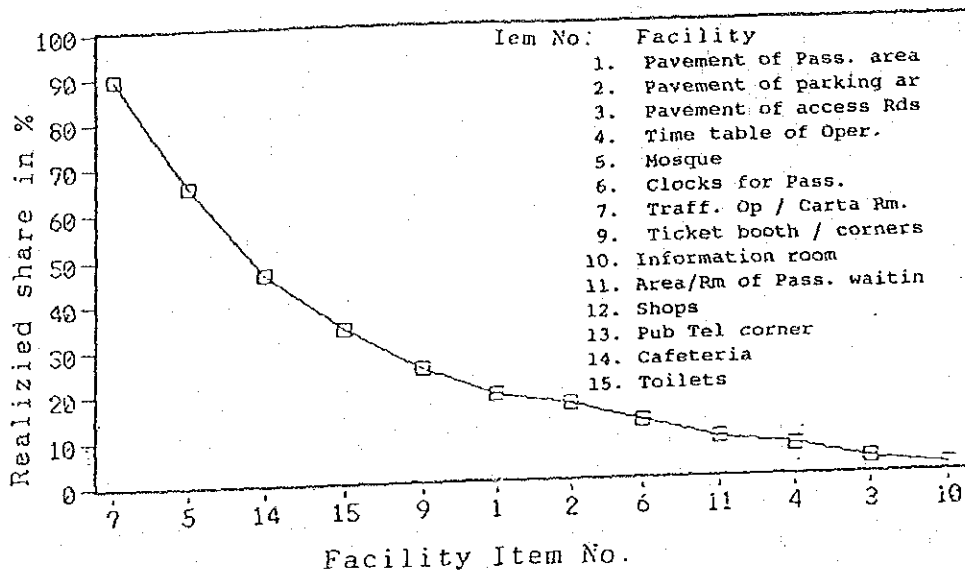


Fig. 5-4-3 Simultaneous Occurrence Probability (Bus Terminals)

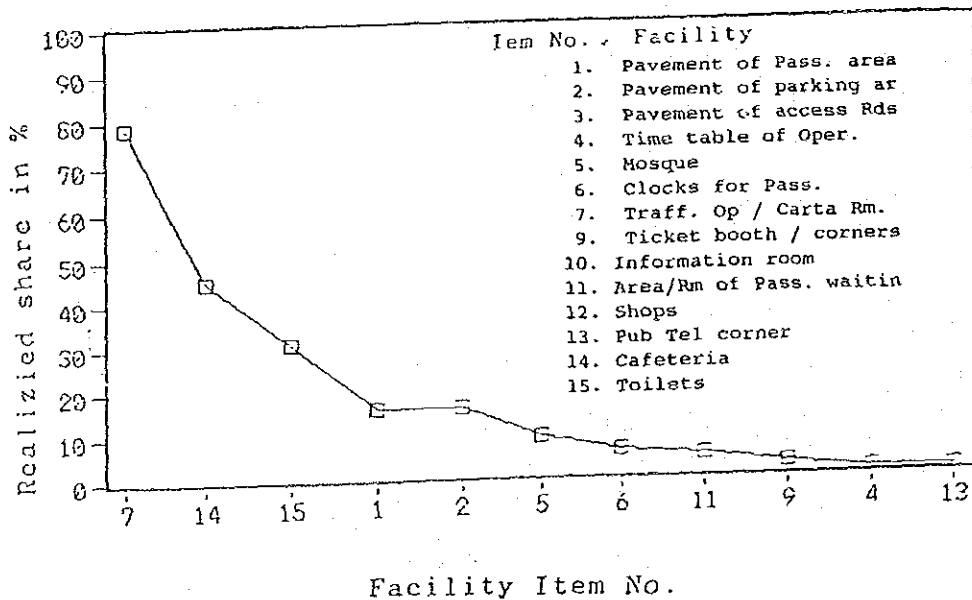


Fig. 5-4-4 Simultaneous Occurrence Probability (Taxi Terminals)

## CHAPTER 6 FREIGHT LAND TRANSPORT

### 6.1 Trucking Industry Regulations

#### 6.1.1 Governing Law

Law No. 64/1970 regulating transport of freight on public routes superseded law 115/1957. The main features of law 64/1970, which remains unaltered, although largely unheeded, are as follows;

- The Ministry of Transport is responsible for organization and control of freight transport on all public routes.
- The Ministry of Transport shall determine suitable transport modes for the freight and organize freight haulage by these modes.
- The Ministry of Transport, in consultation with the ministries of interior and local government may determine number of freight vehicles to be registered by governorate.
- The Ministry of Transport shall determine freight transport fares along public routes and ensure its enforcement by owners, users and operators.
- The import of freight transport vehicles by public entities, private establishments and individuals shall be approved by the Ministry of Transport.
- Public entities shall use only freight operators registered at the Ministry of Transport. The Ministry shall determine conditions for registering and determine maximum hauling capacities of registered operators.

The import of freight vehicles is governed by law 348/1971, issued by the Ministry of Transport. This law determines vehicle makes which may be imported, maximum axle loading, and maximum vehicle width among others.

The stipulations set out in law 64/1970 are not enforced at present, although the law remains unchanged. The wide powers set out for the Ministry of Transport under the law are not practiced and the freight transport industry, save for the vehicle registration process remains unregulated.

#### 6.1.2 Freight Vehicle Specifications

The maximum allowable axle loading for freight vehicles is determined as follows;

- 10 tons for a single axle with four tires
- 16 tons for a tandem axle having four tires on each axle and a distance of less than 2m between both axles
- 20 tons for a tandem axle having four tires on each axle and a distance of more than 2m between both axles

However there is no strict enforcement to ensure that maxi-

mum allowable axle loading conditions are followed.

Other specifications concerning vehicle dimensions as follows;

- Maximum vehicle width is 2.6m
- Maximum vehicle length for trucks with two or more axles is 12m, for semi-trailers 18m and for truck + trailer 20m.
- Maximum vehicle height, with whatever load is 3.5m.

## 6.2 Freight Vehicle Fleet

### 6.2.1 Freight Registration Process

Freight vehicles are registered at local traffic police stations, and registration is renewed annually. Registration process and fees are the same throughout the country, however fees differ depending on maximum loading of the freight vehicle and additional permits (for example trucks having a permit to haul long objects pay an additional fee). At the time of registration no restrictions are set as to routing or service areas.

The vehicle license plate color differs according to vehicle ownership; blue plates for the public sector (ministries and public sector companies), and red plates for private sector. Red plates show the governorate of registration while blue plates only carry numbers and the Arabic letters denoting the public sector.

### 6.2.2 Fleet Characteristics

#### 1) Distribution of fleets by governorate

Table 6-2-1 shows number of registered freight vehicles during the last five years, by governorate. The growth rates in vehicle number in Greater Cairo governorate of Cairo and Giza, urban governorate of Alexandria, and Lower Egypt governorates of Damyet, Dakahlia and Gharbia were more or less uniform. The 1991 vehicle amounts for the three Canal governorates of Port Said, Ismailia and Suez all showed a decrease compared to respective figures of the previous year. The decrease was particularly striking in Suez, where the 1991 figure was less than half of that of the previous year.

The five frontier governorates continued to show increases in freight vehicle fleets up to the year 1990. However in 1991 the fleet in Matrouh continued to grow, while those of North and South Sinai and New Valley declined. By region, the urban governorates and Lower Egypt regions each had 38% of the total amount of vehicles in 1991, while the share of Upper Egypt governorates was 22%. The reason for the sharp drop in registered vehicles in Qaliubia in 1988 followed by a return to the 1986 and '87 levels the following year could not be identified. However given this governorate's substantial industrial and agricultural activities the drop is doubtful. Either there is a mistake in the 1988 data or there may have been some modifications in the governorate's administrative borders.

In overall terms registered vehicle number continued to grow, however annual increase in 1991 was low compared to the previous years.

## 2) Distribution of fleet by age and ownership

Hereafter a description of freight vehicle fleet characteristics in terms of ownership (by public and private sectors), age, and loading capacities shall be introduced. such information has been obtained from a CAPMAS publication, for 1989. It is necessary to note here that total figure for freight vehicles in operation in 1989 shown in the CAPMAS report, of 316,607 is less than the corresponding figure obtained from the Central Traffic Department (Table 6-2-1).

