

Factors Contributing to Successful Public Private Partnership Projects for Highway Projects in Indian Context

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Abstract— With the increasing interest in PPP there is a need to investigate the factors contributing to successful delivery of PPP projects. An empirical questionnaire survey was conducted in Gujarat (India). The survey respondents were asked to rate eighteen factors which contribute to delivering successful PPP projects. The findings from this survey were compared with the results achieved by Esther Cheung in a similar survey conducted in the Hong Kong and Australia. These top five success factors were therefore found to be important for contributing to successful PPP projects irrespective of geographical locations.

Key words: Gujarat (India), Hong Kong, Australia, Public Private Partnership (PPP)

I. INTRODUCTION

PPP projects can be dated as far back as the 1600s during the railway construction boom in the United Kingdom [14]. PPP is a relatively modern term for this arrangement used only more commonly in the last decade. Previously different variations of the arrangement included Private Finance Initiative (PFI), which is a more familiar term to many people due to popular development in the United Kingdom during the early nineties [32]. It would not be incorrect to say that the PFI practice developed in the United Kingdom raised the world's attention to this alternative option for delivering public infrastructure and services. PPP projects now account for about 15 and 8 percent of infrastructure spent in the United Kingdom and Australia respectively (Ernst and Young, 2005). Up to 2006, 794 PPP/PFI deals had already been signed. The combined capital value was approximately £55 billion (National Audit Office, 2008). Amongst these projects almost 70% were in the health sector, and over 40% costing below £10 million [2]. However, it was asserted that PPP/PFI should be abolished for smaller projects and for information technology schemes [22]

For delivering highway construction and building projects, PPP has been well practiced in many developed countries in Europe, America and Australia. The success and advantages of adopting PPP in these places have been documented precisely. But it is unfortunate that all of these PPP projects have not been equally successful. For countries that are new at adopting PPP it is very much important for them to identify the success factors in order to maximize the advantages of this method and to reduce the risks for all concerned parties. The findings presented in this paper are part of a PhD research thesis, Model for PPP in Highway Projects (Case study for Gujarat).

II. LITERATURE REVIEW ON ACHIEVING SUCCESSFUL PPP PROJECTS

For achieving successful PPP projects, some suggestions have previously been reported in literature. This section

reports only a few examples of how successful PPP projects can be achieved. In PPP contracts the government should be concerned that the assets are procured and services are delivered on-time with good quality and meet the pre-agreed service benchmarks or requirements throughout the life of the contract. But it was observed that, the government should be less concerned with "how" these are achieved and should not impose undue restrictions and constraints on the private sector participants. The government should be relegated to the primary role of industry and service regulation; should be flexible in adopting innovations and new technology; should provide strong support and make incentive payments to the private sector where appropriate. On the other hand, the government should retain controls in case of default and be prepared to step in and re-provide the service if required [1][6][8][10][19][21][30][32][34].

A transparent and efficient procurement process is required in lowering the transaction costs and reducing the time in negotiation and completing the deal. Clear project brief and client requirements should be helped to achieve these in the bidding process. In most cases, competitive bidding solely on price may not help to secure a strong private consortium and obtain value for money for the public. The government should take a long-term view in searching the right partner. [6][8][12][16][17][21][27][34].

Successful PPP implementation requires a stable political and social environment, which in turn relies on the stability and capability of the host government [33]. Political and social issues should be handled by the government as it go beyond private sector's domain. It is legitimate that the private sector participants should be adequately compensated, if they victimized unduly.

Many researchers identified that project financing is a key success factor for private sector investment in public infrastructure projects. For taking up PPP projects by private sector, the availability of an efficient and mature financial market with the benefits of low financing costs and diversified range of financial products would be an incentive [3][6][8][16][21][34].

