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RISK ASSESSMENT OF PUBLIC PRIVATE PARTNERSHIP PROJECTS IN KERALA

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Abstract – *Public Private Partnership (PPP) Projects refers to the sharing of skills and assets between public sector and private sector for delivering a general service to the public. This paper aims to identify and assess various risk factors involved in PPP projects in Kerala. A questionnaire survey was conducted responses were used to conduct a statistical analysis and find out significant risks involved in PPP projects. Reliability analysis was carried out and risk factors were ranked. Most significant risks were found out to land acquisition, Delay in project approvals, Political opposition.*

Key Words: Risk Assessment, Public Private Partnership (PPP), Risk Management.

1. INTRODUCTION

Public private partnership projects (PPP) are a contractual agreement between public agency and a private sector entity for sharing skills and assets for delivering a facility for the use of general public. Major motive behind PPPs are the sharing of risk and the development of innovative, long-term relationships between the public and private sectors. These risks involve financial, technical as well as operational risks. PPPs are way forward for India and Kerala who lacks in resources and needs participation of private sector as far as possible.

Further, given the need to develop infrastructure on a war footing, the private sector with its deep expertise and experience in executing such projects would be in a better position than the government in this respect. Experience of the PPP projects in the infrastructure sector in India has been a mixed bag with more failures than successes. It would suffice to state here that future partnerships can learn from the successes and avoid the pitfalls that led to the failure of the other projects. Studies on public-private partnership (PPP) indicated that an objective, reliable, and practical risk assessment model for PPP projects and an equitable risk allocation mechanism among different parties are crucial to the successful implementation of these PPP projects..

Identification, assessment and allocation of risk factors are important for equitable risk distribution between public sector and private sector. Even though PPP model is being practiced in Kerala risk factors associated with PPP in Kerala has not yet been studied. Risk factors vary with the nature of projects. This project intends to identify, assess and allocate equitably between public and private sector.

Chan et al (2011) [1] conducted an empirical study of risk assessment and risk allocation of Public Private Partnership projects in china. This research pushes on the need for the identification and assessment and allocation of risks are necessary in the successful delivery of Public Private Partnership projects. Chan et al conducted risk analysis of PPP projects in china and reached a conclusion that most important risk factors involved in PPP projects were 1) Government intervention 2) government corruption 3) Poor public decision making process. For risk allocation they found that both public and private sector were in consensus with risks identified. This research help companies to better understand how risks should be assessed and allocated for PPP projects.

Karim S Rebeiz (2012) [2] conducted a study on risk factors of Public Private Partnership Projects in emerging countries. He chose to study PPP model of Build Own Operate Transfer (BOOT). He chose emerging countries because of the emerging attractiveness of PPP projects in such countries. A case study was conducted to address risk factors involved in the construction of a PPP project in an emerging country. He concluded that PPP projects are most effective in country environments that foster transparent, expeditious, and reliable transactions with minimum political interferences.

Sayegh et al (2008) [3] studied the risks associated with highway construction in UAE. From studies he identified 33 risk factors involved in construction of highways. A questionnaire is then developed to solicit the opinion of construction professionals as to the probability and impact of those risks in addition to their proper allocation. The relative importance index (RII) for the risk priority is calculated based on all responses for each risk. Risk identification and assessment are integral processes in project risk management. Proper risk identification and assessment enable project managers to decide on appropriate risk response strategies

Grimsey et al (2002) [4] this paper analyzed various principles involved and presenting a framework to evaluate and assess risks. In countries lacking public fund public sector gets into contractual agreements with private sector for design, financing as well as operation/maintenance of

infrastructure. This framework ensures value for money for public procurer and demonstrates the framework with an example.

Wang et al (2002) [5] this paper developed a life cycle risk management framework for public private partnership (PPP) infrastructure projects that lead to the realization of value for money and balance of interests between different partners including the public and end users.

2. RESEARCH METHODOLOGY

A questionnaire survey was carried out with various public sector and private sector professionals to find out the significant risk factors that affect the performance of various PPP projects in Kerala. 30 Risk factors were identified from extensive literature review of various journals related to PPP.

The questionnaire consisted of three parts. First part collected demographic information of respondents. In second and third part the respondents were asked to rate the risk factors based on their probability of occurrence and severity of impact on a Five Point Likert scale, 1-very low, 2-low, 3-average, 4 -high, 5-very high.

