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Evaluation of Success Factors in BOT Construction Projects of Sindh, Pakistan

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Abstract **- In this study success factors for BOT construction projects in Sindh, Pakistan have been evaluated which is a need of the hour for achieving successful results in all BOT-based projects. By identifying success factors of Build-Operate-Transfer performance-oriented results can be achieved. For achieving this task a structured questionnaire form was distributed among highly experienced professionals working in BOT projects of Sindh, Pakistan. There were thirty (30) most important success factors identified for a structured questionnaire form to identify the relevancy of success factors in BOT construction projects of Sindh, Pakistan. And finally, from the results, it is known that out of (30) success factors (24) success factors considered most relevant for BOT construction projects of Sindh, Pakistan. From relevant success factors top five most relevant success factors are (1) Good Government Policy (2) Government Support and Guarantee (3) A strong Project Consortium (4) A Good Contractor and (5) Transparent and Competitive Procurement Process.**

Keywords: Success Factors, Successful Results, BOT construction projects, Sindh, Pakistan.

I.INTRODUCTION

The Build-Operate-Transfer (BOT) is a performance oriented concept and it has been proved to create a successful environment in fulfilling the needs of developing countries for increased investment in infrastructure projects and industrial construction. Without understanding the key success factors that can lead to project success, it is difficult to effectively monitor project performance (Jung and Hae, 2011). When a specific and measurable framework is required to track key project results, it is important that the project owner or project manager understands the relevant criteria for success (Jung and Hae, 2011).The BOT project is one of the public-private partnership (PPP) projects and is defined as contractual relationship between the concessionaire and client to provide public services and infrastructure products. (Cheng and Wang 2009).

The creation of Build Operate and Transfer (BOT) provides attractive business advantages over the traditional approach to an offshore subsidiary and is gaining widespread attention in the financial sector. The main question to explain is how to use the investment, management and technological opportunities of the private sector.

Empirical studies show that the concept of BOT has become a perfect choice for rapidly scaling up projects activities, providing more services, lowering infrastructure installation costs, and shortening up time. In addition, BOT can improve the way it solicits private funds to invest in public works service plans under related contractual agreements Success factors (CSF) of a BOT funding proposal provides an advantage in evaluation of its design and implementation process. A great contribution in better understanding that private agents can make to the purchase of public goods and services can be achieved by these factors and effective to analyze each of them separately. Therefore we recommend CSFs Lets consider based on the basic principles of our basic business case and their relationship.

Successful contribution of these factors in BOT projects and goals of stakeholders has been explored in many case studies. Including Nget al. (2012); Zhang (2005); Qiao et al. (2001); Yuan et al. (2013).Given the specific nature of BOT projects and its successful criteria (SC) may differ from the successful criteria of traditional procurement projects (Skietrys et al., 2008; Osei-Kyei et al., 2017). Researchers of the many countries are working to find out success factors (CSFs) of B.O.T projects which are being executed in their countries and have evaluated different success factors of the B.O.T contracts. These success factors (CSFs) cannot be the same for all the countries due to change of the culture, government stability, economic policy, financial soundness, public interest, environmental condition and local market conditions etc.

Consequently, it is also need of hour to evaluate the success factors (CSFs) of B.O.T Projects in Pakistan so that a comprehensive approach may be adopted keeping in view the success factors of BOT projects. The aim of this article is to discuss the position of private and government officials in the BOT project in Sindh, Pakistan. It attempts to clearly describe Success factors (CSFs) by testing whether BOT is the most

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appropriate funding model for installing large construction projects, especially when Pakistani officials are moving forward to the BOT projects for achieving economic strength to make Pakistan a regional trade and financial hub.

II. LITERATURE REVIEW

BOT is defined as an arrangement of contract in which the private organization uses its finances and assets for a public infrastructure's project, structure, process, and maintenance for a particular concession period, and at the end of it transfers the ownership to the government (Sarvari et al., 2019).(BOT) requires the performance of private sector to input its finance, design a project, build, operate, manage facilities, and then transfer the assets to the state/government free of charge after a specified concession period.

