

## **FUTURISTIC VIEW FOR BUILD OPERATE TRANSFER (BOT) PROJECTS IN EGYPT**

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### **Abstract**

Build Operate and Transfer (BOT) has become one of the most effective management systems in constructing the infrastructure in recent times in developing countries, for example Egypt where often the government do not have enough finance to construct the infrastructure projects, The BOT can provide a unique system to let the private sector participate in financing and operating these infrastructure projects. BOT provided a tremendous opportunity for investment in Egypt to participate in the development of a country like Egypt. Egyptian government started to use BOT system in financing and constructing of BOT projects in different types of infrastructure projects just as roads, power stations, airports, water stations and housing projects. The BOT projects can effectively serve the government and the private sector as well. The BOT projects is a great opportunity government can use in attracting foreign investments in different types of projects. Private sector through previous BOT projects may have faced difficulties and obstacles during recent period. This paper will highlight on BOT projects constructed in Egypt through last period, and will analysis Tahrir Garage in order to identify the obstacles and difficulties faced the private sector and government, and will discuss the proposed alternatives in solving such obstacles in order to achieve a new model or new methodology to achieve a conclusion and recommendation. To have a good futuristic view for Build operate and Transfer (BOT) projects in Egypt.

### **Keywords**

BOT Projects, Egypt, Infrastructure Projects, Development Countries, Tahrir Garage

### **1. Introduction**

With the emergence of the concept of globalization in the middle of the 20<sup>th</sup> century and the massive increase of population all over the world, governments faced a great problem in financing the infrastructure projects needed for the expansions of societies, with the suitable quality and distribution to serve the largest part of society. Governments was lacking to financial supports provided by international institutions that used to provide financial loans to governments but they faced a lot of difficulties in supporting large number of governments, due to the increase of societies that fund can not cover. These

circumstances forced the international financial society to search for a solution to finance infrastructure projects, and finally recommended the participation of private sector accompanied by the supervision of governmental authorities, to guarantee the interests of all parties, customers, private sector entity and governments' entity.

The provision of infrastructures and public utilities has undergone major changes through last two decades with many developing countries choosing to move away from the traditional public sector model of service and to introduce private sector participation. The role of public sector changes into a supervision on projects implemented by private sector through agreements between public and private sectors, in order to provide services to customers. The agreements between public-private sectors can be classified into six forms. These are: "Short term service contract, Management contract, Lease contract, Greenfield projects (BOT, BTO), Concession and Divestiture".

Egypt witnessed a large social change due to the massive increase of population in Egyptian cities as other cities in the world. This has led to changing Egypt from agricultural country – where rural citizens represented 90% of Egyptian population – to civilized country, where the urban population represents more than 45% of Egyptian population and is expected to raise to 55 % by the year 2020. The continuous urban growth poses large challenges, and requires effective advanced methods to operate the development in Egypt. That resulted in implementing infrastructure projects to face the major increase in population in civilized cities. Towards the end of the twentieth century, globalization impacts forced the Egyptian government to pay attention to the role of the private sector in development initiatives, and to plan for a privatization program. A development strategy was implemented to achieve infrastructure projects through the participation of the private sector.

## **2. Build Operate Transfer (BOT) system**

The roots of BOT projects returns to what is known as concession contracts or agreement, which were spread at the end of 19<sup>th</sup> century and beginning of 20<sup>th</sup> century in France and other countries. France government used these contracts to construct railway projects, electricity power stations, and water supply projects. At the middle of 1980's, it received two important developments in the application of this system. First, BOT system was applied through implementation of the Channel Tunnel that connects. Second, the invitation of prime minister of Turkey then "Turgat Ozal" to use this system in implementation of infrastructure projects in Turkey, credited to him the first to use the term "BOT" to refer to this type of projects.