Table 6-2-1 Registered Freight Vehicles (1987-1992)

Governorate	1987		1988		1989		1990		1991	
	Tot.	Annual Increase (%)	Tot.	Annual Increase (%)	Tot.	Annual Increase (%)	Tot.	Annual Increase (%)	Tot.	Annual Increase (%)
<b>URBAN GOVERNORATES</b>										
Cairo	71010	1.9	75076	5.7	78117	4.1	82087	5.1	86120	4.9
Alexandria	54481	2.9	55562	2.0	56893	2.4	57967	1.9	58832	1.5
Port Said	2973	2.1	3000	0.9	2747	-8.4	2621	-4.6	2552	-2.6
Suez	4181	-1.9	3263	-22.0	3117	-4.5	3344	7.3	1514	-54.7
<b>LOWER EGYPT</b>										
Damietta	4910	7.8	5365	9.3	5623	4.8	6055	7.7	6326	4.5
Dakahlia	19348	4.9	19870	2.7	20598	3.7	22025	6.9	23147	5.1
Sharkia	11680	10.7	15381	31.7	16447	6.9	16773	2.0	17506	4.4
Qaluibia	18708	24.5	20812	11.2	11695	-43.8	21855	86.9	21075	-3.6
Kafr El Sheikh	7206	4.2	7473	3.7	7772	4.0	9852	26.8	10699	8.6
Gharbia	18812	4.5	19973	6.2	21000	5.1	21987	4.7	22891	4.1
Minofia	11363	0.3	11678	2.8	12013	2.9	12565	4.6	13406	6.7
Behera	23806	2.7	22620	-5.0	23227	2.7	24595	5.9	24958	1.5
Ismailia	9424	4.4	9753	3.5	9698	-0.6	9780	0.8	9762	-0.2
<b>UPPER EGYPT</b>										
Giza	30284	4.8	31133	2.8	31849	2.3	32802	3.0	34567	5.4
Beni suef	5066	11.7	5555	9.7	5496	-1.1	5780	5.2	5658	-2.1
Fayum	7105	37.2	7371	3.7	7389	0.2	7374	-0.2	7289	-1.2
Minya	8743	6.6	9150	4.7	11685	27.7	11034	-5.6	11001	-0.3
Assyut	7858	10.9	8457	7.6	8377	-0.9	10449	24.7	9909	-5.2
Sohag	7799	5.9	8281	6.2	8276	-0.1	8536	3.1	8804	3.1
Qena	6288	7.0	6552	4.2	6848	4.5	7509	9.7	7483	-0.3
Aswan	3014	5.6	3219	6.8	3449	7.1	3702	7.3	3849	4.0
<b>FRONTIER</b>										
Red See	1473	7.8	1580	7.3	1767	11.8	2019	14.3	2095	3.8
New Valley	988	14.1	1074	8.7	1088	1.3	1187	9.1	1089	-8.3
Natrouh	2781	5.5	2930	5.4	3122	6.6	3351	7.3	3677	9.7
North Sinai	3210	7.7	3421	6.6	3710	8.4	3886	4.7	3719	-4.3
South Sinai	1114	12.6	1174	5.4	976	-16.9	1028	5.3	1017	-1.1
<b>Total</b>	<b>343625</b>	<b>5.5</b>	<b>359723</b>	<b>4.7</b>	<b>362979</b>	<b>0.9</b>	<b>390163</b>	<b>7.5</b>	<b>398945</b>	<b>2.3</b>

Source: Central Traffic Department

Freight trucks and trailers classified under public sector ranged between 12 to 15% of the total during the period of 1983 to 1989, as shown in Table 6-2-2.

Table 6-2-2 Freight Truck and Trailer classified by Sector  
(unit: %)

Governorate	1983		1987		1988		1989	
	Pri- vate	Pub- lic	Pri- vate	Pub- lic	Pri- vate	Pub- lic	Pri- vate	Pub- lic
<b>URBAN GOVERNORATES</b>								
Cairo	73	27	72	28	76	24	71	29
Alexandria	76	24	74	26	76	24	75	25
Port Said	86	14	84	16	81	19	88	12
Suez	85	15	79	21	83	17	81	19
<b>LOWER EGYPT</b>								
Damietta	96	4	96	4	94	6	93	7
Dakahlia	96	4	96	4	96	4	95	5
Sharkia	95	5	96	4	96	4	97	3
Qaluibia	89	11	89	11	90	10	90	10
Kafr El Sheikh	97	3	97	3	98	2	94	6
Gharbia	94	6	97	3	96	4	96	4
Minofia	98	2	98	2	98	2	97	3
Behera	96	4	98	2	98	2	98	2
Ismailia	76	24	79	21	81	19	79	21
<b>UPPER EGYPT</b>								
Giza	89	11	91	9	91	9	92	8
Beni suef	96	4	93	7	97	3	96	4
Fayum	96	4	95	5	95	5	95	5
Minya	95	5	96	4	96	4	96	4
Assyut	93	7	93	7	95	5	95	5
Sohag	94	6	95	5	95	5	93	7
Qena	91	9	91	9	93	7	92	8
Aswan	79	21	81	19	83	17	80	20
<b>FRONTIER</b>								
Red See	81	19	83	17	86	14	91	9
New Valley	87	13	87	13	90	10	94	6
Natrouh	99	1	100	0	100	0	99	1
North Sinai	99	1	98	2	97	3	75	25
South Sinai	61	39	71	29	70	30	65	35
Total	85	15	87	13	88	12	86	14

Source: CAPMAS

The shares of public sector are comparatively high in the industrial governorates of Alexandria, Cairo, Aswan and Qaluibia which may be explained by own fleets of public sector industrial companies operation there. Both governorates of Sinai also show relatively high public sector shares which may be explained by freight vehicle fleets owned by the public sector petroleum and mining companies active there.



Trucks and trailer vehicles classified by age (Table 6-2-3) indicates that overall 70% of vehicles are less than ten years old, while 27% are ten to twenty years old. In terms of private and public sector vehicles, 68% and 70% of vehicles operated are less than ten years old. The distribution of vehicles of age less than 10 years by governorate is more or less uniform at 65% to 70% of the total. However freight vehicles registered in the frontier governorates of Red Sea, New Valley, North and South Sinai are relatively new, as 80% of these vehicles are less than ten years old. This can be explained by the increased importance of these governorates during the 1980's decade in such sectors as petroleum, mining and tourism.

Table 6-2-3 Freight Truck and Trailer Classification by Age in 1989

Governorate	pre 1960		1960-1979		1970-1979		1980-1989	
	Priv.	Pub.	Priv.	Pub.	Priv.	Pub.	Priv.	Pub.
<b>URBAN GOVERNORATES</b>								
Cairo	591	9	1818	303	12235	5323	32085	13438
Alexandria	534	61	1022	224	7087	1861	14370	5427
Port Said	4	1	94	7	590	106	1385	378
Suez	22	0	63	18	519	124	1872	444
<b>LOWER EGYPT</b>								
Damietta	75	1	101	7	1050	83	3618	266
Dakahlia	50	2	979	30	4497	282	10772	552
Sharkia	174	4	833	24	3058	129	11757	322
Qalubia	100	2	609	74	3119	359	6618	746
Kafr El Sheikh	31	0	186	3	1238	104	4434	281
Gharbia	97	0	1026	34	3517	206	7784	335
Minofia	88	0	394	3	2019	110	4970	136
Behera	264	0	453	14	5686	155	12382	305
Ismailia	16	3	239	51	1050	426	4610	1087
<b>UPPER EGYPT</b>								
Giza	568	35	991	51	8478	702	17995	1558
Beni suef	87	4	327	12	753	33	2891	105
Fayum	57	1	240	4	823	56	2757	139
Minya	230	2	363	13	2312	147	7297	317
Assyut	105	1	249	11	1626	88	4237	252
Sohag	38	0	224	21	1577	147	4789	305
Qena	51	0	212	4	1253	138	4867	419
Aswan	17	4	124	33	766	233	2264	541
<b>FRONTIER</b>								
Red See	8	1	52	11	237	52	1121	83
New Valley	2	0	6	2	117	24	685	27
Natrouh	27	0	55	0	979	0	2107	45
North Sinai	23	0	139	0	544	2	2200	49
South Sinai	2	0	44	0	101	67	570	320
<b>Total</b>	<b>3261</b>	<b>131</b>	<b>10843</b>	<b>954</b>	<b>65231</b>	<b>10957</b>	<b>170437</b>	<b>27877</b>
Share of Tot. (%)	1	0	4	0	23	4	59	10

Source: CAPMAS

### 6.2.3 Estimate of Fleet Haulage Capacity

The most common truck/tractor - trailer combinations presently in operation on the Egyptian roads are;

- (a) Truck (capacity 10ton) and trailer (5 - 10ton)
- (b) Truck (capacity 14ton) and trailer (16 ton), and

(c) Tractor and trailer (26-30 ton).

