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**THE AMERICAN UNIVERSITY IN CAIRO**

**School of Global Affairs and Public Policy**

**Towards Reforming Public Bus Service in the Greater Cairo  
Metropolitan Area**

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**A Thesis Submitted to the Public Policy and Administration  
Department in partial fulfillment of the requirements for the  
degree of Master of Public Administration**

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**Fall 2016**

## Abstract

This research manifests the importance of high quality public transport for individuals, communities and the nation as a whole and demonstrates the added value of developing public bus service specifically. Japan International Cooperation Agency's quality standards are used as a conceptual frame of reference to benchmark the public buses service in the Greater Cairo Metropolitan Area. This study relies upon primary qualitative research and secondary data to create background and analysis of the problems within the current system of deficient traffic and public bus service in the Greater Cairo Metropolitan Area. Data findings of semi-structured interviews supplemented by relevant journal articles and Central Agency for Public Mobilization And Statistics report 2013/2014 exhibited the weak points in management and sustainability structures of the public bus service delivery. Thus, a set of recommendations are proposed pertaining to enhancing governance, planning, service delivery and sustainability with the aim of improving the quality of public bus service in Greater Cairo. The recommendations suggest that the empowerment of the Greater Cairo Transport Regulatory Authority as well as the reform of Cairo Transport Authority to follows a sustainable business model, using concession contracts of the London Bus system for contracting service providers and Public Private Partnership to manage its own bus fleet.

## List of acronyms

MDGs: United Nations' Millennium Development Goals.

GCMA: Greater Cairo Metropolitan Area.

JICA: Japanese International Cooperation Agency.

WB: World Bank.

BRT: Bus Rapid Transit system.

GCTRA: Greater Cairo Transport Regulatory Authority.

CTA: Cairo Transport Authority.

MoT: Ministry of Transport.

CAPMAS: Central Agency for Public Mobilization And Statistics.

TfL: Transport for London.

UNDP: United Nations Development Program.

UN-Habitat: United Nations Human Settlements Program.

GOPP: General Organization for Physical Planning

GIZ: German Agency for International Cooperation

PPP: Public Private Partnership.

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# 1 Introduction

## 1.1 Introduction

This study looks into public bus service as part of public transport in the Greater Cairo Metropolitan Area with a view to shed light on its quality and the factors affecting it. It assesses the current situation of public bus service in GCMA according to the service standards set by JICA, and investigates the lessons learnt from London Bus service.

In the context of Millennium Development Goals, transport has been a crucial aspect of sustainable development. Since MDGs are based on three pillars; economic growth, environmental considerations and social inclusion, it takes into consideration transportation development to improve the quality life of people and development of societies (Blewitt, 2014; Elliott, 2012). This is such a historic step, as transportation was not employed in the previous seventeenth MDGs recommended by the United Nations General Assembly. It signaled the importance of transportation in improving social equity, diminishing emissions, poverty alleviation (Tarek, Al-Sakty, 2014). In case of not providing sustainable transport, low income people choose substandard housing, low wages jobs as close to their houses and have limited access to high income but not nearby jobs (ITDP, 2011). Low-income people have limited access to education and health care facilities due to unsustainable transport (ITDP, 2015).

In response to the new Millennium Development Goals, Egypt developed the Sustainable Development Strategy called “Egypt’s Vision 2030”. In such strategy, transportation has

been discussed as one pillar of nine economic development pillars that should help improve to qualify Egypt to reach its potential. The strategy identified many challenges in the transport sector such as low coverage networks, substandard transport service, lack of companies commitment to upgrade the service, lack of financial resources needed for transport development and “insufficient coordination among sustainable transport plans and urban development plans for the new cities”. Explicitly, the vision proposed the creation of 4,800 Kilometers of roads as a part of transportation development. Meanwhile, it implicitly touches transportation when discussing “rationalization of subsidies”, “launching a social protection targeting program using smart cards” and governance and accountability of all state institutions (El-Megharbel, 2015). The vision further suggested enhancing transport sector to reduce traffic congestion and suggest incorporating private sector in transport development (The Egyptian Ministry of transport, 2016). The study, additionally, proposed developing all modes of transport, taking into consideration developing regulations pertaining to its development, private sector involvement and maximizing safety.

To give a glance about Public transport in Greater Cairo Metropolitan Area, public transport in GCMA falls under two categories; formal and informal sectors. The formal sector that is under the Cairo transport Authority auspicious in which CTA is responsible for public bus service operation and light rail service while the Cairo Metro Organization CMO is responsible for urban heavy rail services such as Cairo Underground metro in addition to the Egyptian National Railways (Mahdy, 2012). The informal sector includes shared minibuses, mini buses and Toktoks when shared taxis are now under Cairo, Giza



and Qaliobia Governorate authority (ibid). In spite of the fact that the majority of Egypt's population do not own private cars (ibid), public transport system in GCMA suffers from many challenges. According to a survey done in GCMA, 43% of respondents chose "congestion, late, not reliable, unsafe and uncomfortable" as obstacles of the current public transport while 19 % attributed the unsatisfactory service to lack of reliable timetable and 19 % chose congestion as the factor behind unsatisfactory transport service (ibid).

Public buses have many advantages over other modes of transportation and that is why it is a priority when it comes to public transportation development in GCMA:

- New public bus lines need much lower costs than any other transport mode. For example, the cost of 426 Kilometers of Bus Rapid Transit (most expensive mode of buses) equals the cost of 40 Kilometers of Light Rail Transit or 7 Kilometers of subway or 14 Kilometers of elevated Rail (Okail, October 2016).
- Time of execution of new public buses lines, even the BRT system is less than any other transport mode, since any line can be done without waiting for the rest to be completed.
- It can still function if any bus unit or bus stop stopped working.
- It is a flexible system in which you can add any number of new buses or stop specific buses without losses or problems in addition to flexibility in location changing of stations.
- Public buses can generate revenues more than any other mode of transportation, so there might be cost recovery and efficiency at the same time.

Meanwhile, UN-Habitat suggested public bus service as a priority when it comes to designing transportation because of its high capacity (UN-Habitat, 2013).

## **1.2 Research problem statement**

### **1.2.1 The situation of Traffic in Greater Cairo Metropolitan Area**

The current situation of traffic in the GCMA triggers a need for a solution due to the outnumbered activities going there and rural urban migration. As Professor Osama Okail in a conference titled “Urban Transport in Greater Cairo” hosted by the Egyptian Centre for Economic Studies in October 2016 stated that GCMA now contain 22% of Egypt population, 43% of governmental jobs, 40 % of private sector jobs, 50% of private cars, 95% of consultants and embassies and 90% of ministries. This study was done in collaboration with the World Bank, Ministry of Transportation, Japanese International Cooperation Agency and Urban Planning Authority. The study also estimates that there are 2.5 million trips a day and population of Greater Cairo Metropolitan Area has reached 22.5 million that is increasing at an escalated rate. This is why traffic is currently terrible and expected to get worse in the upcoming years (Okail, 2016). Additionally, there are around 7 million non-motorized journeys per day due to the informal sector (Mahdy, 2012). An important note is that all uses of the informal sectors do not own cars and car owners are willing to use public transport (ibid). Therefore, the aggregate number of trips per day is significantly high.

Another factor contributing to traffic in the GCMA is the new emerging cities accommodating new residents. New cities emerged around GCMA such as Al Abbour

City, 15<sup>th</sup> of May City, Al Sherouq City and 6<sup>th</sup> of October city, which will be accommodating new residents that still commute to GCMA for services and work (JICA, 2002). All of that will increase travel mileage and congestion in and out of the city as well as within it and, in turn, demand higher need for sound public transport that caters for all needs.

In addition, congestion negatively affects the productivity and capability of public transport network, since each trip takes much longer time so number of trips is significantly lower. Thus, the average speed of vehicles is 10 Km/hour during rush hours (Okail, 2016). Congestion, meanwhile, drastically affects public transportation revenues, which subordinates service quality (ibid).

### **1.2.2 Need for high quality public bus service**

One of benefits of creating high quality public bus service is its contribution to create public transport integrated system. The aim of integration that is derived from complementarily is to increase efficiency to meet passengers' expectation (Poliaková, 2013). For customers, travel time and costs are reduced while higher revenues and cost effectiveness are guaranteed for operators (UN Habitat, 2012). Meanwhile, less congestion is one of the benefits of integrated transport, since the system meets the needs of customers, which leads to change in people's behavior, causing an increase in public transport use and in turn a decrease in private vehicles use (ibid). As a result, integrated transport is better for the environment due to decreased congestion and reduced air pollutant emissions. Meanwhile, integrated transport system positively affects sustainability; developing integrated transport system is the gate to reach sustainable transport (Himanen et al, 2009).

Along the same line, public buses might cater for the needs of all Cairenes with multiple in socio- economic classes more than other modes of public transport. Metro has the most ridership density among all modes of transportation, so despite its importance it is not the target of those who ride private cars, especially after ticket price reduction of metro (Okail, 2016). Although metro is a principal mode of transportation, since congestion in the GCMA needs modification and integration of all modes of transportation, Metro cannot cater for the needs of all Cairenes' segments. One reason of its deficiency is its low coverage and high costs of implementation (El-Kadi, 2013). In addition, river transportation is not useful in reducing congestion due to low demand on it and lack of rivers around Greater Cairo. According to a survey conducted on 500 Cairens and filled in by 560 Cairens, results showed that public bus service is the most preferable mode of transport, especially less crowded bus, among all modes due to "its reliability and dynamic schedule" (Mahdy, 2012). Most of the interviewed participant who use private cars in this survey regarded public bus as a substitution for their private cars in case of reliability and regularity (ibid). Therefore, public buses are essential means of public transportation that can reduce congestion and cater for all Cairenes as well. Another advantage of public buses is that they can easily reach the remote newly established cities (El-Kadi, 2013). Thus, public buses can be seen as complementing metro lines by linking passengers to locations not reached by metro due to bus mobility and low costs of renovation (El-Mahdi, 2012). In spite of that, there is shortage of high capacity bus supply as the standard is 300 buses for each 1 million people (World Bank, 2009) while Okail (2016), stated that the number of buses/ million population as 231/1 million.

Regarding quality of public bus service, according to the World Bank Report 2010, Greater Cairo Metropolitan Area is suffering from lack of quality and safe public buses as a factor contributing to congestion and results in encouraging more private cars on the road (World Bank, 2009). Hence, investing in roads and high ways will not cope with the increasing rate of traffic that will increase more economic costs and investing in public transportation networks is the only way of reducing traffic congestion (ibid).

Greater Cairo Metropolitan Area suffers from lack of public transport network compared to the population number, especially when compared to comparable large cities around the world (World Bank, 2014). It suffers from deficiency of transit and mass transit transportation such as tram or metro plus there is no Bus Rapid Transit system at all (ibid). Yet, there is high demand on buses and metro especially during peak hours that manifested the undermined public transport network relative to the population number (ibid), which is expected to grow at an escalated rate.

According to the CAPMAS, April 2016, population of Greater Cairo Metropolitan Area reached 22.5 million (Selim, 2016), which surpassed expectations of multinational agencies. JICA expected the population of Greater Cairo Metropolitan Area reaching 20.7 million in 2022 (JICA, 2002). Also, the World Bank expected the population of GCMA to reach 24 million in 2027 (World Bank, 2014). Both organizations called for urgent actions for developing public transportation in Egypt to cope with the high rate of population growth while the situation is getting worse than expected. As a result, consequences of lack of high quality public transport are and will continue to be much harder than expected by the two organizations. Much more congestion due to excessive use of private cars, delays and environmental degradation, compounded by poverty and

economic deterioration might get worse than expected. CREATS expected the average journey speed of all the modes of transport to decrease from 19.0 km/h in 2002, to 11.6 km/h in 2022 (JICA, 2002). Thus, the average commuting time will rise from 37 minutes in 2002, to 100 minutes in 2022 and all major roads and intersections will be saturated all day long (ibid). This study dates back to 2002, so the current situation is postulated to be much worse.

After this introductory Chapter, the second chapter tackles diverse quality standards of public bus service presented by JICA and the World Bank using a comparative approach, ending by drawing a conceptual framework of this study driven from evaluating the current situation according to such standards. The Third Chapter is Literature Review that presents different views about the current situation of public transportation in the GCMA, importance of accessible public transportation by all population, current situation of public buses in the GCMA, advantages and disadvantages of BRT model and it also discusses London bus as a model and London bus contracting and tendering process. This is followed by Chapter Four that discusses the structure management system of public bus service based on data, legislation and reality. Such chapter entails a brief description of hierarchy regarding transportation planning, overview of planning setbacks, service delivery, Greater Cairo Transport Authority as presumed regulatory authority. The Fifth Chapter focuses on the sustainability structure, a brief discussion on the current status of sustainability of public bus quality service and sustainability preferences in dealing with safe and environmental considerations. The conclusion and recommendations are covered in Chapter Seven.

## **Research Question:**

How can the public bus service quality in Greater Cairo Metropolitan Area be improved through good governance and sustainability?

To answer this question several research sub-questions are addressed:

1. What is the current situation of the public bus service in Greater Cairo Metropolitan Area?
2. What are the main problems in the public bus service delivery in GCMA?
3. What are the governmental plans and efforts for public bus improvement?
4. Can the BRT system do much to solve the GCMA transport issue?
5. What lessons can be learned from the London Bus Service for improving public bus service in GCMA?

## 2 Conceptual framework and methodology

### 2.1 Conceptual Framework

Much of the contribution done in the spectrum of public transportation development in the GCMA might be referred to the World Bank and the Japan International Cooperation Agency (JICA), in the form of grants, soft loans, quality standards and technical assistance to Egypt. Regarding quality standards, this section tackles ‘quality’ standards of public bus service as formulated by the two entities and concludes with choosing JICA’s model.

#### 2.1.1 A brief description about Cairo Regional Area Transportation Study (CREATS), 2002, by JICA

The study provided brief information about CREATS as a background, since it will be referred to many times. Objectives of the study that are: “to formulate a master plan for the urban transport network in the Study Area to the Target Year 2022; to conduct a feasibility study for the priority project(s) identified under the master plan (however, this object shall be undertaken as a follow-up effort to the master plan study); and to carry out technology transfer to the Egyptian counter personnel in the course of the study” (JICA, 2013, p.10).

Cairo Regional Area Transportation Study (CREATS1) had a strategy in order to prevent the traffic situation of Greater Cairo in 2011 from chaos (JICA, 2002).



This study proposed 59 projects and programs aiming to achieve five key objectives that are as follows; “improvement of people’s mobility, optimal infrastructure development, accessible transport for all and sustainable institutional and financial mechanism”(JICA, 2002, p.15). A factor can serve one or more than one aspect of improvements; For instance, ‘sustainable institutional and financial mechanism’ serves also safe and comfortable transport. For this aim, JICA formulated ‘objective verifiable indicators’ such as operational indicators, performance indicators, implementation indicators and system sustainability indicators.

### 2.1.2 ‘Quality standards’ of public transport from JICA and the WB perspective

The World Bank discusses ‘convenience’ of public transport as contributing to poverty reduction directly and indirectly (World Bank, 2005). It has a direct effect on people’s daily life, especially the poor. It also has a positive impact indirectly through improving the national economy at all what is going to be reflected on individuals. Hence, it specified four aspects for convenience that should be addressed to improve public transport from a user perspective; Affordability, Availability, Accessibility and acceptability (ibid).

‘Affordability’ of public transport as the first parameter refers to “the extent to which the financial cost of journeys put an individual or household in the position of having to make sacrifices to travel or the extent to which they can afford to travel when they want to” (World Bank, 2005, P2). Yet, it further explained affordability as the ability to fulfill crucial journeys to work or to school or to visit other family members and other

necessary activities without undermining the ability to take other necessary activities. In case of not fulfilling necessary journeys for a poor family, transport might be considered unaffordable, by most standards.

The form of the Index is relatively simple, and the data for its compilation is relatively easily available:  
**Affordability Index =  $\frac{\text{Number of trips} \times \text{Average cost per trip}}{\text{Per capita income}}$  expressed as a percent**

Source: “Affordability of Public Transport in developing countries”, the World Bank, 2005.

“Availability” of transport, according to the World Bank, of transport implies providing timely and frequent service plus having route possibilities. Whatever the reason behind individual journeys whether necessary journeys or for leisure purposes, individuals should not be constrained by routes or time-taken. Even if every citizen lives near by 400 meters of a bus stop, which is the most common measure of accessibility of public transport, availability has nothing to do with this. Nevertheless, it completely depends on “where he/she wants to go, how often, and how long the whole journey is going to take”(World Bank, 2005, p.3). If the available bus stop can only be reached in a difficult way as passing through heavy shopping or major traffic artery and there is timely and frequent service, transport is not considered available (World Bank, 2005).

“Acceptability” of public transport, according to the World Bank, is an important parameter that should be considered for quality public transport. Even if the previous three qualities are available, passengers might be deterred due to the vehicle’s conditions,

unsafe service, drivers' behaviors and inadequate waiting services in long travel journeys (ibid).