Egypt started to know and use concession system in the middle of 1940's where suburb of Heliopolis was supplied by electricity and water and tram lines according to concession system. Suez Canal in Egypt is considered one of the most famous examples of concession system in the end of 19<sup>th</sup> century.

Build Operate Transfer (BOT) system is used as a form of private sector participation in infrastructure projects, the project company (private sector) agrees with the host government to invest in infrastructure projects for agreed concession period (15-30 years), it refers to the following:

**Build:** the project company (consortium) is responsible for design and construction of infrastructure project.

**Operate:** the project company (consortium) is responsible for operation and maintenance of infrastructure project during the concession period.

**Transfer:** the project company (consortium) is responsible to transfer the infrastructure project facilities to the host government at the end of the concession period with no charge.

## 2.1 Types of BOT projects

The importance of BOT projects used in the construction of mega projects of infrastructure such as power plants, transportation projects appears clearly where governments would not afford financial fund of such projects since the private sector is responsible for the financial fund through construction and operation of such projects. The project is transferred to the government at the end of agreement period without any charges. BOT system is classified to different types of agreements as shown in **Error! Reference source not found.**

	<b>Term Abr.</b>	<b>Term Definition</b>
Transfer immediately	BT	Build and Transfer
	BTO	Build, Transfer and Operate
Transfer After Concession period	BOT	Build, Operate and Transfer
	BOT	Build, Own and Transfer
	BOOT	Build, Own, Operate and Transfer
	BLT	Build, Lease and Transfer
	BRT	Build, Rent and Transfer
	ROT	Rehabilitate, Own and Transfer
No transfer	DCMF	Design, Construct, Manage and Finance
	BOR	Build, Operate and Renewal of concession
	DBFO	Design, Build, Finance and Operate
	BOO	Build, Own and Operate
	ROO	Rehabilitate, Own and Operate
	MOO	Modernize, Own and Operate

**Table 1: Different types of BOT system**

## 2.2 BOT projects contributors

Contributors in BOT projects shares risks and responsibilities of these project. The partnership between contributors through contractual agreements is based on commercial basis that guarantees specific and accurate reviews for the project aims and feasibility. The contributors in BOT projects are listed as follows:

Project Contributor	Responsibility
Host Government	Initiate, approve, monitor and control the project directly to safe guard the public funds and interest.
Project Company	Design, Construct, Operate, handle project risks, provide service to users.
Financer	provide financial loans to project company in order to implement the project
Construction Contractor	Construct project within fixed time construction contract.
Operation and Maint. Contractor	Operation and maintenance Administration of infrastructure projects.
Equity Investors	Participation in investment of infrastructure project.

**Table 2: BOT System Contributors**

## 2.3 Contracts applied in BOT system

BOT systems contains different types of contracts and agreements between different contributors of BOT project as shown in Table 3, These agreements should be well prepared by experts in order to achieve

BOT system goals; implementation of infrastructure projects with high quality; guarantee of satisfaction of customer; guarantee of investor and government rights; providing high quality service or product to customer; the reduction of service monopoly; and finally increase of competence between private sector to provide service.

Type of Contract	Parties	
Project Agreement	Government	Concession period, commitments and rights for both parties, tender documents, project guarantees
	project Company	
Consortium Agreement	Project Company	Responsibilities of different parties contribution of parties in project capital
	Contractor	
	Financer	
Finance Agreement	Commercial Banks	Finance system, Guarantees of financer, Pay back method, Contribution of Parties
	Fund Institutions	
Construction Agreement	Project company	Construction contract, method of payment, penalties, schedules of Maintenance
	Contractor	
Operation Agreement	Project Company	Operation agreement, operation fees, Operation Reports, Financial statement
	Operation Comp.	