The total fleet haulage capacity, as shown in Table 6-2-4, was estimated at 1.34 million tons for 1989. This estimate was based on fleet classification by haulage capacity data of CAPMAS adjusted to total registered vehicles obtained from CTD. The same table indicates that public sector's share of the haulage capacity was 31% while the private sector share was 69%.

Table 6-2-4 Freight Vehicle Fleet Hauling Capacity

(A) 1989 CTD DATA			(B) CAPMAS Data for 1989		
-Truck	322229		-Truck	289692	
-Trailer	39393		-Trailer	21176	
			-Tractor	5739	
<b>Total</b>	<b>361622</b>		<b>Total</b>	<b>316607</b>	

(C) ADJUSTED FREIGHT VEHICLE FLEET (based on CTD total and CAPMAS composition)		
-Truck	330880	
-Trailer	24187	
-Tractor	6555	
<b>Total</b>	<b>361622</b>	

(D) TOTAL FLEET CLASSIFIED BY LOADING CAPACITY (CAPMAS classification and adjusted total in tons)									
	Truck			Trailer			Total	Public Share (%)	Private Share (%)
	Public	Private	Total	Public	Private	Total			
<3t	40603	341372	381975	132	257	389	382364	11%	89%
3t-	5857	43837	49694	1037	1882	2919	52613	13%	87%
5t-	102728	313143	415871	24157	16704	40861	456732	28%	72%
10t-	37906	52269	90175	44773	17475	62248	152423	45%	46%
15t-	4078	7536	11614	83670	21727	105397	117011	75%	25%
>20t	2570	9423	11993	74584	94087	168671	180664	43%	57%
<b>Total</b>	<b>193742</b>	<b>767580</b>	<b>961322</b>	<b>228353</b>	<b>152132</b>	<b>380485</b>	<b>1341807</b>	<b>31%</b>	<b>69%</b>

(E) ESTIMATED FLEET SHARE USED FOR INTERZONAL TRANSPORT									
	Truck			Trailer			Total	Public Share (%)	Private Share (%)
	Public	Private	Total	Public	Private	Total			
<3t	11369	95584	106953	37	72	109	107062	11%	89%
3t-	4800	32967	37767	788	1431	2219	39986	14%	86%
5t-	95000	154522	249522	22000	2517	24517	274039	43%	57%
10t-	37906	52269	90175	44773	17475	62248	152423	54%	46%
15t-	4037	7460	11497	82834	21510	104344	115841	75%	25%
>20t	2493	9140	11633	72347	91264	163611	175244	43%	57%
<b>Total</b>	<b>155605</b>	<b>351942</b>	<b>507547</b>	<b>222779</b>	<b>134269</b>	<b>357048</b>	<b>864595</b>	<b>44%</b>	<b>56%</b>

Based on survey results of this study, applied to total freight vehicle fleet of 1989, a rough estimate of the inter-zonal haulage capacity in 1989 was possible as shown in the Table. Elimination of about 70% of the less than 3ton category trucks and some modifications in other categories resulted in a larger role for public sector trucking in terms of inter-zonal haulage. While overall the public

sector haulage capacity accounted for 30% of the total, the private sector fleet, composed in a large part of vehicles with loading capacity less than 10 tons is considered to be mainly serving within a confined area. Therefore the public sector fleet share in terms of inter-zonal freight transport increased to about 44%.

## 6.3 Freight Transport Operators

### 6.3.1 Introduction

Both public and private sectors are active in the freight transport business.

The public sector freight transport operators are;

- (1) The five public sector companies (total transported freight in 1990/1991 was 11.4 million tons). Estimated share of the total inter-zonal haulage capacity is 7%.
- (2) Own account fleet of the public sector companies and the ministries. Estimated share of total inter-zonal capacity is 37%.

On the other hand the private sector trucking operators are;

- (1) The private truckers working through the trucking cooperatives (total transported freight in 1990/91 was 27 million tons). Estimated share of total inter-zonal capacity is 30%.
- (2) The three large private companies organized under the investment law (total freight transported in 1990/91 was 0.7 million tons). Estimated share of total inter-zonal capacity is 1%.
- (3) Private small truckers and own account fleets of the private sector commodity producers. Estimated share of total inter-zonal capacity is 25%.

Estimate of haulage capacities are based upon data on freight vehicle fleet as outlined in section 6.2 and results of the company survey undertaken by this Study.

Sufficient information exists for the five freight transport companies formerly belonging to the Ministry of Transport, and at present affiliated to the Holding Company for Inland Transport. Operation indices of these companies shall be reviewed in this section.

A number of private truckers operate within the framework of cooperatives set up in each governorate. Some data related to these cooperatives is available from the company survey and interviews conducted by the Study Team.

The three private truckers established under the investment law; Ismailia National Transport Co., Port Said National Transport Co., and Egyptian American Freight Transport Co. were included in the company survey and the data obtained on the operation of these companies is shown in this chapter.

It is clear from the above data that private small truckers

and private sector commodity producers together own one-fourth of the transport capacity. Such truckers register their vehicles annually at respective traffic police departments. However vital records on the number of vehicles owned, load capacities, vehicle types and age, etc. are not maintained. A system by which data may be collected on their fleet and activity is necessary.

### 6.3.2 Public Sector Truck Operators

#### 1) Five Public Sector Freight Transport Companies

##### (1) Organization

At present, there are five public sector trucking companies as follows;

- General Nile Co. for Direct Transport (Direct Co.)
- General Nile Co. for Transport Works (Tr.Works Co.)
- General Nile Co. for Goods Transport (Goods Co.)
- General Nile Co. for Heavy Transport (Heavy Co.)
- General Nile Co. for Inland Transport (Inland Co.)

The five companies, formerly belonging to the Ministry of Transport, have now been reorganized under one or more holding companies affiliated to the newly established Ministry of Business Administration.

##### (2) Facilities

The headquarters of all the companies, excluding Inland Co. are located in Cairo. Inland Co.'s headquarter is in Alexandria. Workshops and garages of the five companies are shown in Table 6-3-1. While the facilities of Inland Co. are concentrated in the Lower Egypt region, the other companies have facilities in the Upper Egypt region. The Canal governorates are mainly served by Direct Co., Tr.Works Co. and Inland Co.

Table 6-3-2 shows the fleet capacities of the five trucking companies. Total number of vehicles (trucks, truck and trailer combination, and tractor and trailer combination) belonging to the five companies is 2,280, and total haulage capacity is 51,743 tons, 7% of the estimated total inter-zonal hauling capacity.

Table 6-3-1 Facilities of the Five Public Freight Transport Companies

Item	Direct	Tr.Works	Goods	Inland	Heavy	
1. Workshops	Cairo: 4 Alex: 1 Safaga: 1 Qena: 1 Suez: 1	Cairo: 4 Alex: 1 Port Said: 1 Beni Suef: 1 Fayoum: 1	Cairo: 2 Alex: 1 Mansoura: 1 Minya: 1 Zagazig: 1	Cairo: 1 Alex: 1 K.El Zayat: 1 Mahala: 1 Cairo: 1 Suz: 1	Cairo: 1 Alex: 1 Mahala: 1 Cairo: 2 Suz: 1	3 1 1 2 1
		8	6	5	6	4
2. Garage (veh. capacity)	Cairo: 800 Alex: 250 Safaga: 120 Qena: 100 Suez: 180	Cairo: 800 Alex: 250 Port Said: 110 Beni Suef: 65 Fayoum: 70	Cairo: 130 Alex: 130 Mansoura: 94 Minya: 93 Zagazig: 90	Cairo: 133 Alex: 100 K.El Zayat: 94 Mahala: 93 Cairo: 90 Suz: 90	Alex: 125 K.El Zayat: 125 Mahala: 120 Cairo: 50 Naga Hammadi: 35	Cairo: 115 Alex: 50 Tanta: 15 Naga Hammadi: 30 Suz: 35
	1450	505	510	455	210	
3. Employee (1990)						
- Permanent Staff	2200	2114	2039	1700	1490	
- Temporary Staff	150	112	182	240	360	
- Drivers	675	456		361	240	