III. RESEARCH METHODOLOGY

A. Questionnaire Template

The practitioners' opinion on factors contributes to successful PPP projects were solicited by way of a questionnaire survey. The questionnaire template designed by Esther Cheung (2009) was adopted for this study. Although a new research questionnaire could be developed, there were several advantages foreseeable to adopt Esther Cheung's survey questionnaire rather than designing a new template. Firstly, the value of Esther Cheung's questionnaire has already been recognized by the industry at large. Her publications as a result of the research findings derived from the questionnaire are evidence of its worthiness. Secondly,

there would be no added advantage to reinvent the work that has previously been done by other researchers. And thirdly by administering Esther Cheung's questionnaire in different administrative systems, it would be of interest for comparison purposes in the future. In addition, the construction practice is very close to Hong Kong hence no problems in adopting this questionnaire could be observed. Therefore, Esther Cheung's questionnaire was adopted for the survey as presented in this thesis with prior permission obtained from the author Esther Cheung.

B. Collection of Research Data

An empirical questionnaire survey was undertaken in Gujarat to analyse the factors contributing to successful PPP projects, and then compares it with Hong Kong and Australia. The survey was conducted from May 2013 to September 2013 in Gujarat, while for Hong Kong and Australia same was from October 2007 to December 2007. The target survey respondents of the questionnaire included all industrial practitioners from the public sectors, private sectors and researchers.

These respondents were requested to rate their degree of agreement against each of the identified factors contributing to successful PPP projects according to a Likert five-point scale in which 1 is Least Important and 5 is Most Important. Target respondents were selected based on their adequate knowledge in the area of PPP and their hands-on experience with PPP projects, experience in conducting PPP research or have followed very closely with the development of PPP.

Survey questionnaires were sent to 100 target respondents in Gujarat, 95 target respondents in Hong Kong and 80 target respondents in Australia. It was anticipated that some of these target respondents would have colleagues and personal connections knowledgeable in the area of PPP to participate in this research study as well; hence some of the respondents were dispatched blank copies of the survey form. A total of 80 completed questionnaires from Gujarat, 34 from Hong Kong and 11 from Australia were returned representing response rates of 80%, 36% and 9%, respectively. In Gujarat out of 80 filled questionnaires 16 questionnaires were rejected due to inadequate response. The lower response rate in Hong Kong and Australia were expected as the questionnaire was administered from Gujarat, hence geographical complications were perceived. But as this paper mainly focuses on Gujarat, the responses received from Hong Kong and Australia was used for reference only.

The working experience of the respondent of Gujarat, Hong Kong and Australia is mentioned in Figure 1. For better and perfect result tried to focus the respondents with rich working experience in the field of PPP road projects, directly or indirectly. As shown in Figure 1, 42% respondents have more than 20 years of experience. Same way 41% respondents have experience in between 11 to 20 years. Only 17% respondents are there having experience less than 10 years. From figure 1 approximately half of the respondents in Hong Kong and Australia possessed twenty-one years or above of industrial experience. It clearly shows that the respondents from all three different regions were having very rich work experience, which assures the value and reliability of the findings.

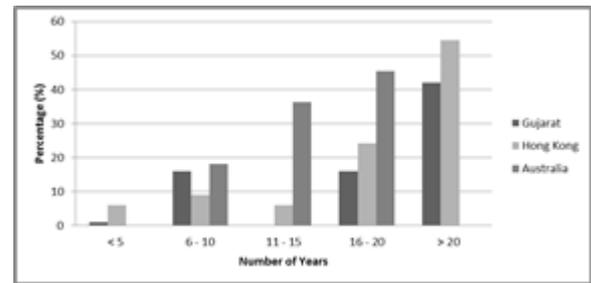


Fig. 1: Number of years of working experience in Road sector for all respondents

C. Tools for Data Analysis

The techniques that were used in this research paper, in respect of quantitative analysis include the mean score ranking technique, Chi square and ANOVA analysis. The five-point Likert scale (1 = Least Important and 5 = Most Important) as described previously was used to calculate the mean score for each factor, which was then used to determine its relative ranking in descending order of importance. These rankings made it possible to triangulate the relative importance of the factors to the respondents from India/Gujarat, Hong Kong and Australia as presented in Esther Cheung's survey (2009).