The BOT concept is a way to provide financing for the construction of large-scale infrastructure projects without direct sovereign guarantee loans, and has been widely used in various settings for many years (Liguang and Xueqing, 2017). Given the international nature of BOT projects, they are especially attractive for multinational companies with strong intellectual capital as a way to enter foreign markets. BOT is a mixed way of entering a foreign market (Cavusgil et al., 2017; Chen & Messner, 2009; Orzes, Sartor, Nassimbeni and Fratocchi, 2017). The BOT method requires the private sector to participate in construction projects in order to establish relationships with government sectors, which can then play an important role in infrastructure project development. Thus, the BOT process allows the private organization to take part (Hanaoka and Palapus, 2012) and directly invest in the acquisition of large-scale projects such as water stations, sewage treatment plants, transport, power plants, etc. In recent years, the BOT method has become an option for transferring public projects to the private sector.

This BOT trend is evident in many governments requiring the private sector to invest in government projects. The reasons for this trend are the lack of public funds and lack of government intervention (Bashiri et al., 2011). Bakri et al. (2009) investigated the level of awareness of relevant stakeholders in the implementation of BOT projects in Malaysia and pointed out the risks associated with Malaysian BOT infrastructure projects (especially motorway and motorway projects).

They initiated several projects that resulted in a win-win situation for the government and investors, including the idea that the project should provide significant returns to attract private investment, and a reliable mechanism for determining and adjusting toll rates. Legal basis for protecting the interests of both parties. Khan et al. (2008) studied the BOT system implementation in Pakistan. They found that in Pakistan the BOT concept is still very new.

Hence, it should be presented to the construction industry and organizations in Pakistan through lectures, seminars, etc. They also suggested that in order to share the success, the stakeholders of the already started BOT projects should be transferred to others. They found that political instability is the main political obstacle that the organization and leadership face in deciding to launch a project in Pakistan. In addition, they proposed to focus on the benefits of BOT projects in the media in order to attract the attention of local and foreign investors. The BOT contractual system is being introduced successfully in many countries and its rapidly growing in all business around the globe. This reflects the awareness of the importance of this innovative type of business, but still, investors and promoters are wary of the announced projects. At the same time, the state bears a heavy burden of fundraising for projects, and the state cannot buy state projects.

For this, key success factors have been identified for BOT-type projects. These projects can help public and private sector decision-makers considering the BOT model to achieve a variety of win-win goals, thereby benefiting them and their interests. Other researchers have identified different BOT values.

Build – A contract is signed between a private sector/organization and a government agency for building an infrastructure project to provide public service. Operate – During the operational phase of the project, all the operational activities must be managed and maintained by the private organization in accordance with the contract during the contractual period. In addition, investments and debts need to be recovered through fees or charges. Transfer – Private developers / companies transfer infrastructure to the state / private owners or relevant government authorities. Once the concession expires, the government will be responsible for owning and operating the infrastructure.

Based on extensive literature review, the mapping of the success factors of BOT projects is given in table 2.1.

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Table 2.1

	Mapping of SFs of BOT Projects identified from Literature																				
S.No	**CSFs**	**References**																			**Total**
		. Niazi and Painting, (2018)	Osie-kyei (2018)	Yang et al (2017)	. Chen et al. (2017)	. Al saadi and Abdou (2016);	. KPMG, 2015	Adnyana et al.2015	Yun et al (2015);	Sharaffudin and Al-Mutairi	Chou &Pramudawardhani	Adeyinka&Olugbamica (2015);	dowling and Kent (2015);	Tang et al., (2013)	Tang and Shen (2013)	Gupta et al (2013);	Mladenovic et al (2013);	. Ismail (2013);	. Emmanuel (2013)	. Gordon et al (2013	. Cheung et al (2012)	
CSF1	Strong commitment and responsibility from the government	*					*	*						*							*	**5**
CSF2	Government support and guarantee	*	*						*						*						*	**5**
CSF3	Good government policy									*						*			*	*		**4**
CSF4	Reasonable risk allocation							*						*							*	**3**
CSF5	Picking up the good project				*				*			*			*							**4**
CSF6	Effective and detailed project organization structure	*						*									*					**3**
CSF7	Thorough and realistic cost–benefit assessment			*		*					*							*				**4**
CSF8	Stable political situation									*		*			*		*				*	**5**
CSF9	A favourable legal framework	*							*												*	**3**