Data obtained was then analyzed using Statistical package for social sciences software (SPSS) for reliability, relative importance and risk significance.

3. RESULTS AND DISCUSSIONS

3.1 Reliability Analysis

Table -1: Output of Reliability Analysis of Probability on SPSS

Case Processing Summary

		N	%
Cases	Valid	38	100.0
	Excluded[a]	0	0.0
	Total	38	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
0.713	30

The Cronbach's alpha value is the measure of reliability. For the data to be reliable the Cronbach's alpha value should be greater than 0.7, sometimes lowered to 0.6 in exploratory researches. Cronbach's alpha for risk factor ratings based on probability is greater than 0.7. Hence we can conclude than data is reliable.

Similarly the Cronbach's alpha for risk factor ratings based on severity of impact is also greater than 0.7, thus making it reliable.

Table -2: Output of Reliability analysis of Severity on SPSS

Case Processing Summary

		N	%
Cases	Valid	38	100.0
	Excluded[a]	0	0.0
	Total	38	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
0.716	30

3.2 Risk Significance

Risk significance is found out to rank the risk factors based on total effect it has on the project considering both probability and impact. The mean ratings of both probability and severity are found out. Rating of risk significance is found out by the product of risk probability and risk impact/severity (Shen et al (20xx))

Risk Significance = Risk Probability X Risk Impact

Risk significance was calculated and it was found that most significant risk factor was land acquisition. Land acquisition was identified as the most probable and severe risk factor by both public and private sector alike. The mean ratings of probability 3.76 and severity 3.86 made it the most critical risk factor in PPP projects in Kerala.

Other critically ranked risks were delay in project approvals. The foreign exchange fluctuations, political opposition, inflation, government intervention, public credit, third party delays, completion risk and government corruption were among highest critical risks.

Medium critical risks were conflicting contracts, environment risk, labor non availability, unforeseen weather, inadequate competition for tender, financing risks, inability of concessionaire, force majeure, legislation changes and lack of supporting infrastructure.

The ranking of risk factors according to risk significance is given below (table- 3)

Table- 3: Ranking of risk factors based on risk significance

Rank	Risk Factor	Risk Probability	Risk Severity	Risk Significance
1	Land Acquisition	3.7632	3.8684	14.56
2	Delay in Project approvals	3.3421	3.3684	11.26
3	Unforeseen weather	3.3421	3.3421	11.17
4	Foreign exchange fluctuations	3.2368	3.3421	10.82
5	Inflation	3.0526	3.2105	9.80
6	Government intervention	2.7632	3.1579	8.73
7	Public credit	2.6579	3.1842	8.46
8	Third party delay	2.4737	3.0789	7.62
9	Completion risk	2.6579	2.6842	7.13
10	Government corruption	2.0263	3.1579	6.40
11	Conflicting or imperfect contract	2.3684	2.6316	6.23
12	Environment risk	2.5000	2.4211	6.05
13	Labor Non availability	2.2632	2.5789	5.84
14	Unforeseen weather	2.2895	2.4211	5.54
15	Inadequate competition for tender	2.2368	2.2632	5.06
16	Financing risk	3.2895	1.5263	5.02
17	Inability of concessionaire	2.5526	1.9211	4.90
18	Force majeure	1.7368	2.6316	4.57
19	Legislation change	1.5000	2.6053	3.91
20	Lack of supporting infrastructure	1.7895	2.0263	3.63
21	Poor public decision making	1.4737	2.3158	3.41
22	Operation changes	1.7105	1.9211	3.29
23	Operation cost overrun	1.2105	2.6842	3.25
24	Imperfect law and supervision	1.6842	1.8421	3.10
25	Nationalization	1.1842	2.6053	3.09
26	Interest rate fluctuation	1.5526	1.6842	2.61
27	Price change	1.6579	1.3421	2.23
28	Expense payment risk	1.5789	1.3421	2.12
29	Unproven engineering techniques	1.3421	1.3421	1.80
30	Market competition	1.2632	1.3947	1.76

4. CONCLUSION

Successfully implementing PPP projects depends on an efficient risk management plan. An effective risk management plan should have a valid risk assessment model made suitable to local scenario. The research findings revealed that land acquisition is the most significant risk factor in the PPP projects in Kerala. Other major risks involved delay in project approvals, foreign exchange rate fluctuation, political opposition and inflation.

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