Source: Transport Companies Survey

Table 6-3-2 Public Truckers Fleet Classification by Capacity (1990/91)

Item	Total		Direct		Tr. works		Goods		Land		Heavy	
	No.	Cap. (Ton)	No.	Cap. (Ton)	No.	Cap. (Ton)	No.	Cap. (Ton)	No.	Cap. (Ton)	No.	Cap. (Ton)
<2 years	156	3517	18	378	30	660	34	589	38	1026	36	864
2 - 4 years	418	9463	85	1785	77	1818	67	1195	55	1485	134	3180
4 - 6 years	593	13409	79	1659	120	2880	180	3356	126	3402	88	2112
6 - 8 years	503	10844	135	2785	98	2420	151	2507	119	3132	0	0
8 - 10 years	410	10019	134	3340	85	2347	49	774	74	1926	68	1632
>10 years	200	4490	99	2455	29	745	29	180	26	702	17	408
Total	2280	51742	550	12402	439	10870	510	8601	438	11673	343	8196

Source:TPA

Overall the majority of vehicles (66%) are between 2 to 8 years old, and 25% are less than 4 years old. By individual company, Heavy Co. appears to have the newest fleet with 50% of its vehicles less than 4 years old. On the other hand, Direct Co., the largest of the five companies in terms of fleet size and haulage capacity, has the oldest fleet with 67% of its vehicles more than 6 years old.

### (3) Operation

The five companies are basically serving to exports mostly through transport of imports coming into the country. However to minimize empty trips the companies also carry some goods that have neither origin nor destination at a port. The served ports for each company was allocated as follows, however they no more follow the system.

- Alexandria Ports : Inland Co.
- Damyat port : Heavy Co.
- Port Said Port : Tr.Works Co.
- Abadia Port : Goods Co.
- Safaga Port : Direct Co.

However in case where goods to be transported from a certain port exceed haulage capacity of the company serving that port, then the company in question either sub-contracts to cooperative truckers or to a sister public company.

Roughly 60 to 70% of materials transported by these companies are Ministry of Supply goods such as wheat. These companies used to receive their work contracts through direct order from the Ministry of Supply however lately much of the work is contracted through tendering. Although in the past coordination existed between the five companies, with the establishment of the holding company fierce competition appears to have replaced coordination.

Indices describing the performance of the public freight transport companies in total and by individual company are shown in Table 6-3-3, for 1989/90 and 1990/91.

Table 6-3-3 Operation Indices of Public Trucker Companies(1)  
A - 1989/1990

Indices	1989/90					
	Total	Direct	Tr.Works	Goods	Inland	Heavy
1.Transport Volumes (mill.ton)	11.2	2.8	2.0	2.7	1.9	1.8
2.Ton/Km (mill)	2505.0	690.0	479.0	474.0	487.0	375.0
3.Total distance covered (mill.km)	133.9	39.0	27.6	24.7	23.8	18.8
4.Total loaded distance (mill.km)	91.6	28.1	18.8	14.6	16.0	14.1
5.Fleet (no.)	2220.0	532.0	424.0	510.0	428.0	326.0
6.Daily ave. vehicles in service	1799.0	415.0	340.0	438.0	348.0	258.0
7.Service factor	0.8	0.8	0.8	0.9	0.8	0.8
8.Ave length of haul (km)	224.3	246.6	239.5	175.4	257.8	210.9
9.Ave load per shipment (tons)	27.4	24.6	25.5	32.4	30.4	26.6
10.Annual tons per vehicle (in service)	6207.3	6742.2	5882.4	6168.9	5428.2	6891.5
11.Annual 1000 ton/km per vehicle	1392.4	1662.7	1408.8	1082.2	1399.4	1453.5
12.Annual tot. dist. per veh. (1000km)	74433.6	93918.1	81176.5	56474.9	68373.6	72868.2

Table 6-3-3 Operation Indices of Public Trucker Companies(2)  
B - 1990/1991

Indices	1990/91					
	Total	Direct	Tr.Works	Goods	Inland	Heavy
1.Transport Volumes (mill.ton)	11.8	3.1	1.8	3.1	1.9	1.8
2.Ton/Km (mill)	2518.0	689.0	460.0	447.0	526.0	396.0
3.Total distance covered (mill.km)	133.1	36.2	28.0	24.7	24.5	19.8
4.Total loaded distance (mill.km)	93.8	26.4	18.7	16.5	17.2	14.9
5.Fleet (no.)	2265.0	550.0	430.0	503.0	439.0	343.0
6.Daily ave. vehicles in service	1800.0	430.0	346.0	393.0	360.0	271.0
7.Service factor	0.8	0.8	0.8	0.8	0.8	0.8
8.Ave length of haul (km)	214.2	223.7	251.4	144.6	273.0	216.5
9.Ave load per shipment (tons)	26.9	26.1	24.6	27.0	30.6	26.6
10.Annual tons per vehicle (in service)	6531.7	7162.8	5289.0	7865.1	5352.8	6749.1
11.Annual 1000 ton/km per vehicle	1398.9	1602.3	1329.5	1137.4	1461.1	1461.3
12.Annual tot. dist. per veh. (1000km)	73920.6	84097.7	80780.3	62725.2	68038.9	73062.7

Source: TPA

Average load per shipment, at 27 tons, appears to be high when compared with average load observed during the road side interview survey of 11 tons for each loaded vehicle. The 1990/91 ratio between total loaded distance covered, at 0.7, is high when compared with the ratio of loaded to total freight vehicles observed at the road side interview survey of 0.6.

#### (4) Financial Conditions

Table 6-3-4 presents summaries of the five freight companies' financial statements; balance sheets and profit/loss statements, comparing those of the years 1977/78 and 1990/91.

##### a. Balance Sheet

During some 13 years from 1978 to 1991, the companies' financial magnitude expanded about five times, with the exception of Inland Co. whose asset increase remained only three times. This development can be attributed mostly to general inflation, as the table shows the number of their fleet increased only by 1.5 times and employees by 1.2 times in the same period. In this respect, this financial growth can be considered rather moderate.

The total accumulated assets amounted to LE 246 million in the year 1991, half of which has been depreciated.

The amounts of receivables are remarkable, being almost the same level as the annual revenues. This is probably because their proceeds are paid in the following year according to annual contracts. In the free market economy, the receivable shall be paid with interest and this situation may result in an additional interest payment.



Table 6-3-4 Financial Statement of the Public Trucker Companies

(1) Balance Sheet

Item	Company Direct Transport		Transport Works		Goods Transport		Heavy Transport		Inland Transport		Total	
	1977/78	1990/91	1977/78	1990/91	1977/78	1990/91	1977/78	1990/91	1977/78	1990/91	1977/78	1990/91
No. of Trucks	226	550	326	430	289	510	246	343	383	438	1,470	2,271
No. of Working Trucks	215	450	255	368	238	437	236	292	311	369	1,255	1,916
No. of Staff	1,834	2,350	2,014	2,226	1,992	2,221	1,078	1,850	1,988	1,940	8,906	10,587
<b>Assets</b>												
Fixed Assets	8,744	81,736	10,595	52,300	12,594	46,636	7,494	47,674	13,062	37,453	52,489	245,799
Depreciation	3,523	29,629	4,110	24,721	5,778	20,511	3,313	21,813	6,336	19,509	23,060	116,183
Assets after Dep.	5,221	32,107	6,485	27,579	6,816	26,125	4,181	25,861	6,726	17,844	29,429	129,516
On-going Projects	1,262	8,144	44	2,345	82	2,187	127	7,996	21	2,826	1,536	23,498
Financial Investment	68	1,054	9	510	150	149	0	42	28	29	255	1,784
<b>Current Assets</b>												
Cash	3,268	8,002	1,457	6	601	66	553	2,637	990	5,648	6,869	16,359
Receivable	2,123	15,246	4,201	19,548	7,767	21,728	1,646	36,431	4,082	11,946	19,819	104,899
Inventory	1,843	10,380	2,197	7,742	1,459	11,433	1,948	10,969	2,009	7,628	9,456	48,152
<b>Total</b>	<b>13,785</b>	<b>74,933</b>	<b>14,393</b>	<b>57,730</b>	<b>16,875</b>	<b>61,688</b>	<b>8,455</b>	<b>83,936</b>	<b>13,856</b>	<b>45,921</b>	<b>67,364</b>	<b>324,208</b>
<b>Capital &amp; Liability</b>												
Capital	7,094	17,253	8,037	12,622	8,721	13,284	5,273	14,447	9,205	14,468	38,330	72,074
Reserves	2,290	8,987	67	4,512	2,491	3,426	-553	4,392	129	3,500	4,424	24,817
Special Fund	0	3,784	0	1,491	0	1,897	0	6,510	0	2,471	0	16,153
Long Term Loan	1,025	35,855	19	19,681	0	32,129	0	38,373	2	17,735	1,046	143,773
Creditors	0	6154	0	6,540	0	4,529	0	19,903	0	4,845	0	41,971
Suppliers Credit, Others	3,376	2,900	6,270	12,884	5,663	6,423	3,735	311	4,520	2,902	23,564	25,420
<b>Total</b>	<b>13,785</b>	<b>74,933</b>	<b>14,393</b>	<b>57,730</b>	<b>16,875</b>	<b>61,688</b>	<b>8,455</b>	<b>83,936</b>	<b>13,856</b>	<b>45,921</b>	<b>67,364</b>	<b>324,208</b>