**Table 3: types of Contracts between Contributors of BOT system**

### **3. Economical reform program in Egypt**

The foreign debt crisis in Egypt appeared at the end of 1980's, Egyptian government started to prepare for economic and structure reform program with the help of World Bank and the international Monetary Fund. The Egyptian government pursued a policy of privatizing public sector companies, and then followed by the policy to privatize infrastructure projects at different national, regional and local levels.

the economic and structure reform program in Egypt aimed generally to transfer the Egyptian economy from economy that rely on command economy mechanism to an economy that rely on market economy mechanism then to sustainable economic development. The economic and structure reform program over three main stages as follows:

#### **3.1 Economic reform stage (1990-1993)**

The aim of the first stage of the reform program was to create macro-economic environment that is capable of achieving economic stability, through controlling the increase of inflation rate and decreasing it from 40% to 5%. The mechanism used in this stage is the transfer of governmental role form direct interference to indirect participation in the different economic activities.

#### **3.2 Structure reform program (1993-1996)**

This stage aims to achieve structure reform in a productive base of the national economy to benefit from the economic environment achieved in the first stage; it consists of economical policies concerning supply and demand for products and services. The mechanism used in this stage is liberating prices of products and services according to supply - demand rule and mechanism of market economy, adopting privatization program for public sector companies and transfer of its responsibilities to private sector.

#### **3.3 Development Stage (1996-2001)**

This stage is known as the stage of increasing investments in the country, it aims to increase the foreign and local investments in the development program of infrastructure projects.

The Egyptian government started the national privatization program at the beginning of 1991 and was declared in 1993 as a main item of economic and structure reform program. National privatization program aims to achieve efficiency of public sector entities, encouragement of foreign and local investments, promote competition between private and public sectors, development of capital market, creating new jobs for community, increase of enterprise efficiency, decrease facial pressure and increase rate of economic growth.

#### **4. Problems of Infrastructure projects**

Local administration in Egypt faced a lot of problems in administration process of infrastructure projects represented in lack of efficiency and effectiveness of local administration process of infrastructure projects due to centralization of decision making process in Egypt. Bahl and Linn stated that there are five factors to declare inefficiently performance of local government in financing, implementing and operating infrastructure projects in local communities as follows:

- **Weakness of economical efficiency:** It is concerned with infrastructure projects involved in the government budget, and their percentage.
- **Weakness of technical efficiency:** It is concerned with ability of local government to implement needs of community with highest technical requirements and lowest price.
- **Weakness of achieving social justice:** It is concerned with the extent to which justice is achieved in distribution of services and facilities for different community groups.
- **Weakness of administration expenditures:** It is concerned with administrative expenditures for local government and reducing it.
- **Weakness of dependency of local government:** It is concerned with the financial and administrative dependency of local government and its ability to take decisions to finance, implement infrastructure projects without reference to central government.

#### **5. BOT in Egypt**

according to the Egyptian law, project agreement is considered a concession contract for public infrastructure, which is defined as:” administrative contract where the committed \_ individual or company \_ is responsible for operating public infrastructure project and use it for a fee paid by the users, this contract is applied according to the general rule for operating infrastructure projects besides the conditions mentioned in the concession contract”. The Egyptian law regulated the relation between the project company on one side and government on the other side through the Egyptian administrative law, while the relation between the project company on one side and the users on the other side is regulated through the Egyptian civil law.

During the last decade, group of laws were issued to regulate the private sector participation in infrastructure projects using BOT system in different sectors of development; law (100/1966) to create the Egyptian electricity authority, law (229/1996) was issued concerning public roads, and law (3/1997) concerning offering public facilities concession to build, operate and use airports.

Egypt confirms continuing BOT projects; Egyptian ministry of finance stressed the importance of using BOT system in implementation of infrastructure projects in Egypt that allows the country to execute its development plan with the aid of private sector to construct high cost infrastructure projects including roads, airports, ports, power plants, drinking water projects and sanitary projects.

General authority for investment specified number of infrastructure projects to be constructed and operated by the private sector, these projects are concerned with activities in different ministries (Ministry of Housing and urban community, Ministry of Electricity and Energy, Ministry of Communication and Technology, Ministry of Transportation, and Ministry of Aviation).