“Accessibility” of public transport means the extent to which passengers of different segments can use public transport and the extent to which all passengers can access a bus stop or station without obstacles. If a passenger is intimidated while walking to the bus station whatever the distance between his home and station was small, be it 200 meters, transport is not accessible. Some buses are hard to board especially for young children or old people or people carrying luggage, so these are inaccessible buses particularly when there is no assistance (ibid).

However, CREATS 2010 tackled accessibility as a contributor to quality in a very different way as it combined affordability, availability, safety, comfort and accessibility for elderly and females under accessibility. For example, CREATS considered accessibility as “ease of reaching” opportunities, be it schools or jobs or shops or the “ease of being reached” by individuals. To this end, transport service will be ‘available’ and ‘accessible’ as result of “ease of reaching”. According to JICA, The layout and cost of transport applies to all socio-economic classes of the population, in particular the poor. Improving accessibility aims at developing public transport to be used by all population classes on an equitable way (JICA, 2002). Thus, CREATS emphasized on accessibility for all segments of population, making it affordable to the poor and available to all. Meanwhile, it explicitly pointed out the importance of safety and comfort while discussing “concerned gender issues”. It stated that “women made significantly less trips

(1.2 trips per person per day) on their daily lives than men (2.1 trips per person per day)” (CREATS, volume 1, p.18). Henceforth, the study emphasized on providing public transport that takes into consideration gender equality, since it regards public transport in the GCMA as lacking safe and comfort for women that are required for their social and economic activities. The study paid attention not only to marginalized women, but also to disabled people and the poor, instigating the government to take specific actions targeting both categories. To target accessibility for the poor, the study encouraged the government to take certain actions such as:

- Providing the poor with direct subsidies and keeping the incentive of efficiency and commercial operation to public transport operators.
- Ensuring coverage of isolated areas with public transport especially Para-transit.
- Preparing a cooperative approach through the Ministry of Social Solidarity and Insurance to give the poor a direct transport subsidy to the deserving poor.

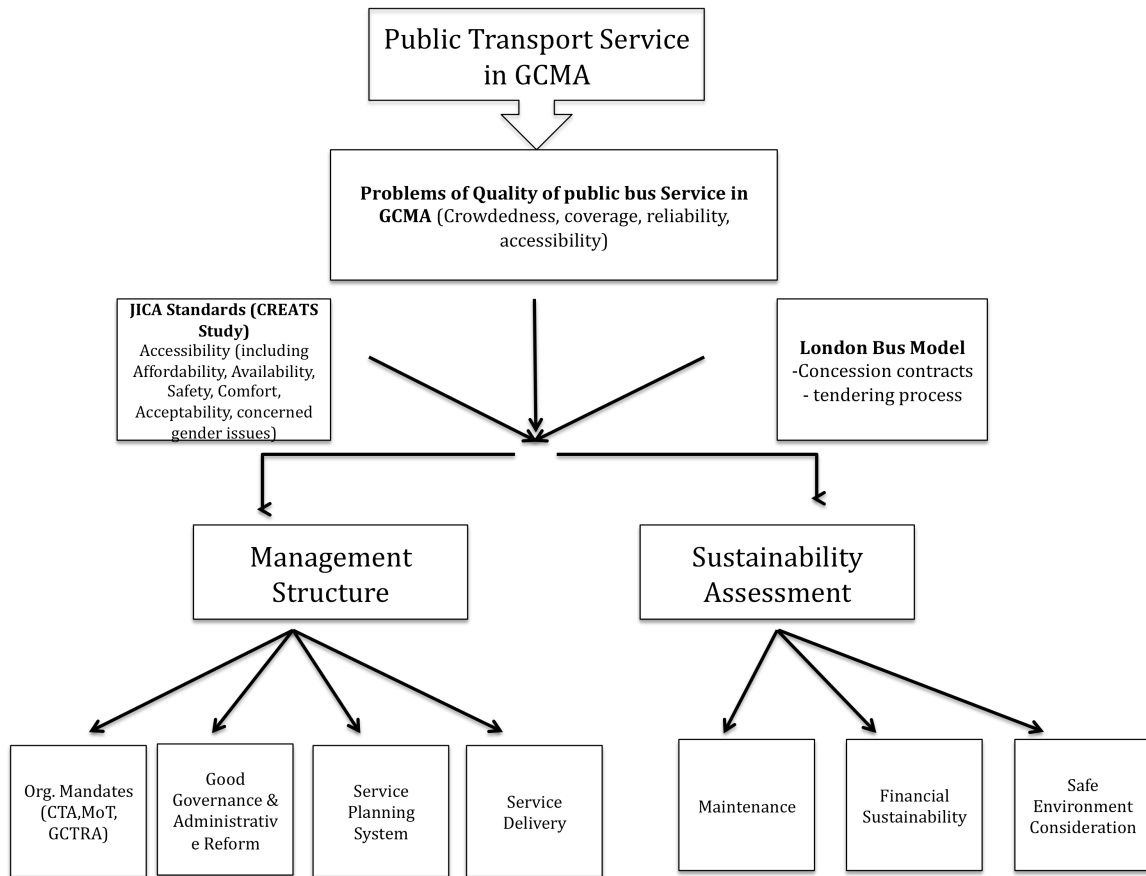
Along the same line, CREATS study addressed implicitly the factor of “acceptability” and “affordability” for low-income class through public transportation coverage of remote areas and offering direct subsidy for them. Meanwhile, it addressed “acceptability” for high-income people through guaranteeing efficiency of operators via presenting direct subsidies to the poor and so enhancing competition, which will pour in quality service enhancement. Efficiency and high quality will promote people’s acceptability although not stated directly by the study.

CREATS further discussed safety solely in a separate section; it highlighted the importance of human development on institutional basis as a key factor in solving the problem of unsafe public transportation in Greater Cairo. According to JICA (2002), 60% of 171 drivers admitted that they drive fast and this is a problem in GCMA. Surprisingly, most other dangerous driving behavior was considered very normal (ibid). Only 15% to 24% considered irrational changing of lanes, uncontrolled overtaking and cutting in front of cars a problem (ibid). According to the same report, about 30% of total drivers confessed to park on places where parking is prohibited, believing that whatever way the car can be parked is “permitted”. This could arouse people’s discontent about transportation service as a result of driver’s attitude and delay to work due to excessive parking. The study considered ‘traffic safety education’ as a main factor in improving traffic, enhancing transportation safety and increasing sustainability. Such area of education is very rare and absent in policies in Egypt due to lack of “institutional development of traffic safety” as JICA mentioned and so needs to be addressed by government policies. Since the area of promoting “safety and comfort” in traffic is relatively neglected, improvement of infrastructure will not be very beneficial in solving the issue on its own, so there should be coordination between education and infrastructure (ibid). Awareness should start from kindergarten to profession in order to be transformed into behavior. Therefore, the JICA program suggested the development of an Egyptian Traffic Safety Council, an Executive Committee for effective implementation of strategies, a Traffic Safety Education Center, a Traffic Safety Information Center and the creation of Non-Governmental Regional Traffic Safety Organizations.

The Egyptian Traffic Safety Council should bear the whole responsibility for strategy implementation and funding “the annual traffic safety initiatives” (ibid). JICA also suggested street side campaigns by stickers and pamphlets especially at critical intersections; in addition to, trainings for managers and drivers (ibid).

To conclude, the ‘CREATS’ study of JICA sets clear quality standards for public transportation whereas the World Bank standards are overlapping; for instance, availability and accessibility are intertwined although presented as 2 separate standards. To explain, for the World Bank accessibility is the degree of ease at which all segments of the passengers can use public transport service; however, this includes delivering frequent and timely regular service, which is considered a component of ‘Availability’ from the World Bank perspective. Most of the World Bank reports focused on congestion, its causes and effects; World Bank reports such as Cairo Traffic Congestion Study, 2014, always points out the importance of having good transportation network to reduce congestion in the GCMA without digging deeper in aspects of improvement for transportation sector in Greater Cairo. The only World Bank Report (2005) that tackled aspects of improvement is the previously discussed “Affordability of Public Transport in developing countries” Report. Yet, the fact remains it is not about Egypt specifically but the developing countries in general. The World Bank also had a report entitled ‘Accessibility and Transport’(2012), addressed accessibility for disabled people, but none of the WB reports covered gender issues and the human factor contributing to transport safety in GCMA as just done by JICA.

Hence, JICA’s CREATS study (2002), presented the clearest and comprehensive standards of public transportation in GCMA and covered all the World Bank indicators; affordability, availability, accessibility and acceptability under accessibility, so it can be relied upon as the conceptual reference in this thesis for assessing the current system of the public bus service.



Source: By the researcher fig 1

## **2.2 Methodology**

This section discusses research methodology in four dimensions; research design, data analysis, limitations and delimitations of the study and ethical issues.

### **2.2.1 Research Design**

The study depends on primary and secondary data. Primary data was used by employing different qualitative techniques such as structured and semi-structured interviews with different stakeholders related to public bus service to capture interviewees' experience as expressed in their own words. The investigator selected a purposeful sampling (sampling strategy) in terms of work position and background. The rationale behind using qualitative research method and purposeful sampling was to explore the current and future government policies of public bus service development, to describe the current situation of public bus service and to elicit multiple constructed realities of bus service by government officials, bus drivers and transportation consultants, taking lack of accessibility factor into consideration. Hence, this study is considered 'unfolding study' (Marshall & Rossman, 2006), since the conceptual framework was developed during this research. After reviewing data, I began with creating a full picture of the current situation of public bus service in GCMA and its consequences; then, I reviewed current strategies of public bus development, identifying major flows in the system.

To illustrate, the sample included two bus drivers, one representative from JICA, three people working in the Greater Cairo Transport Regulatory Authority, two officials in Cairo Governorate, an official in the Research Centre of Traffic and five passengers who ride CTA buses. Therefore, my sampling strategy for doing interviews was 'Criterion' in



the sense that I collected information about quality of public bus service in GCMA through these interviews as sample units so as to reveal system weakness points and what has been developed in public bus transportation system to determine recommendations at the end. Meanwhile, the triangulation concept (Marshall & Rossman, 2006) was employed to confirm the collected data from distinctive sources and determine the most agreed information from all sides.

In addition to primary sources, secondary data is used for the research to include previous research and studies of international organizations such as the World Bank and the Japan International Cooperation Agency (JICA) in the area of public bus service improvement in GCMA. Secondary sources are used as supplementary to primary sources to analyze the current situation and the implemented strategies for developing public transport in GCMA so as to create the researcher's conceptual framework about what has been achieved, what will be achieved and what should be pursued for public buses service development. Studies of such international organizations provided guidelines for quality standards of public bus service and objective verifiable indicators. Yet, interviewing people from GCTRA was useful for determining some deficiencies and knowing the future plan of improvement.

### **2.2.2 Data Analysis**

For this research, I gathered descriptive information about the current situation of public buses in Greater Cairo and the need for solving the problem of substandard public bus

service in GCMA, using primary and secondary data. Also, such descriptive information gave a coherent picture of public bus service in GCMA, which helped me in the interviewing process and then identifying new information, in a trial to seek solutions for the problem.

Meanwhile, it is explanatory in the sense that my study explains the consequences of improving public buses on the future of Egypt that helps in developing new techniques to handle the problem of poor public buses in Cairo.

### **2.2.3 Limitations and delimitations of the study**

There is a clear lack of studies on transportation in GCMA; JICA is the only entity that has done coherent studies on public transportation in GCMA. It has conducted two studies; Cairo Regional Area Transportation Study in 2002 (the most relevant to my research) and the Misr National Transport Study (2010). Yet, the World Bank reports address transportation indirectly through other topics such as congestion and economic development, but it has not carried out a study on how to improve public transport in Greater Cairo. Moreover, there is a lack of literature on what has been done and what has not regarding World Bank and JICA strategies or recommendations that they identified in cooperation with the government. Also, the website of Cairo Transport Authority has no information available on it regarding the future actions for developing public transport in Greater Cairo, given the fact that the government has no strategic plan or time frame for what should be done exactly. All collected literature is from international organizations working in cooperation with the government as asserted by the interviews. All of that hindered the process of research and data collection.

Regarding interviews, I found difficulty in meeting people affiliated to the government. Most of them do not want to spend time with researchers. When I succeeded in meeting them, many were not inclined to share information. Also, some of the top ranking officials such as the vice governor of Cairo does not have much information about the topic. Some of the passengers of CTA buses that the researcher interviewed were unwilling to talk about the service challenges in addition to difficulty in reaching them. All these reasons negatively affected the number of interviews and the resulting outcome.

#### **2.2.4 Ethical issues**

The researcher got the IRB approval (the approval of the American University in Cairo Institutional Review Board needed as a university consent to conduct interviews) before conducting the interviews. Before interviewing, I took the interviewees' informed consent (Babbie, 2013) to use their own words in the study after revealing the purpose of the study. While interviewing, I took into consideration to 'not do any harm' (ibid) to interviewees who are going to participate 'voluntarily' in interviews, and I did not embarrass them or endanger their jobs by disclosing their personal information and their skeptical comments about the government. Additionally, confidentiality (ibid) is guaranteed, since names and positions of interviewees are not mentioned in the research.

### 3 Chapter Three: Literature review

This Chapter discusses public transport as a part of social equality, sustainable development and urban planning, followed by a section highlighted the importance of accessible public transport as leading transport efficiency and qualifying people to accrue enough human, physical, financial, and social assets through accessible transport. Then, a section of public bus service introduced aspects of public bus service provision; namely, public bus subsidy, public bus efficiency and effectiveness, bus priority at traffic signals and public bus door crowding. Additionally, literature on environmental and economic sustainability considerations of public transport was reviewed as to guarantee maintaining service quality. Meanwhile, pros and cons of applying BRT system was presented, so its disadvantages can be mitigated and its advantages can be maximized. Moreover, London bus concession contracts and tendering processes were introduced to show London bus superiority as a best practice benchmark, presenting lessons and experience that can be replicated in GCMA. Moreover, urban planning and transport section manifested challenges of urban planning in Egypt that contributed to the substandard public transport in GCMA

#### **3.1 Public transport**

Literature examines public transport from three different angles; social equality, sustainable development of countries and urban planning. First, public transport is important for social equity and welfare of the population. To explain, High quality public

transport is very crucial for individuals, communities and the nation as a whole. It helps improve the quality life of people, reduce poverty and revitalize business districts, since it helps employees' accessibility to larger work force, creating economic revenues and improving their social and economic status (Choueiri et al, 2013; El-Kadi, 2013; UN-Habitat, 2013). Substandard public transport has negative health impacts on people. This is derived from poor air quality and traffic related accidents. Due to the increased number of cars, 1,000 Cairenes die per year because of traffic related accidents and more than half of them are pedestrians (World Bank, 2012).

Second, transport is examined in the context of sustainable development for the country. Public transport improvement is critical for the environment and reduction of energy consumption (Mahdy, 2013; UNEP, 2009). For developing countries like Egypt, higher dependency on public transportation will reduce dependency on private vehicles and hence on imported oil (Choueiri et al, 2013; UNDP, 2008; Mahdy, 213). To explain, promoting a reliable public transport system enhances air quality, improve the efficiency of energy, eliminates congestion, and so enhances trade, positively affecting the sustainable economic development of countries. Regarding transport impact on environment, congestion due to low coverage public transportation and so the outnumbered private cars plus low quality of existing public transportation causes environmental degradation as a result of CO<sub>2</sub> emissions (World Bank, 2014). JICA's Transportation Master Plan in Greater Cairo Region in 2002 predicted that CO<sub>2</sub> emissions will increase by 30% from 2002 to 2022 if an environmentally-friendly transport system was not developed in GCMA. Thus, creating environmental friendly public transportation system will reduce number of vehicles in the street and overall CO<sub>2</sub>emissions; but also it

will result in a safer environment in terms of reduced traffic related accidents, reducing global warming. As a result of inadequate public transport in GCMA, the economic cost of traffic congestion in Cairo only is 4 % of GDP per year, or 50 billion EGP a year, which was at the time, equal to USD 8 billion/year. An important notice is that GCMA comprises two thirds of Egypt's GDP (Mahdy, 2012). In comparison, New York, for example, loses .07 % of US GDP per year in congestion (World Bank, 2011). Henceforth, traffic congestion in the GCMA drastically affects the economic development of Egypt. In addition, delivering less expensive, more efficient and high quality public transport service that will result in minimizing traffic congestion will improve the employees' capability to work as a consequence of the facilitation of movement and the minimization of time taken from their home to work (Chatman & Noland, 2011; Brian et al, 2009).

Third, public transport is relevant in the literature of urban planning. Urban transport integrated policies are parts of the overall urban planning; Transportation planning and urban planning are used collectively to encourage participation by all users of the transport system (Finn & Mulley, 2011). This is to bring about lower carbon emissions, create transport networks relevant to demand, to create sustainable efficient transport and to prevent future congestion (Hendricks, 2007; TCRP digest, 2011; Finn & Mulley, 2011)

### **3.2 Accessible public transport by all population**

Accessible public transport enhances low-income people demand on it, resulting in poverty alleviation. To explain, in developing countries, disabled persons or elderly are more susceptible to be among the poor (UN-habitat, 2011). Yet, lack of data on needs of

whether disable or elderly hinders improving the situation of accessible public transport (World Bank, 2004).