(2) Profit/Loss Statement

Item	Company Direct Transport		Transport Works		Goods Transport		Heavy Transport		Inland Transport		Total	
	1977/78	1990/91	1977/78	1990/91	1977/78	1990/91	1977/78	1990/91	1977/78	1990/91	1977/78	1990/91
<b>Operating Revenue</b>												
Transport Service	9,594	30,315	11,202	22,317	6,959	21,624	3,108	20,487	8,078	22,578	38,941	117,321
Sub-contract Service	24	35	0	445	0	122	0	23	0	254	24	879
Others	0	711	9	924	41	1,552	0	299	0	445	50	3,931
<b>Total</b>	<b>9,618</b>	<b>31,061</b>	<b>11,211</b>	<b>23,686</b>	<b>7,000</b>	<b>23,298</b>	<b>3,108</b>	<b>20,809</b>	<b>8,078</b>	<b>23,277</b>	<b>39,015</b>	<b>122,131</b>
<b>Operating Expenditure</b>												
Wage	973	6,836	1,057	6,050	1,185	6,633	516	3,370	1,072	6,086	4,803	28,975
Materials req.	1,401	11,562	1,116	7,353	850	6,385	1,005	4,623	1,359	7,732	5,731	37,655
Services req.	5,381	3,556	7,399	2,447	3,322	2,388	1,170	3,957	3,841	2,896	21,113	15,244
Other Expense	176	397	224	1,517	157	297	87	251	212	255	856	2,717
<b>Total</b>	<b>7,931</b>	<b>22,351</b>	<b>9,796</b>	<b>17,367</b>	<b>5,514</b>	<b>15,703</b>	<b>2,778</b>	<b>12,201</b>	<b>6,484</b>	<b>16,969</b>	<b>32,503</b>	<b>84,591</b>
<b>Operating Surplus</b>	<b>1,687</b>	<b>8,710</b>	<b>1,415</b>	<b>6,319</b>	<b>1,486</b>	<b>7,595</b>	<b>330</b>	<b>8,608</b>	<b>1,594</b>	<b>6,308</b>	<b>6,512</b>	<b>37,540</b>
<b>Capital Cost</b>												
Depreciation	912	4,330	1,063	3,452	1,143	4,426	756	4,225	1,178	2,698	5,052	19,131
Interest Payment	113	638	158	1,290	230	2,704	84	1,121	181	412	766	6,165
<b>Total</b>	<b>1,025</b>	<b>4,968</b>	<b>1,221</b>	<b>4,742</b>	<b>1,373</b>	<b>7,130</b>	<b>840</b>	<b>5,346</b>	<b>1,359</b>	<b>3,110</b>	<b>5,818</b>	<b>25,296</b>
Transfer Revenue	253	1,524	1,226	363	122	549	191	1,653	253	846	2,045	4,935
Specialized Current Exp.	289	3,375	2,708	1,690	1,810	991	361	3,752	289	2,295	5,457	12,103
Transfer Surplus	-36	-1,851	-1,482	-1,327	-1,688	-442	-170	-2,099	-36	-1,449	-3,412	-7,168
<b>Net Surplus</b>	<b>626</b>	<b>1,891</b>	<b>-1,288</b>	<b>250</b>	<b>-1,575</b>	<b>23</b>	<b>-680</b>	<b>1,163</b>	<b>199</b>	<b>1,749</b>	<b>-2,718</b>	<b>5,076</b>

Necessary funds are financed mainly by increased paid-up capital and long term loan which grew very much in the 13 years. Increase and replacement of fleets were financed mainly by long term debts from the National Investment Bank whose interest rates were recently raised from 4.0 - 5.0% per annum up to 8.0 - 9.0% per annum. This created a heavier burden of interest payment on the companies and made fleet acquisition more difficult.

In addition, due to the significant increase of liabilities in the recent years, the debt-service ratios, which are still in a comparatively low level, will possibly rise up in the future.

#### b. Profit and Loss Statements

Until the mid-80's, most of the companies could cover their expenditure with their operation revenue. Though some companies made net surplus, however, these were not sufficient to renovate their fleets. In those days, a large part of their activities was blockage of freight to private truckers, and accordingly, most of the revenues were paid to buy services.

However, this situation has significantly improved since the late 80's, partly due to the proper efforts to activate their fleet operation and partly to a series of tariff revisions. All the companies realized a net surplus, showing a steady increase from LE 1.1 million in 1988 to LE 5.1 million in 1991.

#### 2) Own Account Freight Transport

As mentioned earlier in this section, it is estimated that 37% of total inter-zonal haulage capacity belongs under this category. This category covers public sector producing companies and construction companies and government ministries.

Interviews were conducted with a number of large companies; producers of cement, iron and steel, flour milling co., manufactured fertilizers, edible oils and detergents, phosphates, and metal works. Usage of own account fleets varied by company. No company was totally dependent upon its fleet for haulage of raw materials and its products. The cement producing company relied on other transport means for raw materials while it transported a part of its bagged cement and most of its bulk cement production by its own vehicles. On the other hand, all raw materials and products of the iron and steel complex were transported by other transport means and the iron and steel company's substantial trucking fleet is used within its plants.

The priority of interviewed companies was the safe and speedy transport of their raw materials and products and there is hardly any concern as to the high rate of empty

trips (50% of total distance covered). Transport costs are in general not treated independently, but as part of production costs. While most companies had no plans to increase their own account fleet and are expected to gradually increase their reliance on other transport means yet the majority of interviewed companies expressed a strong desire to maintain their fleets at present capacities to ensure that they have their own transport means in case of emergencies. There was a strong fear expressed by most of the interviewed companies that private truckers could not be completely depended upon.

A number of public sector transport companies, about 100 companies were interviewed during this Study's company survey as to their own account freight haulage capacity and extent of their transport of raw materials entering their factories and products leaving their facilities. Approximately 45% of the total raw materials and products land transport to-and-from the facilities were by the companies' own fleet.

### 6.3.3 Private Sector Truck Operators

#### 1) Trucking Cooperatives

##### (1) Establishment and Organization

In the early 1960's a number of cooperatives were set up in some cities of Egypt to gather the private truckers under one organization and more efficiently operate the freight transport industry. These cooperatives were supervised by the Ministry of Industry.

The importance of attaching cooperatives to the Ministry of Transport became evident and in 1964 the cooperatives, seven at that time, were transferred to the control of that ministry. The Ministry of Transport continued to supervise the cooperatives through its Inland Transport Authority up to the year 1975.

Law no. 100/1975 decreed the abolition of the Inland Transport Authority and the transfer of the cooperatives' supervising authority to the Ministry of Local Administration. This situation was once more reversed in 1978, and the cooperatives were returned to the Ministry of Transport. Finally law 43/1979 put each cooperative under the supervision of the governorate administration it is located within. This situation has continued up to the present.

At present there are 25 cooperatives located in all the governorates (with the exception of South Sinai). Total number of members is 12,550 owning 15,200 vehicles, of which approximately 70% are in operational condition. There are no restrictions for membership other than that the freight vehicle capacity should not be less than 5 tons. A board of

directors is elected for each cooperative from among its members, and there is a central committee located in Cairo which oversees all the cooperatives.