### 5.1 Drinking water and sanitation field

Ministry of Housing and Urban Community proposed different projects to extend drinking water and sanitation pipelines to new communities in Egypt, besides that construction or modification of sewage treatment plants in different locations in Egypt, these projects are stated as follows:

**Table 4: BOT Projects in Drinking water and Sanitation – [2002]**

	Project Description	Project Stage	Financing method
Drinking water	Drinking water pipeline project (Marsa Alam - Edfu)	study	BOT
	Extension of Drinking water plant (Korymat)	study	BOT
	Drinking water pipeline project (Isamlia - hasana)	study	BOT
Sanitation	Sanitary drainage plant (New Cairo)	study	BOT
	Sewage treatment plant (East of Alexandria)	study	BOT
	Extension of sanitation plant (Helwan)	study	BOT

### 5.2 Electrical and Energy field

Ministry of Electricity and Energy is first ministry tended to finance power plants in new communities using Build Operate transfer (BOOT) system as follow:

**Table 5: BOT Projects in Electrical and Energy Field - [2002]**

	Project Description	Project Stage	Financing method
Elect.	Sidi Karir Power plant	Contracted	BOOT
	Suez Power Plant	Contracted	BOOT
	Safaga Power plant	Study	BOOT

### 5.3 Communication Field

Ministry of Communication and information technology raised different projects for investments using Build Operate Transfer (BOT) system as follows:

**Table 6: BOT projects in Communication Field - [2002]**

	Project Description	Project Stage	Financing method
Communication	Mobile Phone service	Contracted	N/A
	Public service cabin	Contracted	N/A
	Electronic trade	Study	BOT
	Participation with Telecom Egypt company	Study	BOT

### 5.4 Transportation field (Roads)

Ministry of transportation offered different road projects for investment using Build Own Operate and Transfer (BOOT) system as follows:

**Table 7: BOT Projects in Transportation (roads) - [2002]**

	Project Description	Project Stage	Financing method
Roads	Cairo – Ain Sokhna Road	Constructed	BOOT
	Helwan – Korimat Road	Study	BOOT
	Alexandria – Fayoum Road	Study	BOOT
	Cairo – Alexandria – Matrouh Road	Study	BOOT

**5.5 Transportation Field (railways)**

Ministry of transportation offered number of projects of underground metro to improve performance of transportation inside the cities and linking between new communities, all projects are implemented using Build Operate Transfer (BOT) system by private sector, and they are summarized as follows:

**Table 8: BOT projects in Transportation (Railways) - [2002]**

	Project Description	Project Stage	Financing method
Metro	Underground Metro in Cairo(third Stage)	Construction	BOT
	Underground Metro in Alexandria	Study	BOT
	Underground Metro in 6 <sup>th</sup> of October	Study	BOT

**5.6 Aviation field (airports)**

Ministry of Aviation offered number of airport projects for investment using Build Own Operate Transfer (BOOT) or Build Operate Transfer (BOT) as follows:

**Table 9: BOT projects in Aviation Field - [2002]**

	Project Description	Project Stage	Financing method
Airport	Borg Al Arab Airport	Study	BOT/BOOT
	Al Wahat El Bahrya	Study	N/A
	El Farafra Airport	Study	N/A
	Marsa Alam Airport	Contracted	BOT
	Dahab Airport	Study	N/A
	Al Alamin Airport	Contracted	BOT

**5.7 Underground Garages**

Different governorates in Egypt offered number of underground garage projects for investment using Build Own Operate Transfer (BOT) in order to solve the problem of high capacity in the Egyptian streets. These projects are listed as follows:

**Table 10: BOT projects in Underground Garage - [2002]**

	Project Description	Project Stage	Financing method
Garage	Tahrir Garage	Contraction	BOT
	Mostafa Mahmoud Square Garage	Contraction	BOT
	El Hegaz Square Garage	Study	BOT
	Mesaha Square Garge	Study	BOT

