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Analysis of Critical Success Factors for Effective Public Private Partnership in Redevelopment of Government Buildings

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Abstract: Post-independence urbanization began to accelerate in India, due to the development of the private sector as the country started following and accepting mixed economy. Urbanization is rapidly growing in India. To meet ever increasing demand of land, more of agricultural land has to be urbanized. In the absence of redevelopment and densification of available lands, land remains underutilized and thus contributing to shortage of land and to high land prices. But there are many existing plots in the core of the city which can be redeveloped using Public Private Partnership models for efficient use of land. Critical Success Factors in housing and redevelopment sector are identified and analysed using SPSS software and criticality of factors is determined.

Keywords: Public Private Partnership, Redevelopment, Critical Success Factor, SPSS, Relative Important Index

I. INTRODUCTION

After independence, India witnessed tremendous poverty, unemployment, and economic instability. For economic development, India adopted mixed economy and people started moving to cities. As per Government's estimates, there is a shortage of more than 25 million housing units for the present population. The Government or the Private Sector independently cannot handle problem of this large magnitude. So Public-Private Partnership (PPP) is appropriate way to address this problem.

Public Private Partnership is a contractual agreement between private firm and Government aimed towards designing, financing, managing, operating, implementing infrastructure services and facilities that were traditionally managed and provided by public sector. PPP emphasizes a range of possible relationships among public and private entities regarding infrastructure, other services and facilities. Public private partnership is a form of private involvement in public project in which the public sector and private sector actually form a partnership and work together towards achieving a common goal. PPP aims to club the skills, expertise, and experience of both the public and private sectors to deliver higher standard of services to customers or citizens. Increasing urbanization is leading to scarcity of land, housing units and commercial centres. In every new development plan, exterior of prevailing areas is brought under development which requires huge funds for infrastructure. But there are many existing plots in the city which can be redeveloped using PPP models for efficient use of land.

II. LIITERATURE REVIEW

A. Critical Success Factors

A critical success factor is an element of management which is necessary to achieve the desired goal of company or the firm.

(Olaniyan 2013) defines critical success factors as "those key areas of activity in which favourable results are absolutely necessary for a particular manager to reach his/her goals.

B. Review of Technical Papers

- 1) Olabode Emmanuel Ogunsanmi (2014): The author proposes CSSFs to recommend to all stakeholders and practitioners for their use and adoption in future PPP projects and governments must consider for future PPP projects such concessionaires that will provide realistic cost benefit assessments of the projects. Criticality index (CRI) methodology for ranking of critical success factors by conducting a questionnaire survey. Results suggest that CSSFs for successful implementation of PPP project are integrity, complexity of project, project management expertise, realistic cost/benefit assessment, government guarantee private sector financial capability and adequate financial market that must be considered by all stakeholders.
- 2) Robert Osei-Kyei, Albert P.C. Chan (2013): This paper describes Critical Success Factors for Public–Private Partnership which are major research interest worldwide therefore this paper aims to methodically review studies on the CSFs for implementing



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PPP from some selected top tier academic journals from 1990 to 2013. The mostly identified CSFs are risk allocation and sharing, strong private consortium, political support, community/public support and transparent procurement. Finally the research approaches adopted are case study, questionnaire survey and mixed methods. The findings provide an overview of CSFs for PPPs in order to enhance future implementations.

- 3) LiYaning Tang, Qiping Shen, Martin Skitmore; and Eddie W. L. Cheng (2013): The authors in this paper shows Public-private partnerships (PPPs) are increasingly used to procure Australian infrastructure projects. As the early briefing stages are often the most crucial in determining a successful outcome in construction projects. There is a lack of systematic research on the type and nature of the critical factors affecting the effectiveness and efficiency of PPP during this period. A literature review is presented of PPP in Australia, in which four main categories of factors (procurement, stakeholder, risk, and finance) are identified, each with several sub-factors. A questionnaire survey involving state government stakeholders is also described, and a mathematical model that ranks the factors involved is developed. This is followed by an examination of the potential of the factors to help improve the PPP briefing stage for both public and private sectors.
- 4) Jui-Sheng Chou, Dinar Pramudawardhani: This paper studies Public-private partnerships (PPPs) are an effective and established strategy for procuring infrastructure. For this study, authors compared the categories of key drivers, critical success factors (CSFs), and preferred risk allocation in PPPs established in Taiwan, Singapore, China, the United Kingdom, and Indonesia. Mean value analysis, confirmatory factor analysis, and dimensional importance were used to analyse and compare these categories. This study provides useful information for people seeking to invest in PPP projects, enabling them to enhance their understanding of key drivers, CSFs, and risk allocation in the researched countries. Based on findings, international investors can apply investment strategies by considering the similarities and differences in each country.
- 5) Xiaodan Li, Hao Yang, Wenjing Li, Zhiting Chen (2016): This paper studies the residential Brownfield redevelopment (RBR) which is rapidly growing in US. The paper also throws light on the opportunities and challenges in restructuring RBR's ecological environment and economic benefits. To meet the requirement a collaborative model of public private partnership is adopted. It creates an institutional framework in which the public sectors provide strategic profits to the private sectors, while the private entities implement and develop the public sector's plan. Two case studies are selected for RBR that are Summerset at Frick Park and Hazelwood, both in Pittsburgh, Pennsylvania, for analysis purpose using PPP. The successful case in restructuring ecological environment and promoting sustainable development also provides a paradigm for other cities that are withstanding similar RB or RBR issues.

