

Comparative Analysis of Financial Models in PPP, DBFO and BOT

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Abstract - Selection of a project delivery system which enhances quality, reduces cost, and speeds up the project is one of the best ways of optimization and prevention of wasting funds. Consequently, it is essential for every owner to select appropriate project delivery system considering his/her financial, managerial, and expert capabilities, as well as level of other parties' commitment to the project to accomplish the project with least time, best quality, and cost. In this paper, two project delivery system including BOT and DBFO are examined according to their nature, advantages, disadvantages, scope of application, and an analytical comparison is made between them. Since, each project has its own specification and is unique, it is concluded that optimized project delivery system should be selected according to owner requirements, project specifications and characteristics, environmental conditions, and project's practical principles

Key Words: DBFO, BOT, Comparative study, financial models, PPP, comparison of DBFO and BOT

1. INTRODUCTION

There is a widespread assumption and believe that the general public sector is accountable for delivery of basic services through infrastructure construction is deeply anchored in several countries all-over the planet. however, their square measure completely different strategies by that these services square measure created, procured and delivered [2,3]. There is a broad vary of choices for involving the non-public sector within the finance, construction and operation of infrastructure comes historically the domain of the general public sector [5]. It's cladded completely different acquisition routes together with the public-private partnership approaches across a spectrum [10]. At one finish of the spectrum, the general public sector retains all responsibility for finance, constructing, operative and maintaining assets, including the responsibility for forward all associated risk. At the opposite finish of the spectrum, the non-public sector assumes of these responsibilities. The overwhelming majority of the public-private approaches fall within the middle of spectrum with risks and responsibilities shared between parties with their ability and strength [18].

The public-private partnerships area unit chiefly driven by limitations publicly funds for investments however additionally by efforts to extend potency of paying and also the quality of public services. the final word purpose

of the collaboration between public and personal sectors is added value; a qualitatively higher product for fewer value, higher responsibility and promotion of personal sector innovation [16]. The emergence of public-private sector initiatives, like Build-Operate-Transfer (BOT), Build-Own-Operate-Transfer (BOOT), Design-Build-Finance-Operate (DBFO) and Build-Own-Operate (BOO) for procuring infrastructure facilities provides governments with choice of satisfying their infrastructure wants and demands by alternative suggests that. Generally, such suggests that involve a user-pays idea, that invariably can be enforced by governments, nonetheless several governments have most well-liked to execute the concept through the personal sector thus on minimize their monetary liability (Russell and Abdel-Aziz, 1997 in Confoy et al, 1999). The procure of infrastructure comes victimization those strategies need each the general public and the personal sectors to vary their existing mindsets and adopt new skills, roles, responsibilities and risks so all the phases of a project's life-cycle may be managed effectively. Each of the on top of mentioned concession kind successively is examined.

2. Study area

Study area of this project is PPP models DBFO and BOT specifically. As the private property indulge the maximum risk in this this type of financial models.

3. Research methodology

In this research after identifying the research area, literature review was studied out regarding the topic. After studying several literature research gaps was found out. After literature survey the questionnaire was created which shows the factors which effects the choices of certain project's procurement method.

There is total 17 questions for each choice of procurement method, which are asked to be rated in 5 criteria where 1 has the least degree of effect and 5 has the highest. There is total 34 question in the questionnaire defining certain criteria which effects the choices of the procurement method.

Table -1: Design of questionnaire

SR. NO	Factors
A	Factors make you go for BOT over DBFO
1	Lack of experience in DBFO
2	Human resources
3	Financial condition of company
4	Size of project
5	Complex procedure to obtain approval
6	Delay in approval
7	Scarcity in insurance solutions
8	Change of government support policy
9	Import export restriction
10	Type of building
11	Loose control over subcontractors
12	Inappropriate interventions of clients
13	Poor organization and co-ordination ability of managers
14	Poor communication between stake holders
15	Unclear design detail and specification
16	Lack of qualified professionals with proper design expertise
17	Performance of new products materials and technologies
B	Factors make you go for DBOF over BOT
18	Lack of experience in BOT
19	Human resources
20	Financial condition of company
21	Size of project
22	Complex procedure to obtain approval
23	Delay in approval

24	Scarcity in insurance solutions
25	Change of government support policy
26	Import export restriction
27	Type of building
28	Loose control over subcontractors
29	Inappropriate interventions of clients
30	Poor organization and co-ordination ability of managers
31	Poor communication between stake holders
32	Unclear design detail and specification
33	Lack of qualified professionals with proper design expertise
34	Performance of new products materials and technologies

3.1 Data collection

Data collection is done by questionnaire survey a 5-point scale questionnaire was designed. Where you have to rate the severity of the factors which affects the choices of project.

3.2 Data analysis

For the identification and the analysis of the factors that can affect the procurement method and project selection the questionnaire survey will be carried where the questions related to the topic will be given with the different difficulty, different conditions, and different procurement method.

The RII is simply a mean score for an item, scaled to have a value somewhere between 1/A and 1, where A is the number of response categories. So, you may also just compute the mean score for each item and that will sort the items from "most" to "least" in exactly the same way as would the RII values.

$$RII = \frac{\sum W}{A * N}$$

Where, W is that the weight given to every issue by the respondents (ranging from one to 4), A is that the highest weight (i.e., four during this case), and N is that the total variety of respondents. Higher the worth of RII, additional vital was the explanation for delays.

4. Result and discussion

Table-2 Factors affecting the choices of project for BOT over DBFO

Sr. No.	Questions	RII	Rank
1	Size of project	0.831068	1
2	Type of building	0.7803922	2
3	Lack of qualified professionals with proper design expertise	0.768932	3
4	Performance of new products materials and technologies	0.7223310	4
5	Inappropriate interventions of clients	0.7029126	5

The factors affecting the choice of the project the most are listed in table-2 for BOT over DBFO

Table-3 Factors affecting the choices of project for DBFO over BOT

Sr. No.	Questions	RII	Rank
1	Type of building	0.9728155	1
2	Inappropriate interventions of clients	0.8601942	2
3	Size of project	0.8194175	3
4	Performance of new products materials and technologies	0.7475728	4
5	Loose control over subcontractors	0.6485437	5

The factors affecting the choice of the project the most are listed in table-# for DBFO over BOT

5. CONCLUSIONS

The study aims to choose better procurement method and helps identify the factors affecting the choices of the procurement methods between BOT and DBFO. The study mainly focusses on DBFO and BOT as the private entity indulge the highest risk in this procurement methods. Thus, from the results we can conclude that the factors affecting the choices of the procurement methods are mainly type of

building, size of project, loose control over subcontractors, inappropriate interventions of clients, performance of new products, materials and technologies and lack of qualified professionals with proper design expertise.

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