Analysis of Variance (abbreviated as ANOVA) is an extremely useful technique concerning researchers in the field of economics, biology, management and other disciplines. This technique is used when multiple sample cases are involved. In these paper three different cases of Gujarat, Hong Kong and Australia was involved.

D. Discussion of Survey Results

The survey respondents were asked to rate eighteen factors which contribute to delivering successful PPP projects. The factors that contribute to the success of PPP projects were assessed from different perspectives of the Gujarat (India), Hong Kong and Australia respondent groups. The means for each administrative system were calculated and ranked in descending order of importance as shown in Table 1.

With the help of one tail ANOVA the validation of data is performed and the output is mentioned in Table 2 and 3.

As mentioned in Table 3 for 17 degree of freedom (df) the F value is not greater than F critical value, which shows that the assessment by the respondents within each group on their rankings of factors contribute in success of PPP projects is not consistent. This finding ensures that the completed questionnaires were not valid for further analysis. As the difference between F critical and F value is only 0.09 and according to Esther Cheung's analysis the data is accepted for Australia and Hong Kong, a primary analysis carried out.

Eighteen success factors for adopting PPP were rated by the respondents. Out of that the top five factors ranked by respondents of Gujarat are:

- 1) Commitment and responsibility of public and private sectors
- 2) Strong and good private consortium
- 3) Competitive procurement process
- 4) Transparency procurement process
- 5) Available financial market

Attributes	Gujarat (64)		Hongkong (34)		Australia (11)	
	MEAN	RANK	MEAN	RANK	MEAN	RANK
Stable macro-economic condition	3.73	11	3.85	4	4.18	11
Favourable legal framework	3.70	14	4.06	1	4.27	6
Sound economic policy	3.75	10	3.74	7	4.09	13
Available financial market	3.98	5	3.71	8	4.18	11
Multi-benefit objectives	3.72	13	3.50	16	4.20	10
Appropriate risk allocation and risk sharing	3.94	6	3.85	4	4.64	2
Commitment and responsibility of public and private sectors	4.06	1	3.97	2	4.91	1
Strong and good private consortium	4.00	2	3.91	3	4.64	2
Good governance	3.81	8	3.68	9	4.45	4
Project technical feasibility	3.84	7	3.56	15	4.36	5
Shared authority between public and private sectors	3.66	15	3.41	18	3.70	16
Political support	3.39	18	3.76	6	4.27	6
Social support	3.63	16	3.44	17	3.36	17
Well organised and committed public agency	3.55	17	3.65	12	4.27	6
Competitive procurement process	4.00	2	3.68	9	4.27	6
Transparency procurement process	4.00	2	3.67	11	4.09	13
Government involvement by providing guarantee	3.80	9	3.62	14	2.40	18
Thorough and realistic assessment of the cost and benefits	3.73	11	3.65	12	4.00	15
Variation (max. mean – min. mean)	0.67		0.65		2.51	

Table 1: Factors That Contribute the Success of PPP Projects

Factors	Count	Sum	Average	Variance
Stable macro-economic condition	64	239	3.7343	1.2457
Favourable legal framework	64	237	3.7031	1.1961
Sound economic policy	64	240	3.7500	1.3333
Available financial market	64	255	3.9843	1.2537
Multi-benefit objectives	64	238	3.7187	1.0307
Appropriate risk allocation and risk sharing	64	252	3.9375	0.9484
Commitment and responsibility of public and private sectors	64	260	4.0625	1.1388
Strong and good private consortium	64	256	4.0000	1.0793
Good governance	64	244	3.8125	1.7738
Project technical feasibility	64	246	3.8437	1.8164
Shared authority between public and private sectors	64	234	3.6562	1.4355
Political support	64	217	3.3906	1.5116
Social support	64	232	3.6250	1.6349
Well organised and committed public agency	64	227	3.5468	1.8707
Competitive procurement process (enough potential bidders in the process)	64	256	4.0000	1.2698
Transparency procurement process (process is made open and public)	64	256	4.0000	1.2698
Government involvement by providing guarantee	64	243	3.7968	1.2438
Thorough and realistic assessment of the cost and benefits	64	239	3.7343	1.2775