JICA highlighted the prominence of accessibility in CREATS, 2002, as leading transport system efficiency in GCMA and so stressed the importance to raise its capability to reach its economic potential. It further discussed the role of transport in people's daily lives; it really matters for people's mobility and especially the isolated poor. This is because accessible transport augments people access to jobs, have better access to good health and education. For example, there is a higher probability for children, especially girls, of the poor families to go to school where there is reliable and affordable public transport (JICA, 2002). Thus, lack of transportation could be the gate to more poverty. For the whole population, people will have potential to accrue enough human, physical, financial, and social assets through accessible transport (ibid).

Borges in the article entitled, 'the added value of accessible public transport for all in the context of demographic ageing'<sup>1</sup> attributes Europe's prosperity to the European transport system, which is accessible to all, including elderly and disabled (Borges, n.d). Aside from being citizens' right as 'freedom of movement', it enhances individuals working opportunities, "social and leisure integration" and welfare of people (Borges, n.d). He further elaborated on classifying people with reduced mobility as "disabled people (including people with sensory and intellectual impairments, and wheelchair users),

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<sup>1</sup> From the website of [www.age-platform.org](http://www.age-platform.org)

accessed on 1<sup>st</sup> of December 2016

people with limb impairments, people of small stature, people with heavy luggage, elderly people, pregnant women, people with shopping trolleys, and people with children (including children seated in pushchairs)” (The European older people’s platform, n.d, p.3). This classification clarifies the expected different needs of all different public transport users, which should be recognized by planners of transportation.

### **3.3 Public Bus service**

This section discusses aspects of public bus service provision. It starts with discussing role of government in subsidizing public bus service, since one of the main targets of developing public transport is to be accessible to low income people as manifested in the previous section of this chapter. Also, literature on public bus efficiency and effectiveness is examined after public bus subsidy as the vital factors behind increasing demand on public buses. Also, the researcher manifested the literature on bus priority at traffic signals as contributing to bus service enhancement. Then, the issue of public bus door crowding is scrutinized while reviewing literature on the subject due to its importance in determining the public bus service quality and demand on it.

#### **3.3.1 Public bus subsidy**

In the context of government’s role to reduce traffic congestion, saving wasted fuel, advance passengers’ satisfaction and, more importantly, to enhance social equity, subsidies are introduced to make public bus service affordable by the whole population especially low income segments of the society (Baker et al, 2010). For example, United States allows disparity in bus ticket prices, so Tax-free and discounts on monthly boarding are causes contributing to people’s likeability to ride public transit in United-



States. Meanwhile, several contracts of Public Private Partnership were created in many countries such as the United States to level up the service to the end of meeting passengers' needs.

When UN-Habitat (2003) worked to develop public transportation in Seoul, North Korea, it succeeded to level the service quality up but failed to create a sound subsidy system for public transport (UN-Habitat, 2013). Therefore, the government in cooperation with the private sector work to solve this issue, but it is difficult to be applied after finishing planning and implementation. Creating a subsidized system of transport might be difficult when it comes after planning and implementing an effective an efficient system. Yet, if it failed to be accessible by all population especially low-income people, it would be failed to achieve one of its major causes of its creation. Thus, designing a comprehensive strategy of bus development that takes into consideration all socio-economic classes is highly encouraged starting from the phase of planning.

Literature exhibited different aspects and at the same time imperatives of public bus subsidization process. In Malaysia, due to budget deficit and increasing debt, structural and governmental reforms took place such as public transport improvement and rationalization of subsidization of this field (Bridel and Lontoh, 2014). Subsidization was not eliminated, but reduced to minimize burden on government; thus a balance between costs and revenues was created hand in hand with decreasing subsidies on fuel, which drive people to using public transport (ibid). Before reducing transport subsidy in Malaysia, “value added impact analysis”, “macroeconomic impact” of minimized

subsidies on public transport and the effect of financial resources reallocation on other transport sectors were measured (Hamid, Rashid, 2012). Then policy options were created accordingly before implementation of the new subsidization strategy (Bridel and Lontoh, 2014; Hamid, Rashid, 2012).

### **3.3.2 Public bus efficiency and effectiveness**

Hawas et al in 2012 examined efficiency and effectiveness of public bus service while applying new transit system in United Arab Emirates to make it favorable to passengers, since people are already inclined to using private cars. The authors defined effectiveness as making people use buses in their daily life at lower cost, so it can be measured by “service utilization” that can be maximized by enhancing accessibility and quality of service provided. As for efficiency, bus service should be provided at highest quality with lowest costs (Fielding et al, 1985). These two measures have been used by most authors in literature (Chu et al. 1992; Karlaftis 2004; Lao and Liu 2009). Achieving the two indicators are difficult as it should not be followed by reduction of quality level. This balancing includes reducing maintenance and operation costs without negatively affecting ridership levels. In some case, trying to minimize costs might result in quality deterioration; therefore, Hawas et al suggested neglecting operation costs in the first operation years and till the system “get matured”. Meanwhile, performance assessment is highly encouraged to guarantee sustainability of service quality (Karlaftis, 2004).

### 3.3.3 Bus Priority at Traffic signals

“Bus priority at traffic signals” is one of the solutions suggested in many cities around the world for the aim of public bus service improvement without needed road widening or applying segregated lanes (Mcleaod & Hounsell, 2003). Yet, it is applied in “a single bus corridor” Bus priority has been applied in London, Tokyo, Melbourne and Portland (Bretherton et al, 1996). Meanwhile, there are there different levels of bus priority systems. Advantages of this model entail trips timesaving, cost saving and minimization of bus waiting time. However, in cases of high traffic congestion, it might negatively cause delay for other vehicles (Abdelghany et al, 2006). Mcleaod & Hounsell (2003), suggested that the first category of bus priority system in which “Traffic signal recall” is not given to buses do not cause delay of other lanes.

### 3.3.4 Public bus door crowding

There are many reasons of bus door crowding whether attributed to the human factor or the bus design. Waiting for boarding inside the bus is identified as a reason of bus door crowding (Solymosi, 2015). Drivers sometimes skip stops if there is no monitoring system (Andaleeb et al. 2007). Also, boarding above bus capacity and longer time boarding are causes of door crowding; hence educating drivers on the consequences of door crowding is needed (Katz & Garrow, p.2). Yet, there are other inhuman factor contribute to bus door crowding. Factors that might affect door crowding entail aisle length, door position, service type and existence of “a front seated area” (Katz & Garrow, p.4, 2012). This study is distinguished since it discusses door crowding from bus design’s

angle not from passengers' attitude effect. Some authors claimed that a specific bus design could limit crowding in buses (Kogi, 1979).

Bus door crowding has many negative consequences on bus operation and passengers' safety. Katz & Garrow (2012), denoted that the designing factors of a bus might affecting door crowding affects "operational performance and passenger safety" despite of being unstudied area in most systems. Meanwhile, door crowding might have an adverse effect on people's desirability to ride buses as a result of deteriorated quality (Perk et al, 2001). To explain, passengers have difficulty in riding buses, making boarding and finding a chair, causing discomfort and dissatisfaction of passengers (Fernandez & Tyler, 2005). Moreover, Door crowding results in crime increase (Solymosi, 2015).

### **3.4 Sustainable Public Transport**

Sustainable public transport is critically important, especially for low-income people as an opportunity to improve their quality life (May et al. 2003, Holden et al. 2005). Unsustainable transport directly affects people's health through air pollution and unsafe transport (TCRP digest, 2011). Meanwhile, transit transport is proposed as the best solution for high population growth and limited financial resources (May et al, 2003). Deal et al (2009) have suggested that mass transit is one of the most sustainable modes of transport in spite of high demand on it (Deal et al, 2009).

Different authors of literature examine sustainable public transport either in the context of environmental considerations and in terms of financial sustainability.

### **3.4.1 Environmental sustainability:**

Sustainable public transport has positive environmental considerations. To explain, unsustainable transport leads to higher consumption of energy, which will dramatically affect the environment leading to global environment degradation (May et al. 2007, Jabareen 2006, Litman et al. 2006). Meanwhile, vehicle emissions affect the transport sustainability (Laffel, 2006). Vehicle emissions causes air pollution and global climate change that affect negatively the physical conditions of vehicles (ibid). Also, because the population worldwide is increasing causing the presence of more cars and vehicles emissions, so the pollution is increasing and the transport is affected (ibid).

UNDP (2008) attributed the deteriorated environmental situation in Cairo as worse than any other area around Egypt to congestion as resulted in increasing GHG emissions, since CO<sub>2</sub> will rise from 12.2 million tons to 15.9 million tons. It suggested Developing high quality transport for people to go to use public transport instead of private cars to the end of reducing greenhouse gas and Carbon Dioxide emissions plus minimizing energy consumption. This also will be reflected positively on global environment. UNDP underwent a project terminated in 2008 for improving public transport that resulted in a reduction of 850,000 tons of Carbon Dioxide and a potential five more.

### **3.4.2 Economic Sustainability (Public Private Partnership):**

Many schemes can be applicable for the private sector to sustain development and operation of public bus service. Yet, developing a legal frame for private sector incorporation in such field prior to application is encouraged. The essence of Public

Private Partnership depends on giving the private sector the responsibility to “design, build, commission and operate”(Grimsey, Lewis, 2002, p. 2). UNDP (2008) considered Public Private Partnership as an important factor contributing to sustainable development of public transport. In addition, Public Private Partnership as project delivery is considered the best way to minimize costs, employ new revenue sources and accelerate service provision (Grimsey, Lewis, 2002). In other words, this way of project delivery enhances effectiveness, efficiency and responsiveness of the government, which are aspects of good governance (OECD, 2008).

Given the public sector has proved its inability to efficiently deliver public services and the emergence of the New Public Management (NPM) as a new school of management, most scholars introduced the Public-Private Partnerships (PPP) approach as a panacea for service delivery (Domberger & Fernandez, 1999). In fact, the Public-Private Partnerships coincide with the New Public Management (NPM), which stresses on efficiency and effectiveness (Decorlo-souza& Baker, 2005). The New Public Management comes at odd with the old school of public management given it assumes that the private sector can play a significant role in service delivery (ibid). The coming part is to prove that the PPP model is the most effect for public service delivery.

The Public-Private Partnership, along with BOT, has been introduced by myriad scholars as the most effective method for improving public services and ensuring efficient delivery of services. Domberger and Fernandez, for instance, claimed that the PPP is productive given it’s a matter of delegating the management of public services to the public sector through contractual agreements, (Domberger & Fernandez, 1999). Accordingly, Public-Private partnerships are fruitful and flexible given they are based on

close and direct interaction between the private and the public sectors, (ibid). The PPPs are a win-win solution given they are based on partnership rather than long-term commitment and revenue generation, (ibid). PPPs, on contrary to the BOT, allow the public sector to play its role in collaboration with the private sector. In other words, PPPs harmonize the relationship between the public and the private sector through effective division of labor. In the PPPs, the public sector, as a service provider, is still committed to ensure the quality of service provided and arrange funding, (Decorrolo-souza, 2005). Moreover, PPPs give the public sector the room to the select the private organization; thereby increasing cost savings due to the absence of competition, (Domberger & Fernandez, 1999). In a nutshell, the PPP approach has become widely accepted through public servants given it improves the quality of services provided; ensures better accountability; promotes cost savings and ensures access to markets (ibid).

In agreement with Domberger and Fernandez, Metcalfe argued that the PPP model should promote risk-sharing. He criticized the straightforward role of the Government Party (GP) and increased risk imposed upon the Concessionaire in Concession Agreements (Metcalfe, 2013). That's why he stressed on the significance of creating a suitable and a comprehensive framework for the delivery of public services. He implied that such framework is recommended to be based on the PCDA model (ibid). The four main pillars of the PCDA model are: “plan the delivery of services; Deliver the services; check the delivery of the services, and act on any differences between the planned services delivery and the actual services delivery” (ibid).

### **3.5 Bus Rapid Transit Model**

#### **3.5.1 Reasons and characteristics of developing BRT system**

Vermeiren et al (2016) stated that Rapid urban growth of developing countries results in negative consequences such as making infrastructure lagging behind development as well as increase in number of motorized vehicles and so traffic congestion that hinders urban citizens mobility. Therefore, urban governments started to improve public transport to be reflected on traffic and in correspondence to people's needs; such improvement is perceived as developing mass rapid transit systems to overcome the issue at reasonable cost. Vermeiren et al (2016) looked at the application of BRT in Kampala (Uganda) as a case study. They classified the population into 4 segments; extremely poor, poor, middle income and rich. The results exhibited that although BRT is the solution for overpopulated cities that could be replicated in other populated cities of developing countries, high urban inequalities could constrain BRT benefits to the lowest income people as exhibited in Kampala case.

Vermeiren et al (2016), relied on the World Bank estimates of 2014 that urban population is increasing at two percent on average worldwide mainly due to “natural growth and rural-urban migration”. They also emphasized that the most cities that witness urban growth are located in Africa, Asia and Latin America. According to the World Bank Report (2014) economic growth in much of these cities is higher than urban population growth; however, income distribution among urban population is uneven so rural immigrants cannot make use of this economic growth (Vermeiren et al, 2016). The economic exclusion compounded by lack of accessible public transport especially in



remote areas might lead to higher dependency on cars and more congestion (World Bank, 2014). Thus, urban mobility is a major cause of individual mobility minimization, which could be mitigated by Bus Rapid Transit system that could also reduce urban poverty patterns (Nikitas, Karisson, 2015); Vermeiren et al, 2016).

Characteristics of Bus Rapid Transit system that make it advantageous on other buses are “having a rail network, high capacity fleet and operate along fixed routes with preserved lanes and fixed stations, which are embedded within or added to the existing urban infrastructure” (Vermeiren et al, 2016. p.3). Policy makers asserted that BRT is efficient in eliminating congestion and serving a great segment of the population at reasonable costs (Levinson, Zimmerman; Clinger, Gast, 2003). This is the reason behind applying BRT in North and Latin America and Europe, resulting in travel timesaving of 23-25% (ibid; Prassas, 2013). Meanwhile, the urgency of applying such an efficient and affordable bus system is obvious in African cities although implemented in many such as Rwanda, Mali, Burundi, Uganda, Equator, Nigeria and many others (Vermeiren et al, 2016).

### **3.5.2 Problems with designing BRT in developing countries**

However, the problem with urban transport planning in African cities is that it focuses on quantitative demands whereas socio-economic multiplicity of the target group is not taken into consideration (Jaramillo et al, 2012). Therefore, urban mobility studies are highly encouraged (ibid). Nevertheless, most African countries do not have updated and accurate information on city residents’ mobility. A livelihood typology, similar to the one presented in Vermeiren et al article (2016), using Uganda’s case, is needed to empower

African cities while preparing their cities for future transport demands, using Uganda's case.

### 3.5.3 Applying BRT in Kampala as case study

Kampala is one of the cities in developing countries in which minibuses occupy a considerable space in urban transit (Vermeiren et al., 2016). Such minibuses are growing in number using old vehicles and outdated equipment, which contribute to environmental degradation and congestion, causing longer travel time. Plans recommended introducing BRT to eliminate minibuses and traffic pressure and reduce long travel time (Matrisch and Weiss, 2008). Kampala is considered “a typical sub Saharan African city” in terms of exacerbated traffic due to overpopulation and poor transport infrastructure (Vermeiren et al, 2016). Kampala's residents now are double the official number since it is the economic core of the country (ibid). The majority of its population uses buses for long distances and there is lack of inter-urban buses; thus, the Kampala City Council Authority in collaboration with the World Bank introduced a strategy for implementing a BRT system in the Greater Kampala Metropolitan Area to get rid of road traffic congestion. Another reason behind developing buses is people's dissatisfaction with shared Taxis due to carrying passengers more than its capacity; in addition to the aim of providing safe, environmental friendly, sustainable public transport (ITP, 2010). Vermeiren et al (2016) were eager to evaluate the impact of BRT on the mobility of different socio-economic groups. 800 residents were interviewed during 4 years from 2010 to 2013 in Kampala to identify the different social groups in consultation with national researchers from the “Makerere University and Kampala Capital City Authority” (Vermeiren et al, 2016). After identifying 4 main groups; “extreme poor, poor, middle income and rich”, they

found that the chosen mode of transport correlates to everyone's income level, which showed 'a mobility gap' among various classes derived from lack of accessibility. Results of the study showed that higher social classes have more accessibility to BRT than the poorer groups. Although BRT in Kampala reduced average travel time by 50% and minimized traffic, it overlooked addressing low income people due to lack of affordability so they are excluded from the BRT service. Therefore, Vermeiren et al, (2016) suggested investing in BRT in a way leveraging socio-economic development of all people especially low-income people by making it affordable for all social classes and reaching high population density areas as in Bogota. They suggested governmental subsidies to make BRT accessible for the poor as suggested in previous research (Fouracre et al, 2003).