Cooperatives encourage membership of any private trucker having vehicles of load capacity over 5 ton, regardless of vehicle age or number owned. Cooperatives negotiate contracts and arrange freight hauling jobs, receiving 5% of the revenue paid to the individual truckers. They provide facilities for their members, such as tires, oils, covers, etc. at reduced prices. At present none of the cooperatives have either garages or workshops, although Sohag Governorate Cooperative is said to be studying the construction of a central garage for its members. Cooperatives prepare annual budgets and financial statements which are checked by the central government's accounting agency.

## (2) Operation

The major clients of the cooperatives come from companies affiliated to the Ministry of Supply (cereals, milling industry products, fertilizers, etc.) and annual contracts are negotiated with the ministry. In addition the cooperatives receive haul orders from the five public sector freight transport companies as well as other sector producing companies. Roughly 70% of goods transported by the cooperatives are of the Ministry of Supply. Data on the fleets of the cooperatives is shown in Table 6-3-5.

With a total of 15,200 freight trucks, cooperatives transported 27 million tons in 1990, earning a total revenue of LE 170 million. The table shows number of freight vehicles belonging to each cooperative for the years 1975, 1979 and 1990. In total number of members' vehicles increased by about 70% in 15 years between 1975 and 1990. In terms of total fleet, the share of the cooperatives, at 4%, has continued to decrease when compared to the corresponding figures of 12% in 1979, and 24.5% in 1974 (ENTS II). This may indicate the tendency of private truckers to operate outside the cooperatives, thereby weakening the position of cooperatives within the industry.

A number of cooperatives were surveyed by this Study and a summary of the results is given in Table 6-3-6. Cairo Governorate Trucking Cooperative hauls one-fourth of the total freight hauled by the cooperatives, earning 20% of total cooperatives revenues. In the absence of data on total annual distance covered, average annual freight carried by a vehicle was calculated as shown in the table.

Table 6-3-5 Trucking Cooperatives' Fleet

Gov.	Vehicle Number			1990/ 1975	Share of total trucks in 1990 (%)
	1974(1)	1979(1)	1990(2)		
URBAN GOVERNORATES					
Cairo	1261	1412	2240	1.8	3
Alexandria	850	1100	1103	1.3	2
Port Said	100	261	335	3.4	13
Suez	370	420	310	0.8	9
LOWER EGYPT					
Damietta	93	110	310	3.3	5
Dakahlia	850	950	1799	2.1	8
Sharkia	301	500	415	1.4	2
Qalubia	161	176	457	2.8	2
Kafr El Sheikh	510	600	955	1.9	10
Gharbia	800	850	1000	1.3	5
Minofia	410	624	485	1.2	4
Behera	514	550	825	1.6	3
Ismailia	400	420	115	0.3	1
UPPER EGYPT					
Giza	262	245	310	1.2	1
Beni suef	269	295	192	0.7	3
Fayum	350	264	350	1.0	5
Minya	413	671	1457	3.5	13
Assyut	300	400	1304	4.3	12
Sohag	400	550	770	1.9	9
Qena	187	319	177	0.9	2
Aswan	71	121	135	1.9	4
FRONTIER					
Red See	64	124	65	1.0	3
New Valley	28	40	45	1.6	4
Natrouh	56	79	50	0.9	1
North Sinai	(?)	(?)	(?)	(?)	(?)
South Sinai	NA	NA	NA	NA	NA
Total	9020	11081	15204	1.7	4

Source:  
 (1) ENTS II  
 (2) Cooperatives' Central Committee in Cairo

Table 6-3-6 Operation of a Number of Surveyed Cooperatives

Governorate	Freight hailed in 1990 (1000t)	Annual Revenue in 1990 (1000t)	Share of Coop. Tot. hailed freight (%)	Share of Coop. Tot. Annual Revenue (%)	Vehicle Number in 1990	Average load per Vehicle (t/veh)
URBAN GOVERNORATES						
Cairo	6500	33000	24	19	2240	2902
Alexandria	1826	11554	7	7	1103	1655
LOWER EGYPT						
Damietta	2613	19809	10	12	1799	1452
Kafr El Sheikh	1500	6836	6	4	955	1571
Gharbia	2294	19626	8	12	1000	2294
UPPER EGYPT						
Minya	3875	23251	14	14	1457	2660
Assyut	1000	11790	4	7	1304	767
Sohag	1200	13000	4	8	770	1558
FRONTIER						
Natrouh	191	1993	1	1	50	3820
Total Cooperative	20999	140859	77	83	15204	1381

Source: Transport Companies Survey

## 2) Private Truckers established under Investment Law

Three large scale private truckers were interviewed under the transport companies survey. The three companies of Ismailia National Co. for Transport, Port Said National Co. for Transport and Egyptian American Co. for Transport were all established under the investment law no 43. Data related to the three companies performance in 1990 are shown in Table 6-3-7.

Table 6-3-7 Private Trucker Companies Survey Results

Item	Egyptian American Co.	Port Said Natl .Co.	Ismailia Natl. Co
1. vehicle fleet actual ( in operation )			
- pick up	3 (3)	1 (1)	0 (0)
- heavy truck	49 (43)	40 (28)	4 (3)
- semi trailer	0 (0)	0 (0)	42 (32)
- trailer	68 (42)	40 (36)	23 (17)
total	120 (88)	81 (65)	69 (52)
2. facilities			
- workshops	available	available	available
- garage (capacity)	300	50	60
3. freight transported (1000 tons)			
	254	65	405
4. finances			
- capital (1000 LE)	848	3500	6025
- revenue (1000 LE)	3030	900	2153
- expenditures (1000 LE)			
wages & incentives	752	94	522
insurances, etc	20	81	350
taxes	NA	10	NA
depreciation	247	200	561
fuel	224	77	194
lubricants,oils	63	15	13
tyres	304	206	835
spare parts	202	70	161
other costs	1077	585	552
total expenditure	2889	1338	3188

source: transport companies survey

Ismailia National Co. with the smallest fleet size carried the largest amount of goods in 1990, with an average load per vehicle (of total working vehicles) of 7,800 ton. This is somewhat higher when compared to the public companies' corresponding value of 6.500 ton. On the other hand the service factor (vehicles in service/total vehicles) for the Egyptian American Co. was the lowest at 0.73.

A rough calculation of the financial conditions of the three companies based on available data shows that expenditures exceeded revenues by about 1.5 times for both companies of Port Said National Co. and Ismailia National Co. Only in the case of Egyptian American Co. were the expenditures less than the revenue.

A follow-up interview with Ismailia National Co. has shown that the company has in the past two years shifted over 90% of its work to the transport of Egyptian exports to neighboring countries. The company complained of decreasing demand in the local market coupled with fierce competition that lowers tariff rates to unprofitable levels.

These three companies are not allowed to bid for lucrative transport of the Ministry of Supply goods as they do not belong to the public sector. They must work through the public truckers.

### 3) Own Account Operators

While these operators are estimated to account for about 30% of the inter-zonal hauling capacity and therefore have a considerable role, data on their activities is difficult to obtain. Operators under this category include truckers who own freight vehicle(s) but are not members of cooperatives and private sector producers who operate own account fleets.

Private truckers rely basically on sub-contracts and many transport agents to receive their work. Usually their tariffs are very low. Some of these truckers play parcel trade, i.e. transporting parcels between the major cities. Parcels can be electric goods, foods, clothes, paper and many other types of processed goods. Such truckers fix their routes and tariff is charged by the parcel, with attempts at standardizing dimensions. Some truckers deliver parcels door-to-door however most transport parcels from station to station.

Owner of small factories prefer to have their own fleet of vehicles so as to be always available to them. In interviews with a private plastic bottles producer, it was learned that out of ten vehicles loads (3 ton/veh) leaving the factory daily, three vehicles at least belong to the factory.

Other truckers falling under this category are those that transport vegetable and fruits from farms to market places. This is usually done by small vehicles owned by some of the villagers or by the farmers themselves.

## 6.4 Cost Performance

### 6.4.1 Tariff

The present average tariff is calculated as shown in Table 6-4-1 based upon the company survey results and interviews with various truckers.

Table 6-4-1 Current Average Land Transport Tariff

Distance (Km)	Average Tariff	
	(LE/Ton)	(LE/1000 ton.km)
0 - 150	9	90
151 - 250	13	65
251 - 350	16	53
351 - 450	21	53
451 - 550	25	50
551 - 650	28	47

Source: Study Team Survey

These prices are largely determined by the rates of the Ministry of Supply for transport of its goods, mostly in the form of break-bulk imports from sea ports. It is notable that in terms of LE/ton the tariff continues to rise sharply as the distance increases. This condition is different from that observed for railway and waterways commodity transport tariffs where increase in rate tends to slow down as distance increase.