## 6. Case Study-Al Tahrir garage

The Egyptian government represented in Cairo governorate signed in 1998 a BOT agreement with EICUDE consortium for 25 years concession, in order to design, build, and operate two underground multi-storey garage and entertaining center at the Tahrir Square. The two garages are Tahrir Garage and Omar Makram Garage; this paper will discuss Tahrir Garage only. The project consortium for Tahrir Garage contains the project Consultant “Moharm Bakhom”, main Construction contractor “Arab Contractors”, group of national banks as the financers for the project and investment companies “Artok Group and Green Valley Company”. Figure 1 shows the contractual skeleton for the Tahrir Garage between different parties

Tahrir project is located in front of the Egyptian museum downtown at Tahrir Square, the garage has total area 21,000 m<sup>2</sup>, it consists of 4 underground levels, first and second floors contains entertainment center and car parking, while third and fourth floor contains car parking only. Total capacity of garage reaches 1550 vehicle, 48 buses. The entertainment center contains 4 cinemas, large number of stores, besides that restaurants and cafeterias.

This project faced a lot of problems; Cairo governor was changed after signing the contract in 1998 with the project company. This caused the delay of delivery of land to project company for five years till 2003. The governor started new negotiations with Project Company to change some terms that was not clear in the previous agreement. This lead to change of prices and feasibility studies prepared for the project that raised the project cost from 300 million Egyptian Pounds in 1998 to 593 million Egyptian Pounds in 2006 after finalizing the negotiations and updating of the feasibility studies as shown in Table 11.

The project company faced a great problem when the project was delayed as the revenues and expenses expected in the feasibility study were changed due to the increase of price change and inflation rate in the Egyptian market. The government started new negotiations with the project company to compensate them the price change, the project capital raised form 300 million to 593 million. It was agreed to extend the concession period for 9 year and 6 months as a compensation of

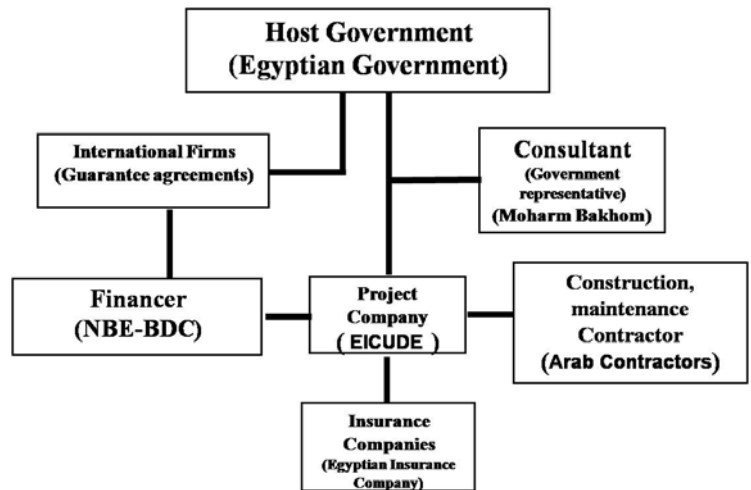


Figure 1: Contractual skeleton for Tahrir Garage

Table 11: Total Investment Cost of Tahrir Garage in 2006

	Items	Total Cost	Percentage
Fixed Investment Cost	Construction Works	302,066,945	50.95%
	Architectural Works	40,000,000	6.75%
	Electrical Works	68,245,209	11.51%
	HVAC Works	23,622,199	3.98%
	Sanitary Works	27,071,100	4.57%
	Road Works	6,900,000	1.16%
	Landscape Works	5,770,655	0.97%
	Total fixed Investment Cost	473,676,108	79.89%
Pre-Operation Cost	Studies, Design, Build, Construction Supervision	12,875,000	2.17%
	Pre-Operation Expenses	10,863,431	1.83%
	Working Capital	2,298,500	0.39%
	Interest Rate During Const.	93,187,990	15.72%
	Total Pre-Operation Cost	119,224,921	20.11%
Total Investment		592,901,029	100.00%



price change through these years.