Making BRT accessible by all revitalizes all business districts and enhances economic opportunities for all plus boosting economic development of a country. Although BRT has a lot of benefits, these benefits can be minimized if certain socio-economic classes are excluded. Therefore, decision makers should take into consideration all socio-economic classes' needs so BRT benefits reach the optimum.

### ***3.6 The Model of London Bus as a case study***

Lobo and Briones (2014) mentioned London bus experience as one of the best bus services around the world saying, "London has one of largest bus systems in the world. During 2012, every weekend, more than six million people are transported on 7,500 buses. The bus network has more than 700 routes and 19,500 routes stops and stations,

covering all areas of Greater London. More than 90% of Londoners live less than within 400 meters of a bus stop” (ibid, p.43). This quotation explains how London Bus provides high quality service reflected in the high level of demand.

Lobo & Briones (2014) further mentioned the London bus concession contracts giving adequate information on the HR system and specifically the incentive structure going there, giving a chance to other countries to adopt. The issue of incentive structure and performance are of paramount importance in judging the effectiveness of management and indicated the level of success. The article also identified two aspects in the concession contracts, namely payment mechanisms and fines and penalties linked to service obligation. The authors defined the concession contract as “an understanding between a company and a host government in which the government specifies the rules under which the company can operate locally” (ibid, p.4). The United Kingdom legislation website published the proposed scheme of ‘Transport Act 2000’<sup>2</sup> that manifested the quality contract framework of London Bus. It emphasized on the importance of efficiency and effectiveness of the implementation policies. There is a quality contract that obliges operators to stick to specific terms such as frequency, fares and standard of service. For example, Section 124 of the regulation defined what a “quality contract” is, “imposing an obligation on the authority to keep under review operators’ compliance with the obligations imposed on them by QCs”. However,

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<sup>2</sup> from [www.Legislation.gov.uk](http://www.Legislation.gov.uk)

accessed on 1<sup>st</sup> of December 2016

section 127 provided what the contract should include. Therefore, the contract determines specific standards through which it guarantees the quality of service.

### 3.6.1 London Bus concession contracts

Since that since a concession contract establishes a framework of the obligations according to which operators are compensated or penalized, Lobo and Briones (2014) examined two different types of fiscal incentives in such contracts, namely “payment mechanism” and “fines, penalties and rewards” related to service requirements. The payment mechanism will have a direct impact on the behavior of the operator who is seeking to increase his profit either by rising income or diminishing operational costs. The other category complements the first one to make performance in line with the authority objectives also lead to success and efficiency at the end. To explain:

#### 1. Imbursement mechanisms

The profit made by operators determines their incentives; however, the government bears the variation in input price such as fuel prices (London for Transport, 2016). To explain, the government compensates the operators when fuel prices become higher. Therefore, the emphasis will be on what determines operators’ income and the way they are motivated. The government does not follow the fixed payment model, which does not force operators to compete in the streets, as their income is independent from service quality. Though, the government adopted the model of “payment based on operational variables” in which compensation is dependent on the effective supply of the service (Lobo,

Briones, 2014; London for Transport, 2016; Baden-fuller, Mangematin, 2013). Such a scheme excludes external revenue risk; meanwhile, it preserves a high quality of service provided in terms of frequency and regularity. In turn, the operators have to cater a timely and regular service, which entail costs that will be covered by revenues

## 2. Sanctions and compensations in regard to service obligations

In order for London authorities to optimize the quality of service, it has established specific service obligations in the contract, enforcing them through fines, penalties and rewards as complementary for the payment mechanisms. Such a mechanism requires monitoring the implementation of obligations, which requires high institutional capacities after creating balance between costs and benefits to determine the incentives and obligations that have been displayed in the London Model (Lobo, Briones, 2014; Mangematin, 2013).

Starting from 2000 onwards, Quality Incentive Contracts were designed to make bus companies improve the service to reach Londoners' expectations; therefore, after ten years of progress London Bus was very advanced in quality of service due to developing the motivation mechanism for employees (ibid). In fact, Quality incentive Contracts regarding London Bus work on a payment scheme that entails two components; the first one is to make all costs covered by revenues to finance the service. The second component is an incentive provision, which increases or decreases payment in line with the quality performance of transport operators. Therefore, Transport for London compares the level of service provision to the operational conditions exists in contracts as

Minimum Performance Standards. Financial bonuses are provided to operators when they meet or exceed the standards required. Meanwhile, deductions from payments are the result when the service was under expectations. However, contract extensions are sometimes given to operators as a kind of an incentive mechanism for performance. There are three kinds of incentive provisions in “Quality Incentive Contracts”:

1. Operated Mileage: it is the incentive of operators to bring the planned mileage existed in every route in its contract. Lost Miles are divided into two categories.
  - “Lost mileages under the control of bus companies such as staff absences and sickness, or mechanical problems, are not paid. This deduction is applied in proportion to annual contract price and scheduled mileage” (Lobo & Briones, 2014, p.14).
  - “Lost mileage beyond the control of bus companies due, for example, to adverse traffic conditions, is not deducted” (Lobo, Briones, 2014, p.14).
2. Reliability Performance Payments: they are measured annually by putting side by side the reliability performance of routes for an operator and “the minimum performance standards” stated in contracts. Such minimum performance standards are formulated according to the length and traffic of every route (Lobo, Briones, 2014; Mangematin, 2013).

For high frequency routes “each .10 minutes in excess waiting time below the minimum standard” stated in the contract, the Transport for London bestows the operator an increase of 1.5 % of the contracted price (London for Transport, 2016; Lobo, Briones,

2014). Meanwhile, a deduction of 1% of the contracted price for operator income is the result if the bus is late by .10 minute (ibid). Also, for low frequency routes LfT compares the arrival and departure time to the established timetable; then, if significant delays are found, a payment reduction will be determined. This is to increase ‘on time’ departures to reach 100% (Lobo, Briones, 2014).

3. Contract Expansion: some contracts that prove efficiency and effectiveness for five years can be automatically renewed for two more years in case of meeting or exceeding reliability, which is called “Extension Threshold” criteria. (Lobo, Briones, 2014; Shaw et al, 1996).

Along the same line, it is important to note that Transport for London worked on improving bus service by taking into account the following dimensions:

- “Driving quality, including customer service and the professionalism, passenger interaction, smoothness of ride, serving the stop” (Lobo, Briones, 2014, p.47).
- “Vehicles internal and external presentation, including cleanliness, damage, defacing and wears to interior and exterior features” (Lobo, Briones, 2014, p.47).

Regarding security considerations, sanctions are functional in order to enhance passengers’ satisfaction. Transport for London also examines various indicators pertaining to drivers’ profession, passengers’ satisfaction and the vehicle status. In case of unsatisfactory performance, Transport for London discusses the issues with operators in order to get new action plans to resolve performance issues. If they failed to do that, other solutions will take place such as terminating the contract. Consequently, Quality



incentive contracts have dramatically improved the level of service of buses in London (Lobo, Briones, 2014).

### 3.6.2 London Bus contracting and tendering process

According to Transport for London website<sup>3</sup>, the article of ‘London’s Bus Contracting and tendering process’ stated that London has passed through successive developments of contracts until Quality Incentive Contracts were introduced in 2001 after the emergence of a devolved government for London in 2000; thus, London Transport Buses became a part of Transport for London (TfL). Such contracts give direct financial incentives to operators based on the service quality. As for Reliability of service regarding regularity of buses and adherence to timetables, each route has a reliability target called the Minimum Performance Standard (MPS) (Transport for London, 2016). The essential aspects of London Bus tendering process are (ibid; Gambini, Filippini, 2003):

- Each route is tendered separately.
- Motivation is given to operators to improve the service quality.
- The duration of each contract is five years; a period could be extended two more years.
- During tendering evaluation, contracts are given to operators who provide the most efficient, highest quality and high safety level.

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<sup>3</sup> from <https://tfl.gov.uk>

accessed on 2<sup>nd</sup> of December 2016.

- Operators' payment is relative to the operated mileage and overall reliability standards.

London for Transport reviews all routes before tendering, taking into consideration views from consultants from different stakeholders. Hence, specific information is provided so to decide on which route the bus takes, regularity of service, the kind and capacity of buses and “the minimum performance standards” (Transport for London, 2016)

Afterwards, operators are asked to present a timetable to provider the contracted service obligations. They also have to provide the total cost plus profit margin of service provision.

Part of the tendering process is devoted to ‘tendering evaluation’. When the outcome is the most efficient and effective service, contracts are awarded. Meanwhile, Price, staffing, timetable, level of service quality, vehicle appearance, Vehicle type, safety and environmental considerations, sustainability and operators' financial status are among the factors of the concerned criteria are (Transport for London, 2016).

Then, the tendering evaluation committee gives approval to the most qualified operators after clarifying any uncertainty about commercial or technical reasons through negotiations.

### 3.6.3 Challenges in London Bus Model

The author explained the barriers of the development of London bus, stating that around half of London Bus drivers' turnover during the first twelve weeks of hiring (Pollit, 2009). Since it costs 3,500 sterling to recruit and fully train each new driver; this high turnover represents a significant waste of investment". Also, the overall drivers' turnover accounts for more than 30%, which results in a need to recruit of around 6000 drivers annually. In addition, the author talked about other barriers such as lack of practical training instead of theoretical training and lack of communication between trainers and trainees that led to this high rate of turn over.

According to Pollit (2009), Challenges in the incentive structure of London Bus are divided into two areas:

#### 1. Driver's compensation

Also, contracts limit or increase the privileges that the operators give to their agents or drivers, affecting the drivers' performance. In other words, giving incentives to drivers when they professionally drive well or interact nicely with passengers without discrimination can motivate them to work better. In fact, the Transport for London authority gives incentives for operators when the drivers are professional. On the other hand, the concession contracts do not form a framework for the relationship between drivers and operators, so drivers are neglected in most times, leading them to leave their work. Moreover, driver's participation in decision-making is not mentioned in the contract although they are the most interacting persons with the passengers and they know their needs; as a result, drivers do not feel that they have a stake in the decision

making so they leave. Drivers' turnover might be also due to lack of communication between drivers and their instructors in the training. In fact, almost half of new drives leave their work in the first twelve months, which manifestly indicates lack of incentive strategy for drivers themselves not only operators phase.

## 2. Drivers' training

The importance of training resides in increasing the ability and skills of employees to work professionally, which will help in serving the objectives of the institution. Also, training contributes to person- organization fit, which levels employee's satisfaction, enhancing the performance of employees. Although London for Transport authority provides training for drivers, most time is wasted transporting drivers in and out of training centers and practical training is not given enough attention. In addition, during training sessions, relationships are not given importance, so drivers became emotionally not attached to the company. Consequently, operational support for training centers are encouraged to give drivers much time to be professional, as some of them didn't have a license before.

Lobo and Briones (2014) added one flaw of London Bus Model about the incentive of Responding to citizens' needs. Despite the advantages of London bus model, it overlooks the "incentives provided to cater to demand" mechanism, so operators have no incentive to respond to demand because their revenues are not affected. This flow may lead drivers to skip stops or not to wait sometime for passengers in stops, which affects the quality of

service. Although regulators use ‘fines and penalties’ mechanism, it does not take into consideration the rate of demand to make up such fault.

### **3.7 Urban planning and transport**

Transport planning should be incorporated in urban planning to guarantee its sustainability and effectiveness (UNDP, 2008). In case of increasing unplanned demand on public transport in cities due to insufficient planning studies, increasing congestion, higher accidents and related negative environmental impacts; there are several aspects that Urban Planning Authority go through as follows (Hay, 1908):

- Studying the traffic effects to assess the impact of traffic, and mitigation strategies for a certain period or for the development of a specific project.
- Creating transport plans to the status of a certain or a specific area to identify ways to improve a particular situation (walking, cycling, public transport, etc.) or area (campus, downtown, industrial zone, etc.).
- Local transportation planning: which means the municipal transport plans or local development planning within the existing neighborhoods.
- Urban and Regional Transportation Planning: it is a planning of higher level for developing integrated transportation plans on urban and regional scale.
- Evaluating the environmental impacts as a result of the introduction of future improvements to transportation, including impacts on air quality system.
- Develop a financial plan to secure enough funds to cover the costs of implementing strategies expenses.

- Strategic planning for the development of long-term transport plans are usually between 20-40 years in the future.
- Improve the transport action plans to identify specific projects programs that will be implemented within a few years plans.
- Monitoring of the status of the transport sector and evaluating it.
- Identify current and anticipated transport problems in the future and analyze the requirements of the detailed planning and the various modes of transportation and improve the strategies necessary to do so studies.
- Creating predictions about the increasing population and the size of future employment, assessing the proposed uses of land in the region and identify growth hubs.
- Prepare a number of alternatives to the programs and plans for long-term and short-term and improve capital and operational strategies to transfer people and goods.
- Evaluating the environmental impacts as a result of the introduction of future improvements to transportation, including impacts on air quality system.

### 3.7.1 Urban planning in Egypt

Urban Planning is critical for transport development, as transport planning is a phase of urban planning; however, Egypt suffers from inadequate planning. Thanks to international organization, attention to urban planning sector started to be in place 1970s after the UN-Habitat conference in 1976 (Milbert, 2000). International efforts were followed by the creation of general organization for Physical Planning in 1973, which cooperated with United States Agency for International Development USAID, the World

Bank and the German Technical Cooperation agency to proceed in urban development projects and urban transport planning as a part of it (Dorman, 2007). In line with international organizations' efforts to support Urban Planning, the German Technical Cooperation Agency (GTZ) helped the Egyptian government in creating a master plan for Al-Abour city. For solving the problem of congested cities, USAID proposed establishing new cities instead of directing population growth away of congested areas, yet it did not work. An importance notice to mention is that only New Cairo, 6<sup>th</sup> of October, 10<sup>th</sup> of Ramadan, Al-Shurouq and Badr cities from 22 new cities had urban planning in GCMA due to international organizations efforts (ibid). This means, most of new cities have no public transport planning at all. The expansion of unplanned gated communities is another challenge to urban planning (Fahmy and Sutton, 2008). The ring road is identified as a reason that increases urbanizations of surrounding areas (Piffero, 2009; Inturri, Ignaccolo, 2016).

UN-Habitat (2015) supported the Egyptian government to build “a comprehensive Strategic Urban Plan”; an aspect of this plan discussed basic urban services. This projects created Al-Alameen as a pilot project for new cities based on sustainability measures. It was achieved by the Ministry of Housing and Urban Communities, the Ministry of Local Development, the General Organization for Physical Planning, New Urban Communities Authority and the al-Alamein local government.

However, in spite of international organizations efforts in this spectrum, Egypt now suffers from inadequate transport planning that should be prior to implementation (Fahmy and Sutton, 2008). Some blame the General Organization for Physical Planning (GOPP) for inadequate planning, since transport was not substantial in planning. Others

claim that there are plans but never looked at in the implementation process, which is a reason of undermined transport networks in Egypt (GTZ Egypt, 2009). Also, there is a clear inadequacy in literature regarding incorporating transport in urban planning in Egypt and how to mitigate negative consequences of improper planning.

### **3.7.2 Route management (preference by JICA, 2002)**

The current traffic congestion is, to a great extent, attributed to lack of traffic management as necessary for smooth traffic flows and best use existing roads (JICA, 2002). A sound efficient and effective public bus service needs deployment of route management system. This system might entail:

#### 1) Traffic signal control.

CREATS displayed spill-back due to over saturated bottlenecks as a main cause of congestion, which has a negative impact on public bus service quality. Therefore, the signal control system should be employed in busy areas so stable flow pattern is guaranteed. Examples of areas that should have signal lights are such as “the area encompassed by Ramses, Clot Bey, Port Said, Magless El Shaab and Cornish El Neel roads where 44 intersections are located. The synchronized system should be introduced on the 8 heaviest routes such as Doqy, Abdel Salam Aref, and Tahreer roads, with installation of signal lights at the roundabout and U-turn points” (JICA, 2002, p.10). Application of a traffic response system has proven successful in many countries; for example, in Tokyo the system reduced travel time by 9% and congestion length time by 28%.



## 2) Improvement of intersections.

Improvement of intersections plays a role in enhancing road capacity; this could be done by widening routes or other adequate engineering methods. JICA study (2002) urgently recommends the intersection improvement at Abdel Moniem Ryad Square as one of the bottlenecks as mentioned in dynamic simulation analysis presented in Chapter 8, Volume III.

## 3) Improvement of parking system to leave space for public buses.

The Cairo Central Business District and Central Giza area are considered by CREATS1 as areas of high demand on parking, especially on-street parking. On street parking in such areas is always 100% saturated during mid-day hours and this is why it should be controlled more to be shifted to off-street parking. The study suggested the improvement of parking behaviors through applying a “Policy Zoning System for Parking Management (PZM)” in which three levels of ‘zonal parking management are designated, based on the zone attributes in terms of the total building floor areas of business & commercial and public uses’. In each zone, both charge for on-street parking and parking prohibition are employed to regulate streets especially the high-congested routes like in Central Giza. To explain, 50% parking prohibition in extremely congested routes (zone A) and 50% are allowed to park with charge. 30% of Vehicles are prohibited to park in less congested routes while 70% are allowed to park with charge. In zone C, only 20% of vehicles are prohibited and the rest are allowed to park with charge. This categorization of zone A,B and C.