### 6.4.2 Suitability of Tariff Level

#### (1) Determination of Tariff

So far tariff has been largely determined based on rates set by the Ministry of Supply for the transport of its goods, mainly imports from sea ports to inland. Although the Ministry's companies have their own account fleet, its huge freight transport demand forces it to sub-contract part of that demand.

The Ministry contracts the work among the five public sector companies according to the ports they are covering. The public sector companies, in turn sub-contract part of the work when they are incapable of performing it all. They charge a 5-7% for administrative fees to the sub-contracted companies. The sub-contracted companies are usually the cooperatives. Each of the 5 public sector companies works with an identified number of cooperatives. The cooperative member who finally receives the work order must pay the cooperative 5% of the tariff. Therefore, if the MOT companies are paid LE 200 to transport a twenty ton load from Alexandria to Cairo with their own vehicles, the cooperative member who participates in this work will receive about LE



175 for the same work.

Although the Ministry contracts its transport work solely to the companies relating to public work sector, most of the other big producing public sector companies contract the work through tenders. The tenderer with the lowest bid is awarded the contract and contract period is usually for one year but is rarely less than six months. Tender is open to all and there seems to be no check as to capabilities of tenderer in terms of fleet capacity, previous experience, or others. It has been reported that participation of large trucking companies alongside small truckers and middlemen in tenders can lead to a drop in price from the average LE 10 per ton to LE 7 or 8 per ton. It may be difficult for large truckers to turn a profit or cover their costs at such a level.

(2) Public companies relating to MOT cost performance

Table 6-4-2 shows operating revenue and costs of the five truckers relating to public work sector for 1990/91 and amount of tonnage transported by them.

Table 6-4-2 Truckers Relating to Public Work Sector Freight Transport Cost Performance

	Direct Trans- port	Trans- port Works	Goods Trans- port	Heavy Trans- port	Inland Trans- port	Total
<b>(A) OPERATING REVENUE (LE 1000)</b>						
-Own Transport	30315	22317	21624	20487	22578	117321
-Others	746	1369	1674	322	699	4810
Total	31061	23686	23298	20809	23277	122131
<b>(B) FREIGHT OPERATING COST (LE 1000)</b>						
-Wages	6836	6050	6633	3370	6086	28975
-Materials	11562	7353	6385	4623	7732	37655
-Services	3556	2447	2388	3957	2896	15244
-Others	397	1517	297	251	255	2717
-Depreciation	4330	3452	4426	4225	2698	19131
-Interest	638	1290	2704	1121	412	6165
Total	27319	22109	22833	17547	20079	109887
<b>(C) FREIGHT TRANSPORTED</b>						
-Hauled Wt. (1000t)	3080	1825	2702	1829	1927	11363
-Loaded dist. (million ton.km)	690	460	474	369	526	2546
<b>(D) COST PERFORMANCE PER TON HAULED (LE/TON)</b>						
-Operating cost	8.9	12.1	8.5	9.6	10.4	9.7
-Own trsp revenue	9.8	12.2	8.0	11.2	11.7	10.3
-Total revenue	10.1	13.0	8.6	11.4	12.1	10.7
<b>(E) COST PERFORMANCE PER TON.KM (LE/1000 TON.KM)</b>						
-Operating cost	39.6	48.1	48.2	44.3	38.2	43.2
-Own trsp revenue	43.9	48.5	45.6	51.7	42.9	46.1
-Total revenue	45.0	51.5	49.2	52.5	44.3	48.0

Source: TPA data

Operating revenues include those gained from the companies

own freight transport operations and those gained from subcontracting freight transport to other companies (mostly cooperatives). Freight operating costs cover the items as shown in the Table.

In terms of LE/ton own transport revenues of four of the five companies cover their operating costs. The own transport revenue of Goods Co. per ton. at LE 8 does not cover its operating cost of LE 8.5/ton. Average haulage distance of this company, at 145Km (Table 6-3-3), was the shortest of the five companies (average of five companies was 230Km) and therefore much of its transport work may have been charged by lower tariffs. The average operating cost of the five companies was LE 9.7 while own transport revenue exceeded that figure at LE 10.3, indicating that the average tariff of LE 10/ton presently charged is sufficient to cover the operating costs.

It is therefore possible to conclude that under the present contract awarding conditions, whereby the Ministry of Supply's transport work is awarded to the five public companies, at the average tariff rate of LE 10 per ton, then these companies can turn in a profit.

### (3) Private cooperative truckers cost performance

As indicated from the company survey, results of which are shown in Table 6-3-6, the operating costs for transport of one ton varied from LE 5.1 (Cairo cooperative) to LE 11.8 (Asyut cooperative). The average was LE 6.7 per ton. Therefore at even the discounted tariff rates (after removing MOT and cooperative managements' 10%) a profit is likely.

### (4) Private investment law companies

The three companies established under the investment law were interviewed in this Study's company survey and the results are shown in Table 6-3-7. Port Said National Co.'s figures are rather doubtful as the company shows a high operating cost of LE 21/ton coupled with a deficit. Ismailia National Co. also shows a deficit but its operating cost per ton, at LE 8 is closer to reality. Egyptian American Co. operating cost was LE 11.4 per ton, and it was able to realize a revenue, charging an average of LE 12 per transported ton.

From the above figures it is clear that in order to realize a profit, Egyptian American Co.'s average tariff rate was higher than the average rate of freight companies relating to public work sector. Ismailia National Co, on the other hand could not realize a profit to cover its already low operating cost and in subsequent interview with the company it was learnt that they had almost completely pulled out of the domestic market.

It is surprising to note that operating cost for Egyptian American Co. was larger than those of the five public companies as it would be expected that a private company perform better than a public one. This point, and the fact that the collected data shows two of the three companies operating at a loss, make it necessary to view the information with some caution.

## 6.5 Issues related to current freight transport conditions

### 6.5.1 Interview Survey

The various organizations/agencies operating in land freight transport sector have been identified in the previous sections. Interviews by the Study Team and Counterpart Team were held with a number of these entities and among the interview items were some questions related to issues faced by these entities. A summation of these issues is shown in Table 6-5-1.

Table 6-5-1 Issues related to Current Trucking Industry Operation

Issue	Public Sector		Private Sector		
	(1) MOT Public Company	(2) Public Sector Own/ Account	(3) Trucking Cooper- atives	(4) Three Invest- ment Co	(5) Private Others & Own Acct
<b>(A) Operational Aspects</b>					
1- Empty running distance	--	0	--	0	--
2- Driver Contact	--	0	0	--	--
3- Delay Time At Port	0	--	0	0	--
4- City Road Restrictions	0	--	0	0	0
5- Delay Time At Silos	0	0	0	--	--
6- Low Quality Local Made tires and spare parts	0	0	0	0	0
7- Sudden rise of fuel cost	0	0	0	0	0
<b>(B) FINANCIAL/INSTITUTIONAL ASPECTS</b>					
8- Low tariffs	0	--	--	0	--
9- Preferential Treatment of public sector truckers	--	--	0	0	0
10-Middlemen/agents bidding in tenders	0	--	--	0	--
11-Regulation of industry	0	--	--	0	0
12-Information collection	0	0	--	--	--

Source: Study Team and Counterpart Teams Survey

In the case of empty running distance, public sector own account companies acknowledged that almost 50% of their vehicles running distance is empty, while the MOT companies showed a much lower total average figure of 30%. Entities heavily involved in transport works for the Ministry of Supply complained about delay times at sea ports and silos and warehouses. All companies complained of low standard locally produced tires, batteries and spare parts. Again the jump in solar (diesel oil) fuel prices to LE 0.3 was a burden all complained of.

The two professional large truckers complained of the falling tariff prices, involvement of middlemen/agencies in tendering, and lack of regulation and enforcement of supervision by the Ministry of Transport. Private sector truckers complained of directly being shut out of the Ministry of Supply business and of unfair treatment in taxes and other benefits given the public sector.

A more detailed look at some of the issues that should be addressed in the freight transport master plan are discussed hereafter.

### 6.5.2 Operational Issues

#### 1) Distribution System

The two most prominent distribution patterns appear to be as shown in Fig. 6-5-1.