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CSF10	A strong project consortium	*												*	*					*	3
CSF11	Rich experience in international BOT project management								*	*					*					*	4
CSF12	Stable macroeconomic environment		*		*	*														*	4
CSF13	Available finance market								*			*		*				*			4
CSF14	Project technical feasibility			*					*					*							3
CSF15	Transparent and competitive procurement process				*								*					*			3
CSF16	Sound economic policy			*							*						*				3
CSF17	Long-term availability of suppliers needed for the normal operation of the project			*			*								*						3
CSF18	Reliable contractual arrangement								*		*							*			3
CSF19	A good contractor						*						*		*						3
CSF20	Multi-benefit objectives			*							*						*		*		4
CSF21	Good governance			*				*					*				*				4
CSF22	Social support				*			*					*							*	4
CSF23	Public safety and health considerations				*					*			*				*			*	5

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CSF24	Giving priority to local employment during the construction and operational				*			*		*											*	**4**
CSF25	Well-organised public agency									*			*					*				**3**
CSF26	Shared authority between public and private sectors				*			*					*					*				**4**
CSF27	Condition of existing infrastructure							*								*					*	**3**
CSF28	Technology transfer		*			*				*							*					**4**
CSF29	Availability of providers at the time of long-term operational			*				*					*			*						**4**
CSF30	Appropriate toll/tariff level(s)			*									*							*		**3**

III. RESEARCH METHODOLOGY

Research methodology consists of two phases. The first phase covers related literature and previous studies of major stakeholders in BOT. The reason behind this phase refers to the identification on the attitudes of stakeholder towards the Success factors of BOT projects. The second phase is developing the questionnaire form for structured interviews as a main tool to explore the level of relevancy of success factors of BOT projects identified from literature review. For the current study. The questionnaire included closed questions and has been distributed between three main stakeholders: government officers, concessionaires and consultants.

IV. CHARACTERISTICS OF RESPONDENTS

Profile of respondent of Questionnaire survey:

Figure-1 shows that a total 18 interviews were conducted using structured questionnaire form amongst the respondents working in the BOT projects of Sindh, Pakistan.

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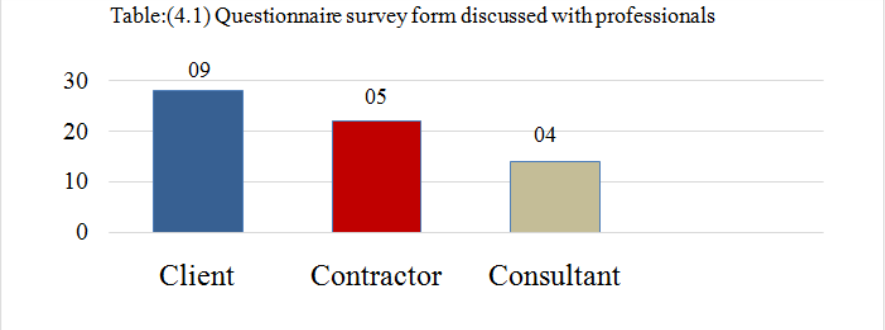

Figure 1

Experience of the respondents in Construction industry

Figure 02: shows the respondent profile according to the working experience in the construction projects. The maximum respondent fall in the category of above 15 years' experience. Majority of the respondents have minimum experience of 10 years working in construction industry.

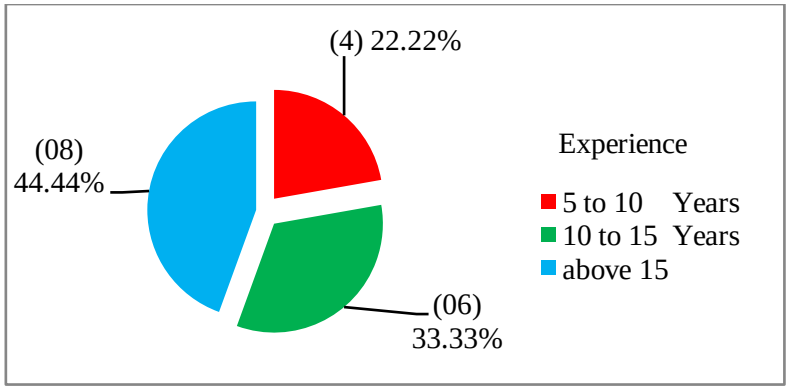

Figure 2

Figure 03: shows the respondent profile according to the working experience in the BOT construction projects. The maximum respondent fall in the category of above 0 to 5 years' experience.