## 4) Traffic safety facilities.

Engineering solutions such as pedestrian bridges and pedestrians crossing streets according to traffic lights might reduce crossing streets in the middle sections, which causes major congestion. Meanwhile, enhancing safety through education by creating traffic safety campaigns is very crucial to transmit a norm or social value of “Pedestrian Priority”. These steps can enhance traffic flows.

#### 5) Improvement of bus facilities

Enhancing public bus transport system in GCMA especially in the Cairo Central Business District and Central Giza entails enhancing traffic management as proposed by CREATS1. This is because the proposed fact that “traffic congestion often takes place with conflicts of buses/shared taxis and other vehicles” (JICA, 2002, p.42). For instance, if the bus priority lane system is applied, commuters will go for buses instead of using private cars due to its speed.

#### 6) Vehicle inspection system.

Another cause hinders traffic flow and results in congestion are engine- troubled vehicles blocking roads and streets (JICA, 2002). This also results in economic loss and pollution (World Bank, 2014). Technical improvement of vehicles through inspection standards, which might entail ‘detailed inspection for each category’, is very needed to avoid such problems. Yet, legislative reforms are needed to emphasize on administrative decision. Such reforms imply not only inspection of private vehicles but it also entails inspection of public buses.

### **3.8 Governance as a central aspect for public bus service management**

Also, good governance involves an effective regulatory policy, which is critical for making policy reforms, aiming at achieving transparency, legitimacy, accountability, trust in government, efficiency and policy coherence (OECD, 2011). To this end,

- Solid research and analysis should come before policy design.
- Having a particular institution that is responsible for leadership is critical like GCTRA is an asset. Yet, it should be capable of making reform, supporting implementation and controlling quality.

Meanwhile, improving regulatory decision making leads to assuring systematic quality, using some tools that include “regulatory impact analysis, the consideration of regulatory alternatives, administrative simplification, ensuring regulatory transparency and *ex post* evaluation” (ibid, p.20).

OECD suggested the existence of “a centrally located body” that plays the quality control role and overseeing of “Regulatory Impact Analysis” for altering regulatory decisions especially in “a highly-charged political environment”(OECD, 2011). As a result, cost-effectiveness and high quality will be increased plus decreasing unnecessary regulations. Meanwhile, creating regulatory alternatives is importance for regulatory authorities such as GCTRA to choose the most effective way of reaching the desired outcome after evaluating all feasible options.

Transparency has been one of the most common characteristics of governance; but also necessary to eliminate the causes of regulatory failures such as lack of accountability or inability to identify the political danger (OECD, 2011). Thus, transparency is very

essential for regulatory success. The World Bank (2008) regarded transparency through information access is the gate to enhance governance in service delivery. Sharing information between the government and citizens is the essence of building responsibility and responsiveness. The report also stated that information about service delivery includes “budgetary data, service usage rates, qualitative ratings of service and performance reviews” (World Bank, 2008). Hence, recognizing obstacles to share information about such aspects is needed to improve the situation, adding to efficiency and effectiveness of service provision. This is because sharing information leads to better monitoring for service providers.

Regarding Ex-post evaluations, it is principal in evaluating the outcomes of regulatory decisions. To this point, the regulatory Authority should “examine the relevance, effectiveness, and impacts of regulatory decisions, as well as identifying unintended outcomes, reasons for failure, and factors contributing to success” (OECD, 2011, p.50).

UNDP (2013) discussed “the role of state in development” or the extent to which the state should intervene in case of crisis, stating that despite that this role is unclear, the fact remains that consequence of lack of governmental regulations and transparency recalled the role of the state. This is why UNDP encourages the enhancement of “capable states” to be qualified regulators. At the same time, UNDP (2013) discussed E-governance as a central component in service delivery enhancement and the promotion of MDG goals. It highly encouraged E-governance for enhancing transparency through availability of information to increase citizen and stakeholder participation. E-governance includes; “E-administration, E-service delivery, E-participation and E-policy-enabling environment and regulation” (UNDP, 2013). As part of public administration reform, public

institutions should enhance transparency and accountability in order to improve their operation, known as “E-administration”. For the intervening time, “E-participation should be implemented through increasing interaction between the government and citizens via dialogues or conferences while instigating efficiency and transparency of all public institutions that provide services by Information Communication Technology as “E-service delivery”. “Policy-enabling environment and regulation” factor implies incorporating E-governance principles in legislation to guarantee implementation of them in policies.

To conclude, the literature review presented the importance of public transport from several aspects, focusing on certain dimensions of public bus service provision. Meanwhile, it reviewed London bus as an international experience to bring about learned lessons. Additionally, it examined urban planning in relation to transport generally as well as in Egypt.

## 4 Chapter Four: Analysis of Management Structure

### 4.1 A brief description of mandates of public bus service key stakeholders

This section of the research explains the hierarchy of mandates amongst the Ministry of Transport (MoT), the governorates of Cairo, Giza and Qaliobia, the Cairo Transport Authority and Greater Cairo Transport Authority (GCTRA).

As for MoT, according to the Ministry of Transport website<sup>4</sup>, its general policies entail:

1. Developing a comprehensive strategy for national transport schemes through the preparation of a comprehensive scheme for all modes of transport (road transport - sea – rivers- costal transport) taking into account the evolution of the current and future demand that determines necessary costs, priorities, funding, managing projects and programs and execution time. Also, MoT is responsible for achieving connectivity and integration among stakeholders and lays the foundations to update those plans periodically in accordance with the updated data; in addition to determining how to organize and structure transport services provision system.

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<sup>4</sup> from MoT website

accessed on 1<sup>st</sup> of Decemeber, 2016

2. Developing all modes of transport and operating systems to keep pace with technology and intelligent transportation systems while continuing developing, modernizing and using modern information systems of operation, control and management.
3. Developing laws and regulations for the transport system and developing policies in line with the comprehensive plan requirements.
4. Enhancing development and regulation of urban transport
5. Application of systems that manage comprehensive maintenance of all transport modes.
6. Fortify the bodies and transport projects against corrupt practices through the development of laws, rules and executive regulations plus the development of sophisticated and accurate systems to ensure the integrity and transparency of proposing projects procedures. Besides, MoT has to ensure the quality and completeness of the studies, design and project management in addition to monitoring violations and filling gaps with corrective action.
7. Review all policies and procedures from an environmental perspective to ensure compliance with environmental standards that will be developed to ensure sustainable development and to reduce the negative effects of transport services on environment.

According to the Egyptian constitution, the governor is considered the representative of the executive power to maintain and oversee the implementation of the state general policy and to provide service facilities and production within his province (the Egyptian

Constitution, 2014). Meanwhile, the governor has the minister prescribed authority regarding supervising the decisions of public bodies boards, which holds public facilities and services within the scope of the province (the Egyptian Constitution, 2014). Accordingly, the Cairo Transport Authority has to consult governorates of Cairo, Giza and Qaliobia for execution of policies and strategies regarding transportation.

Establishing the Cairo Transport Authority<sup>5</sup> was after the Decision of the Egyptian President No. 2716 of 1966. According to the CTA website, the current functions of CTA are as follows:

- 1) Management and operation of public transport facility in GCMA, except what falls within the terms of reference of a company or other body.
- 2) Establishment and making the best use of all facilities locating within the province.
- 3) Develop and improve the public transport service level.
- 4) Guaranteeing regular and affordable service performance at the lowest cost in support of low social level passengers.

For achieving these functions and the main goals of its foundation, CTA works on a group of principles:

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<sup>5</sup> From the CTA website

accessed on 1<sup>st</sup> of December, 2016



- 1) Develop sound plans for all Authority activities in order to ensure the best use of all resources available to the Authority.
- 2) Achieve coherence and coordination among all the CTA organs and to form the features of the CTA general plan including the level of service expected by business, the outcome out of it and their implications.
- 3) Develop implementation plans to ensure the implementation of the Authority's plans.
- 4) The immediate follow-up to the implementation plans in all areas, identifying any deviations from the established plans, clarifying its causes and reviewing plans to adjust it if necessary, not affecting the goals.
- 5) To conduct supervision and inspection on the implementation to ensure safety, clarify violations and its implications and to take the necessary measures to prevent their reoccurrence.
- 6) Measuring the performance efficiency of CTA bodies and the extent to which quality plans and general plans are executed compared to the actual implementation and figuring out any deviations from the plan and its causes.
- 7) Calculate the actual cost of the service performance, calculate revenues and evaluate the economic performance of the Authority.

Taken as a whole, the MoT draws the general comprehensive transport strategies of the whole country for all means of transport, including public buses, through governorates as supervisory power. The General Transport Authority as implementing power formulates plans and pursue management of public buses as well as other modes of transport within the area of GCMA, under Cairo, Giza and Qaliobia governorate supervision. Therefore, the Board of Directors of the CTA includes a representative of the Ministry of Transport,

and a representative of each of the governorates of Cairo, Giza and Qaliobia. Yet, it also includes an Assistant Minister of Interior Affairs and a Counselor of the State Council, chosen by the board Chairman, three of the CTA workers chosen by the Governor of Cairo and three members selected by Minister of State for Local Government and popular organizations.

In response to the above situation, Greater Cairo Transport Regulatory Authority was established pursuant to the Presidential Decree 2012 to work as a regulatory authority for transportation over Greater Cairo Metropolitan Area (An interview with a top ranking official in GCTRA, October 2016). According to an interview with a top-ranking official at GCTRA, GCTRA is under the Ministry of Transportation and its jurisdiction includes:

- Policy-making and developing the comprehensive plan for the development of the transport system in Greater Cairo.
- Studying the requirements and needs of transport on the national and regional level,
- Discussing plans designed to meet the demand on it and according to the rules organized by the Ministry.
- Ensuring the provision of more efficient transport through a network of integrated transport services, ensuring the achievement of the desired goals and improving the service performed.
- Developing rules, regulating the transport business in Greater Cairo, in coordination with those working in this field, drawing a general plan for transport

projects and encourages the participation of the private national sector to invest in these projects.

- Preparing implementation programs, deciding on the necessary financial requirements for the implementation of those projects, and proposing funding sources.
- Maximizing the efficiency and development of standards and conditions for issuing licenses and permits for service providers.

## **4.2 Challenges facing GCTRA**

As exhibited previously, Greater Cairo Transport Regulatory Authority is considered the coordinator between the Ministry of Transportation, the Cairo Transport Authority and the three governorates; yet, it works under the auspicious of the Ministry of Transportation. In fact, having a regulatory authority for transportation of GCMA was very much needed. Yet, it is still considered a set up; thus, it faces many challenges.

### **4.2.1 Challenge of Political will facing GCTRA**

However, there are still many challenges that threaten GCTRA existence, exhibited in interviews. In an interview with an official working in GCTRA who marked political willingness as an impediment; he mentioned:

*“This apparatus is ‘new born’. We are getting into the hell due to multiple challenges we face. We will try to get into this in the coming period. If we cannot do it, we will stop work. Success depends on the level of political will needed for our continuity, which is one of our challenges”.*

(An official working in GCTRA, October 2016)

The interviewee considered GCTRA as incomplete established entity due to many challenges facing it, which could hinder its success. One of the challenges that threaten its existence is lack of political will. GCTRA seeks to enhance its existence by building connections with officials to pursue its vision regardless of their legislative power taken from the presidential decree that makes no sense without political willingness and good connections with decision makers.

#### 4.2.2 Challenge of lack of financial resources

Another challenge facing GCTRA, according to interviews, is lack of funding. For instance, they need to measure demand on transport; yet, this study needs much money and they have to have an existing body to receive the fund. Thus, they aim at spreading their mission so everybody hears about them and know their importance as well as creating institutional structure. Then, they can receive funds from other entities to proceed in their work (An interview with an official working in GCTRA, 2016). Yet, the fact remains that although they have started 3 years ago, nothing has been accomplished till now due to lack of funding. According to the interviews, there is lack of political support causing the lack of funding. If this situation continues, GCTRA will not be able to achieve any of its missions or even prove its potential.

However, GCTRA managed to get a 300,000 grant from the Work Bank to make a Spanish consultant agency prepare its operational manual (GCTRA inauguration workshop, October 2016) aside from the government budget. Then, GCTRA seeks to get

another grant to be able to conduct studies and to hire top calibers. This was asserted again in an interview with one of those who work in GCTRA who said:

*“We suffer from lack of financial resources that are needed to hire Calibers. Everybody will know us when we cause a huge change”*

(Another official working in GCTRA, October 2016)

Unavailable financial resources hinder the process of hiring qualified people. Thus, GCTRA seeks to get a fund from the AFD to conduct studies even if the government did not specify a budget for it. According to the interviewee, financial resources will guarantee sustainability of their existence.

#### **4.2.3 Challenge of fear of losing power**

Another challenge facing GCTRA manifested in the problem of fear of losing power in the same interviewee’s words:

*“People at CTA and the three governorates have to understand that I am not fighting them. I am here to complement with them to reach efficiency and effectiveness on a sustainable way”*

(The same official working in GCTRA, October 2016)

This points out that government officials are not aware of the exact mandate of GCTRA, since they do not want to lose power or to forfeit aspects of their responsibilities. This shows that government officials do not know that GCTRA is just a regulatory authority and will not lose their executive power.

#### 4.2.4 Challenge of unidentified well-known mandates and responsibilities

What makes the situation more complicated and difficult to be solved is that even the employees working at GCTRA do not know their exact responsibilities, which was apparent in the same interviewee's words who mentioned:

*“One of our jurisdiction is giving concessions. CTA is not providing good service. The private sector come and take these buses. There are always penalties so either you pay or provide a good service. If you are providing good quality service, take another concession in another area. This is the regulation”.*

(The same official working in GCTRA, October 2016)

According to staff in GCTRA, giving concessions to the private sectors falls under GCTRA jurisdiction. Also, the presidential decree of GCTRA establishment gives the responsibility of preparing implementation programs to GCTRA although CTA is still the contracting and implementing authority. Yet, GCTRA as a regulatory authority could not be an authority of service provision; both responsibilities should not be at the hands of the same entity. Consequently, indefinite power division and unclear mandates led officials in the Transportation Sector to be worried of losing power. Another important observation has to be mentioned is that GCTRA do not have a comprehensive strategic planning for transportation in GCMA, as shown from interviews conducted with people working there. In spite of that, the fact remains having a regulatory authority for transportation in GCMA is very much needed as exhibited in literature and asserted by interviews.

### **4.3 GCTRA as presumed Regulatory Authority on CTA**

Greater Cairo Transport Regulatory Authority is expected to monitor the quality of public bus service when it came into action. Commenting on how to raise the quality, an interview with a top ranking official working in GCTRA who noted:

*“I will supervise the service quality through my engineers via quality standard”.*

(An official working in GCTRA, October 2016)

This shows that GCTRA will monitor the service through quality standards and already the service will be improved because of competition while low quality and low ticket priced buses will stay in existence for who needs it because of their low-ticket prices.

Regarding standards, there are 11 standards, cover 6 key aspects (same interview):

1. Regarding Reliability, the GCTRA official noted that:

*“Public buses should provide timely and regular service, so they should meet reliability performance standards”*

(An official working in GCTRA, October 2016)

The interviewee considered meeting reliability performance standards as one indicator of providing quality public bus service. For instance, he believes that scheduled bus trips operated in each route should be fulfilled at least 96% monthly. Meanwhile, bus service should adhere to not to be late more than five minutes of its scheduled time. Additionally, according to him bus breakdown rate of all buses should not exceed 1.5 % monthly.

2. Regarding Loading he denoted:

*“Bus loading during weekday peak periods should not go above its capacity to avoid overcrowding”*

(An official working in GCTRA, October 2016)

The person interviewed considered over-crowded buses as a factor negatively affecting quality service of public bus in GCMA; therefore, he wants to work on improving service through using specific advanced buses that do not open their doors when they do not have vacant seats.

3. On the subject of Safety, he supposed:

*“Accident rate on all buses should be reduced to the minimum; otherwise, penalties will be forced on drivers and sanctions will be forced on operators”*

(The Same official working in GCTRA, October 2016)

The interviewee recognized the high rate of road fatalities as estimated by the WB (2012) that 1,000 Cairenes die per year; hence, he wanted to work on enhancing safety of public buses as contributing to overall road safety. In case of continuing to commit accidents, sanctions and penalties are be in place.

4. On the topic of Availability, he believed that:

*“Every person should live nearby 400 meters of a bus stop, which is the standard of accessibility by most national standards...buses should operate 18 hours a day.... Headway should not surpass 30 minutes as a start then 20 minutes to reach 10 minutes at the end”*

(The same official working in GCTRA, October 2016)



The interviewee regarded access to any bus service, bus service operating hours and frequency as crucial components of service availability as explained above. For bus service to be available an individual should live by 400 m of a bus stop; meanwhile, bus lines should be connected. Moreover, headway, which is the time difference between two buses at the same bus stations, should not beat 30 minutes (same interview).