<b>Investment Cost</b>	<b>1998</b>	<b>2006</b>	<b>Difference</b>
Constructions Works	198,600	342,067	143,467
Electromechanical Works	32,600	91,867	59,267
Pluming Works	23,500	27,071	3,571
Roads and Landscape	-	12,671	12,671
Total Construction Work	254,700	473,676	218,976
Emergency Reserve	7,641	-	-7,641
Total Fixed Investment Cost	262,341	473,676	211,335
Working Capital	750	2,299	1,549
Pre-Construction Cost	22,447	23,738	1,291
Interest Rate During Construction	13,455	93,188	79,733
<b>Total Investment Cost</b>	<b>298,993</b>	<b>592,901</b>	<b>293,908</b>

**Table 12: Comparison between investment cost in 1998 and 2006**

As shown in Table 12, the investment cost at the beginning of the project was expected to be 300 million; the investment cost was raised to 593 million after delay of the project. The project cost increased almost the double the cost was expected at the beginning of the project.

<b>Expenses and Revenues</b>	<b>1998</b>	<b>2006</b>	<b>difference</b>
Total Revenues	4,345,175	4,656,575	311,400
Operation Expenses	330,659	618,347	287,688
Other Expenses	395,861	886,821	490,960
Financing Expenses	67,273	74,304	7,031
Depreciation Expenses	284,795	590,603	305,808
Total Expenses	1,078,588	2,170,075	1,091,487
Net Revenue Before Tax	3,266,587	2,486,500	-780,087
Tax	1,334,332	496,252	-838,080
<b>Net Revenue</b>	<b>1,932,255</b>	<b>1,990,248</b>	<b>57,993</b>

**Table 13 : Comparison between Expenses and Revenues in 1998 and 2006**

As shown in Table 13, the revenues of the project slightly increased after the delay of the project, this lead to difficulties in finding financial support for the project. The revenues of this project will be collected through car waiting fees, renting fees of commercial stores, cafeterias and restaurants.

The project started the construction phase after updating feasibility studies in 2006, the project was expected to be complete in 3 years but till now [2010] the project is not completed due to difficulties in financing the project, The Tahrir Garage is partially opened for users in its first stage of operation. The compensation agreement between the government and Project Company is not enough to overcome the increase of price and inflation rates.

## **7. Conclusion and Recommendations**

This paper attempted to overview the BOT project implemented in Egypt through last period, and it aslo analyzed BOT project constructed in Egypt in order to identify the obstcales and difficulties faced the private sector and government, that can be summarzied by mis coordination between governmental authorities and lack of legislations that regulate BOT projects in Egypt.

The Egyptian government started a new strategy of private sector participation to increase foreign and local investments all over the country, this strategy applied by the Egyptian governments has a promising future concerning private sector investments in infrastructure projects, but it also has some defects and obstacles that need to be solved in further studies.

This paper mentioned some defects in BOT project implemented in Egypt through the discussion of a case study for underground multi-storey garage in Tahrir Square, the recommendation for improving the methodology of Egyptian government concerning BOT projects can be mentioned as follows:

- Coordination between governmental authorities concerned with investors, and activating "One Window" system created to unify the entity dealing with the investor, leading to facilitation of investment environment to increase investments in Egypt as planned in main strategy.
- Legislation framework must be issued for BOT projects in Egypt in order to regulate BOT system in Egypt in different fields, in addition to announcing these laws to investors in order to facilitate the investment environment process.
- Attention to train Egyptian governmental staff to prepare, evaluate, operate, and supervise BOT projects in Egypt, and attention to increase the awareness for decision makers in government towards the private sector participation in infrastructure projects.

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