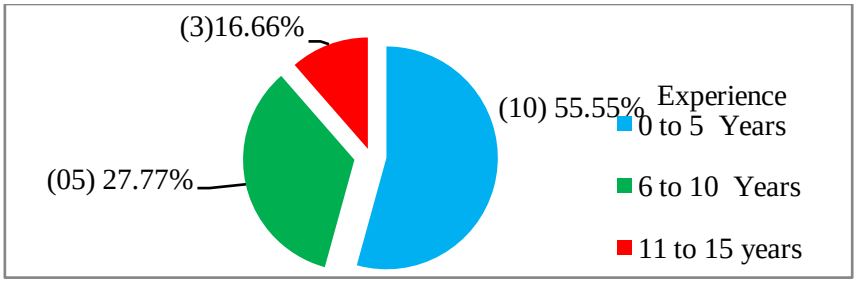

Figure 3

V. DATA COLLECTION *(i.e. to determine relevancy of the SF)*

Literature review and structured interviews of construction industry experts were involved.

A questionnaire survey was distributed among professionals to explore the level of relevancy of success factors of BOT projects identified from literature review. The collection of data was done from the highly experienced respondents who are employed in BOT construction projects. In this study, five point Likert scales were used.

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Likert scale is a ranking data that typically utilizes numbers in ascending/descending order. The numbers assigned important (5, 4, 3, 2, 1) and shows absolute quantities. Likert scale is shown in Table.

Item	Extremely Relevant	Very Relevant	Moderately Relevant	Slightly Relevant	Not Relevant
Scale rate	5	4	3	2	1

Table 5.4: Descriptive Statistics

S. No.	SFs	N	Mean	Std. Deviation
1	Good government policy	18	4.50	0.985
2	Government support and guarantee	18	4.44	0.984
3	A strong project consortium	18	4.33	0.686
4	A good contractor	18	4.33	0.686
5	Transparent and competitive procurement process	18	4.28	0.826
6	Good governance	18	4.28	1.074
7	Availability of resources at the time of long-term operational	18	4.22	0.943
8	Strong commitment and responsibility from the government	18	4.22	1.003
9	Giving priority to local employment during the construction and operational	18	4.17	0.924
10	Sound economic policy	18	4.17	1.150
11	Project technical feasibility	18	4.11	0.832
12	Long-term availability of suppliers needed for the normal operation of the project	18	4.11	0.900
13	Social support	18	4.11	1.079
14	Technology transfer	18	4.06	0.998
15	Stable political situation	18	3.94	1.211
16	Thorough and realistic cost–benefit assessment	18	3.78	0.808
17	Picking up the good project	18	3.67	0.594
18	Reliable contractual arrangement	18	3.67	0.767
19	Rich experience in international BOT project management	18	3.67	0.907
20	A favorable legal framework	18	3.67	1.085
21	Multi-benefit objectives	18	3.61	0.850
22	Shared authority between public and private sectors	18	3.61	1.037
23	Appropriate toll/tariff level(s)	18	3.50	0.985
24	Stable macroeconomic environment	18	3.50	0.985

In this study, after analyzing 30 success factors of BOT projects identified from literature review 24 success factors having mean value 3.50 or more are considered most relevant and suitable for further investigation in construction industry of Sindh.

VI. CONCLUSION

The focus of this study was to develop a list of most relevant success factors (SFs) for Sindh's BOT projects to help the government and project companies to achieve success in BOT projects. Existing literature revealed 30 common success factors used in different countries of the world.

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Structured interviews of the practitioners showed that 24 factors are relevant to BOT projects of Sindh. Structured interviews conducted for assessing relevancy of the success factors showed that top success factors are:

1. Good government policy
2. Government support and guarantee
3. A strong project consortium
4. A good contractor
5. Transparent and competitive procurement process

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