5. Concerning Integration, the same interviewee claimed:

*“Bus service operating hours should start from 6 am or before till 12 midnight or later”*

(The same official working in GCTRA, October 2016)

The same interviewee alleged that bus-operating hours contribute to integration, so buses should not work less than 18 hours, perhaps more, and they should not stop from 6 am to 12p.m. Yet, drivers can make shifts to take some rest. In fact, the concept of bus service operating hours is mentioned before as a component of availability, but this does not downplay its importance as contributing to integration.

6. As for Information, the same interviewee asserted that:

*“Availability of up-to date information via Internet website and hotline about bus schedules, expected headway, cancelled trips and other actions is highly crucial for quality of bus service”*

(The same official working in GCTRA, October 2016)

The interviewee believed in the importance of available bus timetables for everybody through a website and hotline for individuals to attain convenient trip planning. He further highlighted that unknown cancelled trips lead to overcrowding of other buses.

Meanwhile, according to him the issue of unavailable bus schedules is a major cause of overcrowded buses. This idea was asserted by the CAPMAS report (2013/2014) that implied that overcrowding rate for public transport bus in GCMA is 1.5. This number is equal to the Average number of passengers for a vehicle's one-way trip / average of number of seats for a vehicle.

This idea has been triangulated through another interview when a bus driver noted that:

*“An unknown bus schedule is the reason behind overcrowded buses. People do not know when the coming bus comes, so they all ride the available bus”*

(A bus driver, October 2016)

Therefore, the bus driver referred the problem of overcrowded buses to lack of predetermined bus timetables rather than the driver's inclination to collect more money when asked about the reason behind overcrowding buses. He further justified his words by asserting that money goes at the end to operators not drivers, so there is no other reason behind over-crowded buses from his viewpoint.

An official working in GCTRA suggested a solution to get rid of over-crowded buses through importing new buses; he claimed:

*“Less crowded buses gives hint on the vacant seats; if there is not, it will not stop. Technology plays an important role in solving the crisis of traffic in Egypt”.*

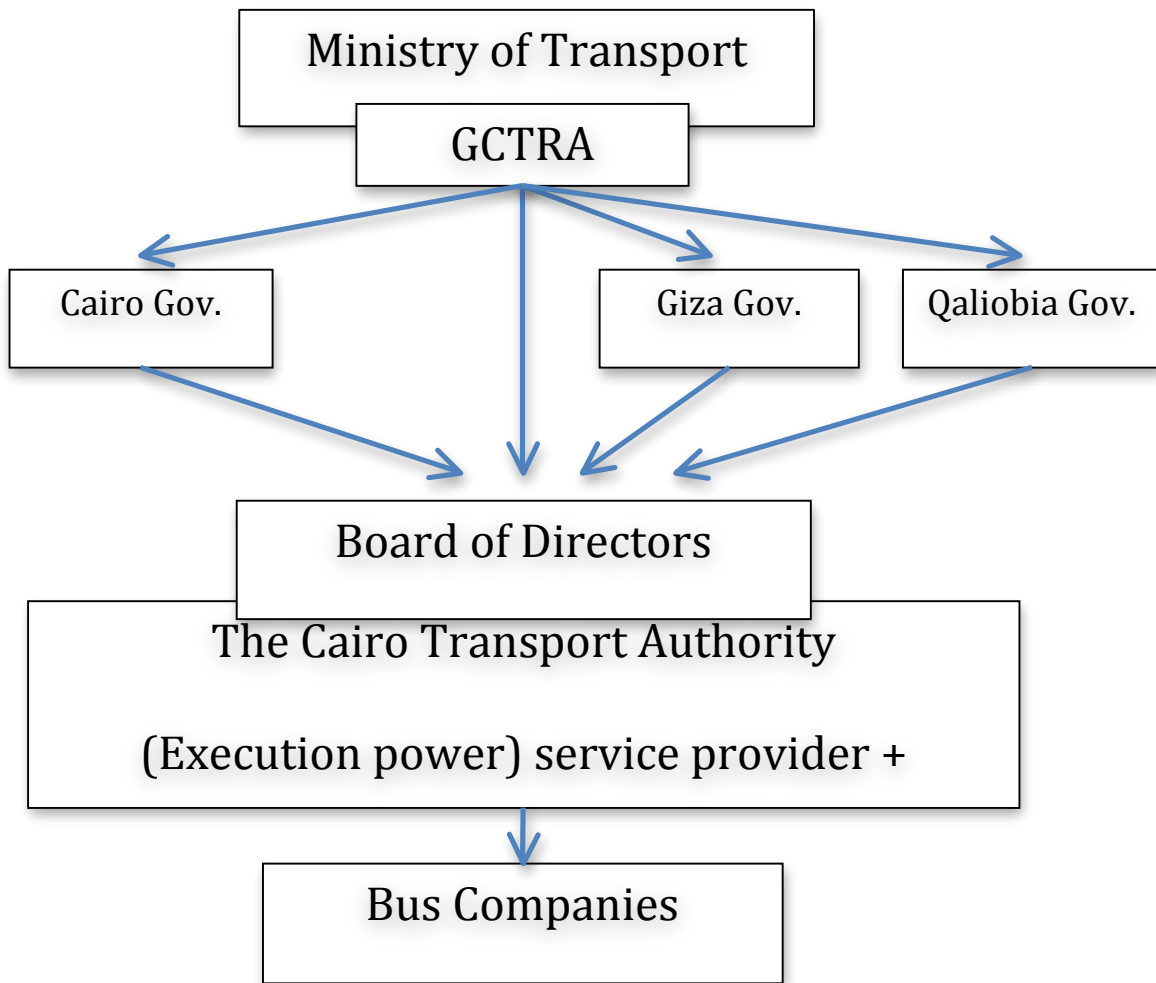
(An official working in GCTRA, October 2016)

Therefore, if GCTRA was able to supervise the process of public bus service, the problem of overcrowded buses will be eliminated so the quality service will get higher.

Yet, the government should solve the problem of limited bus numbers before importing the less crowded buses. In case of having less crowded buses but limited number of buses, streets will be over-crowded with people waiting for buses. Therefore, the problems of overcrowded buses and limited number of buses should be solved simultaneously.

According to an interview done with one of the officials working in GCTRA, in case of not fulfilling these standards, financial penalty will be enforced. Standards depend on routes; additionally, there are daily and monthly standards. According to violation, penalty is enforced.

Consequently, despite the fact that the GCTRA has no coherent vision of public transportation development in GCMA, it has specific quality standards, which can do the regulatory and supervisory mission through. Yet, the challenge remains whether it can take the prescribed responsibilities pursued in the presidential decree or lack political willingness will hinder this process.



Source: By the researcher fig2

#### 4.4 Overview of public bus service planning setbacks (interview findings)

##### Hierarchy of public bus service planning

GCMA suffers from insufficient integrated sustainable transport planning (UNDP, 2008; even in newly established cities except the ones replanned in cooperation with international organizations as exhibited in literature. Therefore, transport services in new cities depend on private and informal means of transport (UNDP, 2008). This is because

there is a visible inadequacy of integrated land use planning that includes transport planning plus insufficient coordinated strategies that imply all modes of transport while planning and implementation.

Greater Cairo Strategic Urban, called for short Cairo 2050, has been developed in cooperation between the Ministry of Housing, Utilities and Urban Communities represented by the General Organization of Physical Planning, the United Nations Human Settlements Program (UN-Habitat) and the United Nations Development Program (UNDP) for the aim of correcting the error of inadequate planning in GCMA (UN-Habitat al, 2012). It has taken into consideration transport development, especially developing transport infrastructure, to be accessible by all population segments. It tackled planning of major traffic roads and how to incorporate public transport in. such land planning was expected to meet future economic development and population growth considerations. Yet, this strategy never concluded or was approved or implemented, and is still under reconsideration.

In practice, interviews with staff of GCTRA exhibited that planning for public transport is usually created on an ad hoc basis to respond to challenges and to meet demand on it. However, CTA should have distinguished techniques to measure the existing transport networks, potential population growth, city planning and demand and supply that the CTA do to measure demand on transport, but the researcher has no information about how the CTA does this or whether it does it or not

To dig deeper in hierarchy of planning amongst MoT, CTA and governorates of Giza, Cairo and Qaliobia, this section tackles problems hindering such hierarchy. Regarding

hierarchy of planning and power relations among governorates, CTA and the MoT, an interview with a top-ranking official working currently in Cairo Governorate explained the problem of hierarchy noted that:

*“We have a problem in hierarchy and coordination among the three entities. There is no real coordination between the Ministry of Transportation and the Cairo Transport Authority... we call CTA the illegal child. There should be a system among the three”.*

(A top-ranking official in Cairo Governorate, October 2016)

The interviewee mentioned that there is no chain of command or order among the three entities and the situation of CTA is problematic that is why it is the illegal child. To explain, it is not clear who CTA should refer to. He explained the problem of hierarchy by pointing out an incident. At a time when employees of the Cairo Transport Authority complained of lack of financial incentives, the Ministry of Transportation asked for the authority to be under its auspicious. The governorate refused that. They had a request from a former Transportation Minister to make the Cairo Transport Authority under its umbrella and Cairo Governor refused. Every employee has a complain goes to the Ministry of Transportation as they want to be treated financially like people working there, the governorate gets angry and stubborn and this is why relations among the three are stressed (Interview with a top-ranking official in Cairo Governorate, October 2016). Yet, Cairo Governor has the upper hand over CTA; for example, if they got 500 buses, Cairo Governor has the authority to distribute them hand in hand with the chairman of the CTA. Yet, Cairo Governor had to take a push from the Minister of Transportation to implement some decisions, for example, to accept a loan from the World Bank (same

interview). Some decisions depend on power relations among the three entities or specifically the minister and the governor (same interviewee). Therefore, decisions always depend on personal power relations rather than hierarchy.

The idea has been triangulated by the same notion regarding power relations among the three entities and lack of coordination by another interview with one of the staff working in the newly established GCMA Transport Regulatory Authority who noted:

*“Greater Cairo is in need for a regulatory authority for transportation to coordinate efforts related to transport planning in Greater Cairo”*

(A top-ranking official in Cairo Governorate, October 2016)

The interviews confirmed that practically there is a problem in power relations among the CTA, Cairo Governorate (might be the same for the other two governorates) and the Ministry of Transport; here comes the utmost importance of a coordinated body. There are internal problems in the CTA, since workers want to be under the ministry not under the governorate, which some ministers prefer this and governors totally reject the idea. Implementation of new policies or decisions is constrained by the degree of cooperation among the three; this comes from lack of clear-cut regulations and laws that define roles and responsibilities of each entity.

#### **4.5 Public bus service delivery**

According to the Cairo Transport Authority website, it is the responsible entity for providing public bus service. Thus, it has the responsibility of setting policies and plans to guarantee development of public buses with efficient use of resources. Meanwhile, according to the CTA chairman CTA is considered operator and service provider for the

buses owned by the CTA whereas it is considered only a service provider through contracts for the buses operating under 16 private sector companies (Abdelbaset, 2016). CTA contracts out with such private companies operating under the CTA supervision, as the state alone cannot carry all the burden of the bus service provision alone plus they open up job opportunities for young people and investment by the private sector (ibid).

#### 4.5.1 The CTA as service provider and operator

The CTA owns 2600 operating buses around Greater Cairo Metropolitan Area; yet, it aims to stretch its feet to reach 5000 buses by the end of 2017 to cover all GCMA (Abdelbaset, 2016). Meanwhile, among these buses will be 10 buses supplied with ladders to ease movement of people with special needs, 10 articulated buses and 10 double Decker buses (ibid). To decrease the headway time, CTA chairman aims at intensifying the number of buses in every line along with existing buses that were modified (ibid). To this end, CTA not only increased the number of buses in certain lines. But it also seeks to link new cities around the capital, especially New Cairo to each other. According to the CTA chairman, 'For the first time, a bus line extended from Road 90 to the American University in Cairo and another bus line links the third settlement to Abdel Moneim Riad street (ibid). Each bus line includes 10 buses (ibid). There is a newly established bus line extending from Banha city, Qaliobia to Cairo with 12 buses at the lowest price to facilitate the transfer of students to universities of Cairo (ibid). Before establishing this line the ticket price was 5 pounds by private transport, while the price of public buses is two pounds (ibid). Along the same line, two lines were established in



Pichu American City area in Maadi, as it was completely deprived of transportation, along with a focus on high-density slums areas such as Arab Unity, and Shubra Al Khaimah, which have been linked to Bulaq Dakrur, El-Darrasa, and Abdel Moneim Riad (ibid). Also, there was establishment of bus line in Abraham bek, other moves from Abraham bek to Alopagh, and another to the Mamluks area to make bus lines to the universities of Cairo and Al-Azhar and Madenet El-Salam (ibid). All these lines were introduced by the CTA to enhance public bus coverage in GCMA.

However, improving the quality of buses does not seem to be on the top of the CTA agenda. Although many interviews were conducted with the CTA chairman by many journalists, he did not talk about or show attention to the quality of public bus service in terms of sustainability. An interview done with a public bus driver working under the CTA showed:

*“There are no categories of public buses. All air-condition buses are now not air-conditioned. Air conditioning stopped working”*

(A bus driver working in CTA, October 2016)

This showed that there is no quality maintenance. Meanwhile, the same interviewee asserted that there is no periodical inspection on vehicles. According to the interviewee, inspection is by complaining. If a driver complained about something, he goes to the maintenance workshop although the same bus works from 8 am to 1 am (same interview).

Thus, it is shown in interviews that the CTA pays attention to extending the public bus fleet and neglects improving the quality of buses to meet all Cairens's needs. Even most of the CTA president's and Cairo Governorates' words during journalists' interviews talk about increasing the number of buses and neglecting maintaining the quality of existing buses.

#### 4.5.2 The CTA as the only operator

The CTA gives concessions to private bus companies after setting roles and standards for them (Abdelbaset, 2016). It supervises 16 bus companies to ensure compliance with its rules and regulations (ibid). For instance, the CTA decides on what bus lines should be given to operators according to the lines on which buses are few in number.

It may also regulate other aspects of buses owned by operators as mentioned in an interview with a bus driver who said:

*“Private buses have to get the license every year when they pay money for the government and also licenses are given to them after looking at their vehicles appearance, whether there is smoke coming out or not and checking motors”*

(A bus driver working at CTA, October 2016)

This means that the CTA monitors the quality and appearance of private buses every year to approve their licenses while playing the only role of service provider. Looking at the vehicles appearance and its status are ways to test buses not owned by the government.

#### 4.5.3 Problems in public bus service (interviews findings)

Interviews with passengers of buses weather owned by the CTA or private companies highlighted many problems in service provisions.

More than one passenger of CTA buses complained about late buses. Regarding lack of timely and regular service, an interview with a CTA public bus passenger live in Zahraa El-Maadi denoted:

*“Buses are very late; they drive people crazy as they reach their jobs late. Therefore, people stopped to ride such buses”.*

(A public bus rider, January 2016)

The same idea was proved in another passenger’s words; he said:

*“I have been waiting in Masr and Sudan street in Hadayek Al-Obba for an hour to go to Al Sekka-Club while I have noticed buses with the same numbers on them (the same buses) passing through this area many times despite of low demand on them”*

(A public bus rider, January 2016)

These two interviews showed that there is inadequacy in public bus number, so passengers are complaining about delay of service while others highlighted that some areas are covered by buses more than other areas despite of low demand. This also pointed out lack of management because buses arrive late. Lack of regulation manifested in other passenger’s words as he said:

*“I was sitting in a bus in El-Giza station, then the driver said I will go to Al-Sayeda Aisha today. If you do not agree, leave the bus... there was an old lady sitting in the women. There is not only because bad driver’s*

*behavior, but also it is because of absence of regulation in public bus service”.*

(A public bus rider, January 2016)

The interviewee elaborated on bad drivers’ behavior, pointing out this incident. He also attributed bad drivers’ behavior to reasons of inadequate regulation or management plus absence of morals. He further said that when passengers revolted against the driver, he said do whatever you want. Other passengers of CTA buses highlighted bad drivers’ behavior as a major cause of service deterioration. Another passenger said that when he asks the driver to stop smoking, he usually rejects.

An interview with a bus driver showed the impact of public buses break down in streets on traffic flow, delaying people; he enumerated:

*“Many public buses stop at streets all of a sudden because of lack of inspection and this distracts traffic flow; especially this bus might stay at street side more than one day”*

(A public bus driver, October 2016)

The interviewee signaled lack of inspection for public buses as a factor contributing to traffic flow distraction; therefore, people riding the broken down bus are delayed to their work or schools or any destination and at the mean time other buses are delayed to deliver timely and regular service. The interviewee further emphasized on the importance of creating a system of periodical inspection to prevent this problem occurrence.

## 5 Chapter five: Assessment of Sustainability public bus service

### 5.1 *A brief description about Current status of sustainability of public bus service quality*

This section is divided into sustainability of public bus service quality and financial sustainability of the CTA as service provider.