Table 2: ANOVA Analysis Output-1 for Factors Contribute Success of PPP Projects

Source of Variation	SS	df	MS	F	P-value	F critical
Between Groups	35.41406	17	2.08318	1.541155	0.073153	1.631784
Within Groups	1532.828	1134	1.3517			
Total	1568.242	1151				

Table 3: ANOVA Analysis Output-2 for Factors Contribute Success of PPP Projects

The first success factor ranked by Gujarat respondents was “Commitment and responsibility of public and private sectors”. This success factor was also ranked importantly by the Hong Kong and Australians at second and first place respectively. This success factor was ranked high by all respondent groups irrespective of geographical locations. According to National Audit Office (2001) to secure the success of PPP projects, both the public and private sectors should bring their complementary skills and commit their best resources to achieve a good relationship.

Ranked second by respondents in Gujarat and Australia was “Strong and good private consortium”. Respondents from the Hong Kong ranked it on third

position. This finding again has shown that this success factor is seen to be highly important for success of PPP projects irrespective of geographical locations. The government in contracting process of PPP projects should ensure that the parties in the private sector consortium are sufficiently competent and financially capable enough to taking up the projects. This suggests that private companies should explore other participants' strengths and weaknesses and, where appropriate, join together to form consortia capable of synergising and exploiting their individual strengths. Good relationship among partners is also critical because they all bear relevant risks and benefits from the co-operation [1][4][6][8][16][18][31][33][35].

The third, fourth and fifth ranked factors of Gujarat were ranked almost last side by Hong Kong and Australian respondents. Due to the corruption in Gujarat/India the transparency and competency will not maintained up to that level, especially compare to Australia and Hong Kong. This may be the reason the respondents from both this jurisdictions not gave that much response to these factors.

The mean values for the success factors as rated by Gujarat respondents ranged from 3.39 to 4.06. This observation has reflected that the variation in their responses are relatively small, only 0.67 for Gujarat. In Australia and Hong Kong the means ranged from 2.40 to 4.91 and 3.41 to 4.06 respectively. The corresponding differences in means were 2.51 and 0.65 respectively. The differences in means were shown to be much higher for the survey conducted in Australia compared to Gujarat and Hong Kong. This finding shows that the Gujarat and Hong Kong respondents rated the eighteen success factors much more similarly, whereas in Australia the respondents showed a much larger variation.

As the respondents were asked to rate the eighteen success factors according to a Likert scale from 1 to 5 (1 = Least Important and 5 = Most Important), a value above "3" would represent that the success factor is of importance. Amongst the success factors none were ranked below "3" in the Gujarat and Hong Kong rank. In Australia only one success factor was ranked below a score of "3". Therefore, all three groups of respondents concurred that the identified factors were important.

IV. CONCLUSION

This paper has analyzed the perceptions of respondents from Gujarat (India), Hong Kong, and Australia on the importance of eighteen factors contributing to successful delivery of PPP projects. The ranking in Gujarat (India) showed that the top five success factors included: (1) Commitment and responsibility of public and private sectors; (2) Strong and good private consortium; (3) Competitive procurement process; (4) Transparency procurement process; and (5) Available financial market. The top success factor ranked by Gujarat (India) respondents was also ranked with high importance by respondents from the other two groups; implying that to secure the success of PPP highway projects both public and private sectors should bring their expertise and skill to achieve better output. The second success factor was also ranked high by all three groups of respondents, indicating that these success factors were applicable to delivering successful PPP projects irrespective of their geographical locations. The third, fourth and fifth success factor ranked by Gujarat (India) respondents was ranked lowly by the other groups of respondents. In Australia and the Hong Kong there is a well-established stable macro-economic environment hence the market is much more predictable. Gujarat (India) on the other hand has experienced dramatic changes since the British in 1947, hence they are still adjusting to the changes and the market is therefore not as stable. In general, all three groups of respondents concurred that the identified factors were important.

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