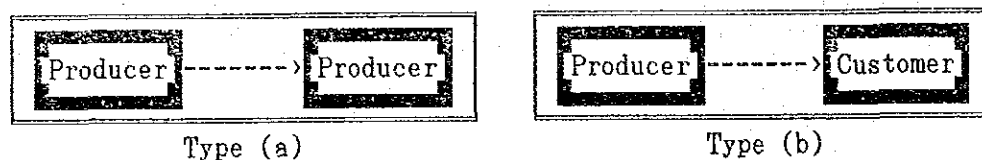


Fig. 6-5-1 Common Distribution Patterns

Most mined minerals are immediately transported to producers or sea ports for export, and product that enter into manufacture of other goods, such as some chemicals are also transported directly from one plant to another, with storage as necessary at either end.

Most construction materials are delivered directly to the customers or handed over at the production plant and transport arranged by the customers. In the case of cement, plants have some capacity for storage, however the nature of cement does not encourage long storage duration so attempts are made to keep production in line with demand. Much storage of construction materials is maintained at construction sites, while large contractors may have their own storage sites.

The iron and Steel Complex is another example. All products are stored at the factory grounds until customer collection, using own arranged transport.

The following distribution pattern shown in Fig. 6-5-2 is

most common in the case of producers or suppliers having their own storage facilities.

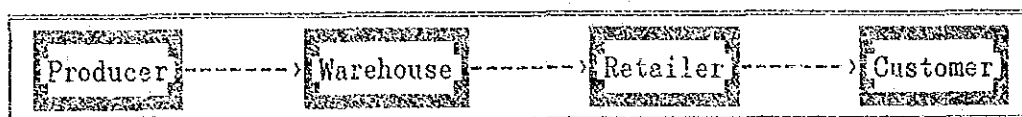


Fig. 6-5-2 Distribution System with Storage Facility

Goods belonging to the Ministry of Supply are mostly handled in this pattern. The Ministry has storage facilities in most of the governorates and most of food products, such as edible oils and fats are collected by the Ministry arranged transport at producing factories and transported to such storage sites. The Ministry then distributes the stocks from its warehouses to its retail points which are located all over the country.

The petroleum product, produced by the Ministry of Petroleum and Mineral Wealth are also transported to storage points from the refineries and then distributed to gas stations or other venues serving as outlets to the customers. However there some exceptions such as product delivered to big plants.

The Ministry of Agriculture's Principal Bank for Development and Agricultural Credit (PBDAC) also used to collect such products as manufactured fertilizers from the producers, transport it to its storage and distribution points near the farming areas, for sale to the farmers. However recently PBDAC has stopped this practice and the manufactured fertilizers are being purchased by a number of buyers who in turn distribute to the consumers. But these buyers do not have any storage facilities so there have been complaints by producing plants that it is some times necessary to store products at the factory, thereby taking up space.

On the other hand, the distribution process which is not so widespread, and which is efficient in terms of separating long distance transport from urban distribution, is shown in the following Fig. 6-5-3.

Rod Al Farag fruit and vegetable distribution market in

Cairo is one of the rare examples of a wholesale market. Fruits and vegetables are transported either directly through the farmers' arrangements or by the wholesaler, and sold at the market by the wholesaler to retailers who then transport the goods to their shops. The market does not only serve the Greater Cairo area but also acts sometimes as a middle point between the Lower and Upper Egypt regions.



Fig. 6-5-3 Distribution System with wholesale Market

The prevalent distribution systems do not allow for a separation of long distance transport and intra-city transport. Under the present conditions vehicles may be used inefficiently, and large vehicles suffering delays due to restriction on use of certain roads during specified hours in some cities.

## 2) Modernization of Industry

### a. Information system and driver contact

The beg truckers, whether the MOT five companies or the private companies established under the investment laws, need to perform their works under a more efficient data collection and information system. The ability to coordinate their resources to transport in a more economical manner will help such companies to better serve their clients. At present there is no contact with vehicle drivers and drivers must call in at predetermined times. However due to road conditions and unavailability of communication facilities at all times this system of maintaining contact with drivers is not too reliable. Therefore such basic information as exact location of the drivers, existing road conditions, estimated times of arrival at the next point, vehicle conditions, transported cargo conditions, etc. are in many cases unavailable. Coordinating between transport demand and directing the driver from one unloading point to the next loading point is not carried out smoothly.

## b. Loading and unloading

Loading and unloading in most cases is still done manually and this results in time delay, damage to transported cargo and poor working environment for those doing the work. Poor packaging combined with loading or unloading contributes to damages and loss.

## c. Containerization

Road side surveys carried out by this Study, revealed that only a very small volume, less than 2% of the total cargo surveyed at road side stations was carried by containers. The utilization of containers for certain commodities can greatly contribute to their efficient transport. In addition containers facilitate inter-modal change.

### 6.5.3 Financial and Institutional Issues

#### 1) Enforcement of trucking industry regulation

There are very loud calls within the trucking industry that the Ministry of Transport should identify suitable freight tariff rates, and keep a register of truckers and their fleet capacities and conditions. The logic behind this is to bar unqualified truckers, or middlemen, from entering bids in tenders and cause the tariffs to drop to rates at which the established truckers, with larger overheads than one or two truck owners, can no compete.

However under the government's current privatization policy, while guidelines may be set for tariffs it is not possible or wise to force customers to pay high rates when lower rates may be available. It is however necessary to keep track of the companies involved in the trucking industry to ensure that bidding is realistic. Law 64/1970 (outlined in section 6.1) calls upon the Ministry of Transport to maintain a register of the trucking companies and therefore the government is in a position to exercise some control over the industry. The government can therefore restrict bidding to prequalified tenderer who have sufficient vehicle capacity or proven experience to undertake the tendered work. At present there are no such restrictions. Customers overlook such conditions, concentrating only on lowering transport costs, and knowing that truckers may resort to over-loading or sub-contracting if awarded. However any measures taken by the government in this regard should not result in undue tariff increase.

The five MOT public companies, have until recently been operating at a profit. This has largely been due to order contracts by the Ministry of Supply and other public sector companies. Privatization of some of the public sector companies and the desire of some of the Ministry of Supply public companies to decrease transport costs may lead these enti-



ties to resort to tendering rather than direct orders. Under fair tendering conditions, the five MOT companies, themselves in the process of privatization and streamlining their operations and the investment law private truckers may be expected to successfully compete.

The correct environment - and legal one taking into consideration law 64/1970 stipulations - should be provided so that these relatively big companies can continue to contribute to the freight transport industry. The trucking industry should be open to only those legally qualified. Conditions for qualification should be clearly specified and kept within reasonable limits.

## 2) Route or service area definition

At present the five MOT trucking companies divide the countries major ports amongst themselves and have also determined the trucking cooperatives to resort to in case of need. Therefore the cooperatives areas of work, in the case of the Ministry of Supply goods transport, are also fixed. These conditions were established a long time back when there was true coordination among the five companies and all were working within one organization.

Today these companies are on the road to privatization, and it appears that already competition has replaced coordination in many cases. Alexandria port, once the domain of Inland Transport Co., stationed in Alexandria, is now open to the other four companies. In the past these companies used to coordinate on which of them would enter specific tenders, however now it is no strange if all five participate in one tender. While this is a healthy sign, it may still be necessary to monitor the shift from fixed service areas to outright competition and study whether it is necessary at some stage to introduce the concept of determining fixed routes or areas as a condition when registering. Any measures adopted to regulate or deregulate the trucking industry should be supportive of the government's tendency towards development of a free market oriented economy and no contradictory to that policy.

## 3) Public sector own account fleet operation

This study has estimated that own account public sector fleet inter-zonal haulage capacity accounts for 37% of the total, and accordingly that fleet carries approximately the same share of the interzonal freight transport.

Own account public sector companies were interviewed as to expenses incurred by the transport of their products or raw materials and the economic justification of using their own vehicles bearing in mind that close to 50% of the distance covered by their fleets were unloaded trips. The unanimous reply was that although economically unjustifiable, the

availability of their own account fleets ensured these companies an alternative should they be let down by the trucking companies. Some companies voiced the opinion that it was safer to use their own vehicles to safeguard against theft or damage of their products. In most of the interviewed companies, transport costs are calculated as part of production costs and are not considered separately.

As the public sector companies streamline their operations under the privatization drive own account transport may substantially decrease. The issue is how long this process will take. On the one hand the trucking companies are complaining of a slow market and on the other hand continuation of the present own account freight transport at such a large scale is not economically sound both for those companies involved and also for the national economy. Therefore it may be worthwhile to consider introducing measures to hasten the process.