#### 5.1.1 Sustainability of public bus service quality

Sustainable public bus service gives a positive contribution to maintaining the service quality; yet, public bus service in GCMA suffers from lack of sustainability and so quality deterioration. In this section, the researcher divided quality sustainability of public bus service into two aspects; number of bus fleet and sustainability of vehicle's physical quality.

Regarding bus fleet, in an interview with the Chairman of Cairo Transport Authority conducted by El- Sherouq newspaper (2016), he stated that the Authority contracted to import 440 high quality new buses. According to him, the current situation of public buses is much better; he worked on improving the bus fleet, which already includes 2500 buses in GCMA and reaches up to 10 thousand buses through cooperating with the private companies that supply the service through mini-buses to cope with the pressure. He further said in another interview conducted in 2016, by El-Yom El Sabea newspaper that the bus fleet of CTA increased from 1200 to 2500 during this year; besides, he got 60

new Volvo buses out of 150 in May 2016. The 60 buses are going to be distributed on 6 lines to diminish headway time. Regarding the performance of public transport buses, buses operate in the vicinity of Greater Cairo until 12 pm, but he strives to make the bus service covers all parts of GCMA with public buses. The aim is also to supply all new cities by bus such as Bader, Al-Aobour, Al- Sherouqcity, 6<sup>th</sup> of October city and 15<sup>th</sup> of May city (Shawky, 2016). He, further, promised citizens of continuity of improvements in public transport and continuing supply new modern lines of buses. However, it will take time to reach the level of people's satisfaction, which will happen when the time between a bus and the one comes after it (headway time) at the same station is up to 10 minutes; so he believed they need to work over 15 hours a day and this is already happening according to him (ibid). This interview reflected that the number of buses in GCMA is lagging behind, but pointed out the number of buses needed to cover all of it.

Regarding vehicle's physical quality, according to the CTA president, CTA works on keeping maintenance of old buses while supplying the two large workshops with spare parts and spending 100 million Pounds for modifying them through a grant from the World Bank (Abdelbaset, 2016). These are two of the most advanced workshops in Middle East including assembly lines established by a World Bank grant (ibid). Overall, he considered the old buses that surpassed five years in operation as a huge wealth (ibid). In fact, two workshops for all buses are very small in number compared to the number of buses. According to the CTA Vice –President, more than 2000 public buses are not operating (Shawky, 2013), and this is because of a lack of maintenance. Also, according to the CAPMAS, 2013/2014 operation efficiency of public buses is 62%.

In an interview with the chairman of Cairo Transport Authority conducted by El-Sherouq newspaper, (Abderazik, 2016), the CTA chairman affirmed that there are 2 workshops, one in Nasr City and the other in the Suez Bridge area; the two are responsible for the renovation and maintenance of buses, as well as smaller workshops similar to European workshops (Abdelbaset, 2016). The main workshop at Suez bridge area includes five production lines, which is responsible for the overall renewal of the bus fleet after the consumption of five years and every line produces 25 buses a month after a total renovation (Abderazik, 2016). Thus, 125 buses undergo total renovation per month or 1500 per year while there are 2600 public buses. A public bus undergoes full renovation after 20.8 months in spite of working more than 12 hours a day.

In fact, 2 workshops for all buses are very small in number compared to the number of public buses. Also, periodical inspection is very important; yet, an interview with a public bus driver who said:

*“There is no periodical inspection for buses. It is by complain. If a driver complained about something, he goes to the maintenance workshop. Off course, privately owned buses have their workshops”. “The same bus works from 8:00 am to 1:00 am, but drivers are being changed”*

(A public bus driver working in CTA, October 2016)

This shows that there is no periodical maintenance that can extend the life of buses or maintain their good quality. Yet, there is annual inspection regarding appearance and quality of buses owned by private companies as explained in the Management Structure Chapter.

Quality degradation has a negative impact on environment. Although there are governmental inclinations to import environmental friendly public buses, yet, the majority of public buses are not environmental friendly. In 2015, the CTA chairman declared that 950 environmental friendly public buses were in GCMA streets (Abdalla, 2015). Even the environmental friendly buses will not remain in the same quality due to lack of sustainability.

Additionally, there is one training center for bus drivers (Abdelrazik, 2016), which is not enough to train all drivers on traffic signals and how to drive safely. At the same time, there is no institutional development of traffic safety as a part of sustainability. These were factors negatively affecting sustainability of quality and safety as well.

### **5.1.2 Financial sustainability of CTA**

This section discusses cost recovery of CTA as an important factor of financial sustainability through analyzing costs and expenditures as well as revenues.

#### ***Cost recovery of the CTA***

Aside from being non-profit, the CTA revenues do not cover expenses; there is no cost recovery, which jeopardizes maintenance of quality. To show the scope of the problem, according to the CTA vice-president, the CTA is in debt by two billion Egyptian Pounds to the Investment Bank with 13% Interest Rate (Shawky, 2013). Regarding revenues, CTA budget is only 2.5 billion Egyptian Pounds per year and the value of selling annual spare parts accounts for 100 million Egyptian Pounds (Abdelrazik, 2016). Yet, the real ticket price is 7 Egyptian Pounds although it is sold for 2 LE (ibid). According to the



CAPMAS (Stats of public Transport inside and outside cities 2013/2014) free tickets are guaranteed for the people who work for public transportation companies and bodies and the same goes for old soldiers. Family cards as free tickets are issued for families of those working in the same bodies, but for just one member of the family other than the person already working there. Free tickets are also given to trainees during their training period as training cards. In addition, there is another category of passengers who ride public buses without paying for it such as police officers, ambulance men and other public employees. Overall, each ticket gives 3 transitions per day. According to the same CAPMAS report, the public bus operation efficiency is 62%, which negatively affects revenues. These all are reasons why CTA has minimal revenues and so budget deficiency.

The most recent CAPMAS report (Stats of public Transport inside and outside cities) 2013/2014 will be used to show the scope of budget deficit and reasons behind it:

### **Revenues 2013/2014**

Revenues of public bus service in Greater Cairo Metropolitan Area come from sold services, capital gains, revenues of previous years, sold spare items and others estimated at 1346319 thousand Egyptian Pounds. However, fixed asset movement for public bus service (2013/2014) remained stand still for lands but jumped from 157766 to 159299 when it comes to buildings, constructions, facilities and roads. Though, significant reduction in fixed asset movement in four categories; namely machines, means of transportation, computers and furniture, equipment and offices compounded with slight

increase in tools category from 14007 to 15464 thousands Egyptian pounds. Meanwhile, the category of templates programs in fixed asset movements remained as it is. Overall, fixed asset movement of public bus service in the Greater Cairo Metropolitan Area declined from 2,2 billion Egyptian Pounds to 2,08 Egyptian Pounds.

### **Costs and expenditures 2013/2014**

86 Million Pounds are the total cost of intermediate goods consumed in public bus operation whether solar or gasoline or natural gas or oil and grease while other consumed goods such as maintenance and spare materials cost 96,852,000 Egyptian Pounds (CAPMAS, 2014). Regarding service expenditure of public bus around GCMA that is comprised of building and machines rent, advertisements cost, insurance expenditure against fire or steeling and others cost 36 million Egyptian Pounds (ibid). Other expenditures of public bus service in GCMA, which could be taxes, damages and fines, security installments, expenditures of previous years, cost 422,575,000 Egyptian Pounds (ibid). Overall, costs and expenditures of public bus service in the GCMA are 642,515,000 Egyptian Pounds.

Consequently, fixed asset movements declined plus very low ticket prices -disregarding free tickets- and taking into account the small budget dedicated to the CTA; all of that has a catastrophic impact on CTA cost recovery and hinders it to reach its potential, causing sustainability deterioration. Meanwhile, the ability to buy new buses is suspicious. According to the CTA Vice-President, the Price of public bus is 1,300,000 LE (Shawky,

2013) and because of limited revenues, the financial ability of buying new buses is questioned and quality sustainability of old buses is already imperfect. However, the newly imported buses don't come only from the CTA budget, but United Arab Emirates, the World Bank and the Egyptian Army gives the CTA resource input in the form of new buses. United Arab Emirates has given the CTA 200 new buses as grants (El-Leithy, 2015). The Egyptian Army launches 36 buses to support CTA after CTA employee's turmoil (Attif, 2014). This gives hint to the real budget deficit that the CTA faces.

## ***5.2 Sustainability preferences in dealing with Safety considerations regarding public bus service***

Sustainability means meeting the needs of the current generation without compromising the needs of future generations (Laffel, 2006). Promoting sustainable public bus service development is part and parcel to sustainable development (ibid). Sustainable safe and environmental friendly public buses lead to less environmental damage before it takes place rather than a reaction to future environmental degradation plus enhancing road safety. There are two important aspects of public buses contributing to environment degradation and poor health; CO2 emissions result in climate change and other emissions result in air pollution and successive health effects (ibid). The two problems are exacerbated by the outnumbered vehicles getting to streets. Hence, if public bus service is developed in terms of sustainability of quality and safety, then number of private vehicles will be reduced and so will the subsequent emissions. Route management is one of the principal factors playing role in enhancing public bus service that leads to safer and less damaged environment.

### Safe public bus service

Promotion of safe transport is not attributed only to developing infrastructure, but also it needs enhancement of human factors; traffic users and managers at the same time (JICA, 2002). Drivers need to be aware of traffic rules and regulations and managers should be very qualified in monitoring traffic behavior. Therefore, CREATS proposed a plan for traffic safety that includes institutional building in order to be prepared for future consequences of the coming 20 years.

- Traffic Education and Information Program

This programs targets road users' knowledge. It enhances traffic managers' knowledge and expertise; meanwhile, it addresses citizens' wrongdoing actions towards transport and traffic (JICA, 2002). Development of Traffic infrastructure cannot yield results without education and enforcement. This program aims at raising awareness of traffic problems to improve human behavior at the end. At the same time, road safety education for children to act safely as pedestrians, bicycle riders, vehicle passengers and later on vehicle drivers is highly encouraged (Bassat, Avnieli, 2016). Traffic education for children has proven a positive effect on their attitudes and their parents' attitudes regarding traffic safety (ibid).

- Organizational System for the Traffic Education and Information Program Implementation

JICA (2002) recommends incorporating all public organizations and ministries in an Egyptian Traffic Safety Council (TRASAC) at the national level. This council formulates

the strategy, program and public financing. This council is, further, responsible for enforcing traffic law and penalizing traffic offenders as a management entity. In the intervening time, the Traffic Safety Education Center (TRASEC) should work as an implementing arm for the daily execution of the TEIP while a Traffic Safety Information Center (TRASIC) deems the responsible entity for various initiatives of enhancing public awareness.

Regarding budget, a 'sustainable financing system' to support all activities by TRASAC and TRASEC should be maintained whether through international grants or taxes coming from the private sector or fees collected from people participating in the training and education program or government budget or fines collected from traffic violators(JICA, 2002).

Overall, Traffic Safety Organizations (TRASO) are considered non-governmental organizations that are responsible for improving traffic safety and road users' behavior on a sustainable way. Yet, TRASAC should support and regulate all actions and activities within a specified area.

- Function of the Program (JICA, 2002).

Traffic Safety Council (TRASAC) launches the Traffic Safety Campaign and modifies the TEIP depending on monitoring the performance (JICA, 2002). Into the bargain, TRASEC enhances education in the area of traffic safety through several programs include training for drivers, trainers, managers and all road users. TRASIC should organize an annual campaign to enhance traffic safety in addition to media campaigns and safety classes at for children and students at schools and universities. Yet, it should

not neglect public participation in the campaign via the regional Traffic Safety Organizations. Ultimately, training and education are expected to greatly improve traffic behavior and so traffic safety on a sustainable way. Besides, traffic managers will be very qualified to monitor implementation of laws. Regarding convincing traffic offender to abide by the rules, a system of “penalty-point system” is proposed to work as “rehabilitating” offenders. To this end, corresponding to the severity of violating traffic laws, offenders receive their penalty, which might range from taking “the one-day reeducation program” at TRASEC to losing their license. Yet, this system necessitates development of “computerization of traffic citation records”.

## 6 Chapter Six: Conclusion and Recommendations

### 6.1. Conclusion

To conclude, the Transportation problem is a major problem in the Greater Cairo Metropolitan Area; it has tremendous effects on the quality of life and, given its size, the economy as whole as well. Hence, enhancing the quality of public transport that caters to all Cairenes is urgently needed to alleviate the current and future negative consequences of the increasing rate of population growth on individuals' life and sustainable development considerations. Improving public bus to cater for all Cairenes as a mode of public transport is a step towards improving the overall public transport network; especially, it requires fewer costs, less time and more flexibility in location changing of stations compared to other means of public transport. For that reason, the main purpose of this thesis is to address the main research question: How can public bus service cater for all Cairenes? In order to address the research question, the researcher analyzed JICA's and the World Bank quality standards of public transport in order to be able to assess the current situation of public buses in GCMA. The researcher relied upon JICA standards as the conceptual reference in this thesis.

Along the same line, literature was reviewed to underscore public transport importance in the context of social equity and sustainable development, giving hind to the importance of incorporating transport planning in urban planning to reach sustainability. Given the fact that public transport development is of utmost substance to low-income and disabled

people who have no other choice of transportation, accessible public transport by all population was covered in literature as well as sustainability of public transport. Also, different aspects of public bus service improvement such as subsidy, efficiency and effectiveness, bus priority at traffic signals and public bus door crowding were examined whereas BRT model advantages was presented in the same framework of bus service enhancement. Lessons learned from BRT in Kampala, Uganda were introduced to inform a solution for overpopulated cities; noting that diversity of socio-economic segments of the population has to be taken into consideration when applied in GCMA as the same problems of Kampala experience might be visible in GCMA; both of them are capitals of developing countries. Furthermore, the researcher presented London Bus as a case study to provide tested solution on public buses in GCMA. This is because London has one of the largest bus systems in the world; its superiority is referred to its incentive structure and tendering process, an experience could be replicated in Greater Cairo Metropolitan Area. This is the reason behind reviewing incentive structure of concession contracts in London Bus model plus examining its tendering process.

For the same purpose of answering the research question, qualitative approach was pursued through in-depth interviews with selected purposeful sampling, using snowballing method. Then, the analysis displayed the management and sustainability structures of public bus service in Greater Cairo Metropolitan Area, underlining weakness points.

In the next section of this chapter, the researcher provides some recommendations that may assist the Ministry of Transport in improving the current public buses problems in order to cater to all Cairenes.



## **6.2. Recommendations**

Literature, situation analysis and interviews suggests that for the objective of reforming public bus service a holistic approach is needed to take into consideration the following:

### **6.1.1 Enhancing governance:**

Enhancing governance could be attained through creating an environment of political will to initiate strategic planning; then, institutional reform, commercialization of CTA, clarifying mandates of different key stakeholders and employing some aspects of good governance are highly encouraged.

#### ***A. Creating an enabling environment based on political will:***

Initiation and agreement upon a strategic planning process is a must as the first step of strategic planning process (Bryson, 2011). Such agreement turns the good will into action. Hence, decision maker should be aware of the scope of the problem, its implications and consequences as explained before. Then, they can make an initiative of reform based on a strategic planning process, which guarantees its continuing of application aside from being ‘one-man show’. In this process, milestones, timing of outputs, roles and functions of strategic planning team, roles and functions of those who oversee the effort should be determined.

### ***B. Institutional reform:***

Institutional weakness is an obvious problem in transport planning in Greater Cairo Metropolitan Area (JICA, 2002; Fahmy and Sutton, 2008). It causes functional and jurisdiction obstacles, hindering integration and operation optimization (ibid). To overcome such issues, institutional and administrative reform is urgently needed plus providing technical education and training. Although establishing GCTRA is a very good step on the road of making institutional reform, the fact remains that capacity building, technical education and training of CTA and GCTRA are imperatives for this reform. Another imperative is incorporating appropriate transport planning in urban planning. This might entail: analyzing the current situation of public bus service and its anticipated problems, making the traffic effects and mitigation of these effects study, designing appropriate local transportation planning within neighborhoods, developing financial plans to secure enough funds to cover the costs of implementation, creating long term strategic planning for public bus service, preparing policy options for operational strategies and drafting progressive actions plans. Despite the fact that Egypt Strategic Vision 2050 was developed to correct down flows of planning in GCMA, it did not concluded or approved. In case of implementing such strategy, the situation of public bus service will be greatly improved, since it seeks to solve many issues of planning to of public transport service improvement.

### ***C. CTA to follow a commercial/ corporate model:***

CTA is considered the only service provider of public bus service in GCMA, yet, it suffers from chronic financial problems. It has 40,000 employees, low bus fare regardless of the free tickets, insufficient budget and low potential for business operation. Hence,

CTA needs to be commercialized to achieve self-sustainability away from political influence. CTA should be structured to get rid of routine and bureaucracy, budget deficit and debts and lack of sustainability. For CTA to be sustainable, it has to shift towards a business model in which cost recovery is guaranteed. Following the Model of London for Transport concession contracts could be the gate to developing a business model. Either rationalization of subsidies or making innovative ways to generate income is another step on the same road. Generating revenues could be through creating advertisements on public buses and bus stations or renting station for street vendors who used to buy products in station. CTA should train its employees and managers plus restructuring of its departments to be more capable of managing and developing the service as Egypt Telecom succeeded to do.

#### ***D. Clarify mandates of GCTRA and CTA:***

A conflict in responsibilities between GCTRA and CTA is obvious when the above-mentioned responsibilities of CTA and GCTRA are compared to each other. According to CTA website, CTA work on developing implementation plans while the presidential decree of GCTRA establishment gives GCTRA the responsibility of preparing implementation strategies. Yet, CTA should prepare the implementation strategy as an implementing power since GCTRA is just a regulatory authority. Meanwhile, CTA responsibilities entail measuring performance efficiency of CTA bodies by comparing general plans to the actual implementation, which should be GCTRA responsibility as a monitoring body and the entity responsible for formulating quality standards. Hence, clarifying mandates GCTRA and CTA is highly encouraged.

Mandate is a list of “musts” through which each entity should know what it should do and what it shouldn’t do, so managers think they are constrained in their actions because of having a specified mandate (Bryson, 2011). Legislation or charters reform is a must to define these mandates (ibid). Then, orientation about mandates should be attended by member of the two entities, so everybody knows about it. Otherwise, the existence of the public enterprise will be threatened and might be destructed, as it does not have clear objective. The process of clarifying mandates is very essential to strategic planning, which should be pursued by GCTRA (ibid). At the same time, clarifying mandates of transportation entities will overcome the problem of fear of losing power among officials, facilitating the process of public bus service development.

#### ***E. Adopting governance principles:***

Enhancing transparency as one of good governance principles is principal to monitor lack of accountability or inability to recognize any political danger. This might level the level of service quality of public bus key stakeholders. Furthermore, regulatory impact analyses combined with Ex-post evaluation are highly encouraged especially in a politically charged environment as suggested by the OECD (2008). Development of complaints system to enhance communication between the government and citizens to better meet public bus passengers’ needs.

## 6.1.2 Enhancing planning:

### *A. Strengthen the capacity and authority of the Greater Cairo*

#### *Transport Regulatory Authority (GCTRA):*

The inauguration of GCTRA was a move on the right track, so there is someone in charge of regulating the system; it should work as a coordinator and regulator of all efforts exerted in the area of public transport development in GCMA (World Bank, 2014). Yet, for GCTRA to be effective, it has to have sufficient capacity, resources and authority as stated in the World Bank report, 2014. Although the decree has been in action by the president in 2012 and the Ministry of Transport took the responsibility to make the Authority operational, the fact remains that GCTRA is unable to pursue its mission now. GCTRA should ‘not only oversee the transportation issues in the Greater Cairo Metropolitan Area but will also ensure effective coordination and efficiency in planning and implementing investment supported by various development banks and other donors’ (World Bank, 2014). To this end, the World Bank suggested selecting a consultant to advise and provide these services (ibid, p.10):

- “Development of organization chart and manpower profile”.
- “Designing the operations processes and developing system management procedures manuals”.
- “Capacity building, training, and one year of technical support and handholding”.

In fact, the current capacity of GCTRA cannot fulfill the required responsibility and, in turn, capacity building and training are highly needed. This requires financial resources what should be presented by the government.

### ***B. Begin with route management solutions:***

Better route management will maximize the utilization of roads in Greater Cairo Metropolitan Area; this might entail prioritization of corridors and roads to improve traffic flow. According to the World Bank (2014), urgent corridors are such as May 15<sup>th</sup> bridge, Al-Mokatam Street and El-Malek Faisal Street. Route management includes traffic signal control, improvement of intersections, improvement of parking system to leave space for public buses, traffic safety facilities, improvement of bus facilities and implementation of vehicle inspection system. Besides, more regulated routes will give more space for public buses to reach all areas in a shorter time. More importantly, it will serve when BRT is applied. Yet, more update detailed studies are required for implementation.

### ***C. Apply Bus Rapid Transit system in certain routes:***

BRT has been the solution of improving transport network in developing countries as well as many developed countries due to its reasonable costs and high capacity. BRT has been in place in North and Latin America and Europe, resulting in travel timesaving of 23-25% (Levinson et al, 2003; Prassas, 2013). It has been implemented and proven its efficiency in Rwanda, Mali, Burundi, Uganda, Equator, Nigeria and many other African countries; also in France, German, Belgium and Spain (Vermeiren et al, 2016). To show one aspect of its superiority over other modes of transport, the cost of 426 Kilometers of BRT equals the cost of 40 Kilometers of LRT or the cost of 14 Kilometers of elevated

rail or the cost of 7 Kilometers of Subway (Okail, 2016). Meanwhile, BRT has the most capacity so it best fit in highly populated cities (ibid). However, a coherent plan of implementation should address how BRT can fit all socio-economic classes to avoid mistakes of Kampala experience. One recommendation suggested by JICA in CREATS, 2002, is presenting direct subsidy to the poor. In spite of that, BRT cannot fit in all places. JICA feasibility study, 2002, suggested implementing BRT on West Wing, providing 3 options.

**Option 1:** 6<sup>th</sup> of October City ~ an interchange on Alexandria Desert Road ~ an interchange on Ring Road ~ agriculture area along the east side of Ring Road ~ Barageel St. in urban area ~ Tareeq Imbaba St. and Tareeq El Matar St. between Imbaba Airport re-development area and the ENR line ~ a terminal, which will be constructed at Imbaba Airport Redevelopment Area. Therefore, the total length of Option 1 is 38.1 km

**Option 2:** 6<sup>th</sup> of October City ~ an interchange on Alexandria Desert Road ~ an interchange on Ring Road ~ a terminal constructed near an interchange on ring road. Therefore, total length of option 2 is 33.1 km

**Option 3:** 6<sup>th</sup> of October City ~ an interchange on Alexandria Desert Road ~ an interchange on Ring Road ~ A canal and Alamein St. along the ENR line ~ a terminal to be constructed at Cairo University Station on Metro Line 2. Therefore, the total length of option 3 is 38.0 km.

Although BRT combines metro advantages as capacity and speed and the advantages of a bus system as flexibility and lower costs, it can only implemented under particular

conditions. For effective implementation of BRT, suitable corridors, streets spaces and sidewalk space for stations are needed (Transit Cooperative Research Program, 2003). Meanwhile, evaluation of current and future demand, costs, benefits and gains of BRT implementation should be looked at during planning. To this end, Transit Cooperative research program, presented key factors that should be taken in consideration while planning for BRT such as land use, capacity opportunity of expansion of roads, past operation of buses and targets of bus operation (JICA, 2002).

Such factors should be studied before implementation so BRT could be implemented in corridors plus the ones recommended by JICA.

### **6.1.3 Improving Service Delivery**

To improve service delivery, public private partnership incorporation in public bus service plus introducing new bus designs is needed. In the intervening time, adopting concessions contracts and imitating the tendering process of London for Transport are very important steps to be taken into consideration.

#### ***A. Applying good governance principles in service delivery***

At the same time, enhancing good governance through increasing transparency, accountability and responsiveness is suggested by UNDP, OECD and the World Bank to greatly improve service delivery. Sharing information through Information Communication Technology may increase accountability as a result of increasing transparency. This will minimize causes of regulatory failures, leading to regulatory success and promotion of MDGs as proven in Literature. Also, on the road on improving



service delivery, Ex-post evaluation of developing new implementation strategies as suggested by OECD (2011).

### ***B. Public. Private. Partnership***

To ensure sustainable public transportation development, Public private partnership must be taken into account to guarantee sustainable development of the service as discussed in literature. The public sector has proven less efficiency than the private sector regarding management; therefore, New Public Management delegates the management mission to the private sector in order to reach efficiency and effectiveness of public bus service. at the same time, it is better than the BOT model, since the government still has the right to enforce rules and regulations according to which the private sector should be penalized or rewarded. The private sector is considered the operator of public bus service in case of applying public private partnership.

### ***C. Introduce advanced designs of public buses:***

The double-decker buses have many advantages; they are used for mass transport in United Kingdom (Harris, 2016). Double-Decker buses have double the capacity of regular buses; thus, they carry a larger number of passengers and save streets space as well. They might reach the capacity of 100 passengers as in Malaysia (Malaysian Institute of Road Safety<sup>6</sup>website). Double-Decker buses save fuel, occupy less roads, higher capacity of passengers; they are highly encouraged in congested traffic conditions (World Bank Group, 2006).

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<sup>6</sup> [https://miros.gov.my/1/publications.php?id\\_event=85&idxs\\_page=23](https://miros.gov.my/1/publications.php?id_event=85&idxs_page=23)

accessed on 18<sup>th</sup> of December, 2016

Also, a special design of buses to prevent door crowding as discussed in literature review can be imported to solve this issue in GCMA. Literature exhibited that the bus design could increase or decrease bus door crowding.

Importing environmentally friendly buses so as not to have an adverse impact on people's health and the environment.

Improving bus stations and importing certain buses for elderly or disabled people or people with heavy luggage or people on push chairs are very necessary steps on the road of accessibility enhancement of public bus service, which might pour in GCMA prosperity.

#### ***D. Adapt concession contracts of London Bus (HRM):***

In London, quality incentive contracts between bus operators and the government is well developed and with good performance characteristics as it is the product of more than three decades of trial and error, presenting a best practice benchmark for other countries. Therefore any reform should be implemented gradually in order to maintain the achievements. Yet, tested experience from a superior bus system like London bus is needed. Payment mechanisms and fines, penalties and rewards linked to service obligations are used well as incentives, which are HR tactics, for achieving high performance and high quality service. High performance and good quality depends on mileage and reliability performance as indicators and complementary to the incentive plan. Meanwhile, it made the best use of the best features of a Gross Cost model; "production risks are under the control of operators so they have incentives to be operational efficient and control cost, but do not have to bare excessive demand risk

which would increase costs through the risk premium charged by operators” (Lobo, Briones, 2014, p.49).

The following table shows the difference between London for Transport and GCTRA in terms of management and sustainability structure in order to be able to learn from London experience:

	<b>London for Transport (Lft) (Actual)</b>	<b>Greater Cairo Transport Regulatory Authority (GCTRA) (proposed)</b>
<b>Similarity</b>	Metropolitan government	Metropolitan government
<b>Similarity</b>	Regulatory Authority	Regulatory Authority
<b>Management Mechanism</b>	<p>Regulating service through ‘Quality Incentive Contracts’ that entail:</p> <ul style="list-style-type: none"> <li>- Payment mechanisms (the profit made by operators determines their incentives).</li> <li>- Fines, Penalties and rewards linked to service obligation (complementary to the payment mechanisms to optimize the quality of service): comparing the</li> </ul>	<p>Regulating service through standards and</p> <ul style="list-style-type: none"> <li>- Free competition results in higher service quality.</li> <li>- Financial penalty will be enforced in case of not fulfilling the specified standards.</li> </ul>

	level of service provision to the operational conditions in contracts as minimum performance standards. .	
<b>Management Mechanism (Continued)</b>	<p>Three types of incentive provisions in ‘Quality Incentive Contracts’ (Standards):</p> <ul style="list-style-type: none"> <li>- Operated mileage</li> <li>- Reliability Performance Standards</li> <li>- Contract extensions</li> </ul>	<p>Standards of quality monitoring:</p> <ul style="list-style-type: none"> <li>- Reliability</li> <li>- Loading</li> <li>- Safety</li> <li>- Availability</li> <li>- Integration</li> <li>- Information</li> </ul>
<b>Sustainability Structure (Sustainability of quality)</b>	-Sustainability of quality is guaranteed through making revenues dependent on demand, as quality of service is multidimensional.	- Competition levels the quality of service provided.
<b>Sustainability Structure (Safety of operation)</b>	- Since operators have the incentive to cater to demand, they seek to provide much safer service.	- Penalties and sanctions will be forced on operators providing unsafe service.
<b>Sustainability Structure (Environmental considerations)</b>	<ul style="list-style-type: none"> <li>- Concession contracts imply a set of clauses directly related to fleet renovation and other environmental considerations.</li> <li>- Extension of Contracts takes into account environmental considerations.</li> </ul>	

Hence, GCTRA should adapt contracts that imply specific standards needed for service monitoring and quality maintenance as in London Model. It is true that competition will level the service quality, but for the time being competition is not high and so setting quality standards will level the service quality up till the required standard. Meanwhile, GCTRA do not take environmental considerations into account and, in turn, it should formulate standards to maintain sustainability.

#### ***E. Imitating the tendering process of London For Transport:***

After the emergence of a devolved government for London in 2000 and London Transport Buses became a part of Transport for London (TfL), routes became for tendering after reviewing it by TfL, which is considered a counterpart for CTA. Thus, CTA should set up and review the minimum performance standards, type and capacity of vehicles and frequency of service for each route at different times of the day. According to such standards, operators should be asked to present their plan and Schedule plus the total cost and the net profit. Then comes tendering evaluation; contracts are given to the most advantageous outcome for the government.

#### **6.1.4 Achieving sustainability:**

##### ***Rationalization of the current transport subsidy policy:***

As exhibited in literature and analysis, the CTA suffers from huge budget deficiency due to lack of cost recovery, which drastically affects the level of service provided. According to UITP, 500 member operators of international union for public transport, “operational revenues should cover the recurrent operational costs and 70% of the total

costs including capital costs and depreciation, then the government subsidy is appropriated to fulfill the shortfall. To this end, deregulation for the public transport operators should be pursued” (JICA, 2002).

Sustainability of bus service is the reason behind integrated service and is driven from commercialization (ibid). Hence, public bus fare strategy should be revisited according to economic indicators and market needs.

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## APPENDICES

### Approval of Institutional Review Board

CASE # 2016-2017-0013



TO: Asmaa Taher Abdalla  
CC: Mariez Wasfy  
FROM: George Marquis  
DATE: 5 Oct 2016  
RE: Approval of study #2016-2017-0013

This is to inform you that I have reviewed your research proposal entitled "**Public bus services in Cairo: lessons learned from London**" and determined that it required consultation with the IRB under the "expedited" heading. The members of the IRB requested modifications to ensure that all measures possible would be taken to minimize risk to participants. I have determined that you have made the required changes and that the study may now proceed. I believe you will also make adequate provision for obtaining informed consent of the participants, either oral or written.

This approval letter was issued under the assumption that you have not started data collection for your research project. Any data collected before receiving this letter may not be used since this is a violation of the IRB policy.

Please note that IRB approval does not automatically ensure approval by CAPMAS, an Egyptian government agency responsible for approving some types of off-campus research. CAPMAS issues are handled at AUC by the office of the University Counselor, Dr. Amr Salama via an official letter from your School Dean. The IRB is not in a position to offer any opinion on CAPMAS issues, and takes no responsibility for obtaining CAPMAS approval.

This approval is valid for only one year. In case you have not finished data collection within a year, you will need to apply for an extension.

Thank you and good luck.

A handwritten signature in black ink, appearing to read 'George Marquis'.

George Marquis  
Acting IRB Chair  
Associate Dean of HUSS  
T: 02-261-1598  
Email: [geomarq@aucegypt.edu](mailto:geomarq@aucegypt.edu)



Institutional Review Board  
The American University in Cairo  
AUC Avenue, P.O. Box 74  
New Cairo 11835, Egypt.  
IRB Email: [geomarq@aucegypt.edu](mailto:geomarq@aucegypt.edu)

## List of Interviews:

- (2016). Interview with an official in Cairo Governorate. (Asmaa, Interviewer)
- (2016). Interview with a vice president of Cairo Governorate. (Asmaa, Interviewer)
- (2016). Interview with a government representative in Traffic research centre. (Asmaa, Interviewer)
- (2016). Interview with another official in GCTRA. (Asmaa, Interviewer)
- (2016). Interview with a public bus driver. (Asmaa, Interviewer)
- (2016). Interview with another public bus driver. (Asmaa, Interviewer)

## Interviews Questions:

- 1- What is the government strategy for developing public bus service in greater Cairo?
- 2- What were the previous strategies of development and were they completed?
- 3- Are current efforts of development satisfying?
- 4- How many maintenance workshops for buses are there?
- 5- How many training centers are there for training drivers?
- 6- What about JICA and World Bank efforts in developing public bus service?
- 7- How does the government coordinate all efforts of development to be under government supervision?
- 8- What are the development efforts of public bus service?
- 9- What are the challenges facing the development of public bus service?
- 10- What efforts have been made to face these challenges?



- 11- What about your recommendations of improving bus service in Greater Cairo Metropolitan Area?
- 12- What is GCTRA's mandate? Is it applicable?
- 13- How can GCTRA monitor public bus service quality?
- 14- How can GCTRA improve the quality of public bus service?
- 15- What is the government vision of incorporating private sector to improve the service?
- 16- Do BRT fit in all places? Is it the magic solution for congestion with low costs?
- 17- How can GCTRA guarantee the sustainability of quality?
- 18- What is the solution for over crowded-buses?
- 19- Are there tests or checks on bus drivers?
- 20- What are the procedures of taking driving license for bus drivers?
- 21- How many bus lines are there?
- 22- Is there training for drivers?
- 23- What about training for those who work in Workshops?
- 24- What happens after the bus expired?