III.PROBLEM STATEMENT AND METHODOLOGY

A. Problem Statement

Increasing urbanization is leading to scarcity of land, housing units and commercial centres. In every new development plan, exterior of prevailing areas is brought under development which requires huge funds for infrastructure. But there are many existing plots in the city which can be redeveloped using PPP models for efficient use of land.

B. Methodology

The research will be carried out in the following manner :

- *1)* Defining the problem statement with the help of literature.
- 2) Through expert interviews and literatures, factors are found out and a questionnaire is prepared using importance index.
- 3) A questionnaire survey is carried out which includes respondents like Government officials, contractors, builders etc.
- 4) Collected responses are analysed using SPSS software to find the mean of all responses.
- 5) Ranking of these analysed factors is calculated to find critical factors.
- 6) Then rating is given according to the mean.

IV. DATA COLLECTION AND DATA ANALYSIS

A. Data Collection

Critical factors in housing sector using Public Private Partnership are studied by collecting the data in the form of questionnaire survey from Government officials, contractors, builders, top managerial authorities. For questionnaire 43 factors are collected which are arranged under heads of General factors, Technical factors, Managerial factors, governing factors, Contractual factors, Financial factors, Operational factors and Other factors.



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B. Data Analysis

Questionnaire is prepared and responses are taken from 87 respondents in order to assess the factors in housing sector depending on Relative Importance Index. Criticality of success factor is determined depending on mean values. Each CSF is grouped into five categories like extremely critical, Very critical, average critical, fairly critical and not critical. The forthcoming tables elaborate the data interpretation using the statistical parameter. Mean of an attribute indicate the average value got to the question based on responses in SPSS software.

Table I Descriptive Statistics

| | 1 | | MIN | MA | | STD. | |
|---|----|------|------|------|-----------|---------|--------|
| | | RAN | IMU | XIM | | DEVIATI | VARIA |
| | Ν | GE | M | UM | MEAN | ON | NCE |
| PRE-PROJECT ASSESSMENT | 87 | 3.00 | 2.00 | 5.00 | 3.8276 | .78068 | .609 |
| AVAILABILITY OF FINANCE & ITS PROVISION | 87 | 3.00 | 2.00 | 5.00 | 3.8046 | .74458 | .554 |
| AUDIENCE ACCEPTANCE | 87 | 4.00 | 1.00 | 5.00 | 3.3103 | 1.08167 | 1.170 |
| DIFFERENCES IN WORKING | 87 | 4.00 | 1.00 | 5.00 | 3.0000 | 1.03430 | 1.070 |
| POOR DECISION MAKING | 87 | 4.00 | 1.00 | 5.00 | 2.9655 | .93321 | .871 |
| PLANNING & DESIGNS WITH APPROVALS | 87 | 4.00 | 1.00 | 5.00 | 3.4713 | .91294 | .833 |
| APPLICABILITY | 87 | 4.00 | 1.00 | 5.00 | 3.3908 | .95669 | .915 |
| PUBLIC GUARANTEE FOR LOAN | 87 | 3.00 | 2.00 | 5.00 | 3.8506 | .86976 | .756 |
| PROJECT DURATION | 87 | 3.00 | 2.00 | 5.00 | 4.5862 | .69134 | .478 |
| GEOTECHNICAL CONDITIONS | 87 | 3.00 | 2.00 | 5.00 | 3.7701 | .74242 | .551 |
| CONSTRUCTION TECHNOLOGY & METHOD | 87 | 43.0 | 1.00 | 44.0 | 2 0 4 2 5 | 4 42965 | 10 (12 |
| | 8/ | 0 | 1.00 | 0 | 3.9425 | 4.42865 | 19.613 |
| DESIGN DEFICIENCY | 87 | 3.00 | 2.00 | 5.00 | 3.7126 | .80562 | .649 |
| POOR QUALITY OF WORKMANSHIP | 87 | 3.00 | 2.00 | 5.00 | 3.4253 | .87114 | .759 |
| RESOURCE AVAILABILITY | 87 | 3.00 | 2.00 | 5.00 | 3.6092 | .86745 | .752 |
| TRANSPARENT PROCUREMENT PROCESS | 87 | 4.00 | 1.00 | 5.00 | 3.3448 | .92545 | .856 |
| LATEST TECHNOLOGY | 87 | 4.00 | 1.00 | 5.00 | 3.0460 | 1.35465 | 1.835 |
| COORDINATION IN SYSTEM WITHIN | 87 | 3.00 | 2.00 | 5.00 | 4.1264 | .83254 | .693 |
| CONSORTIUM | 0/ | 5.00 | 2.00 | 5.00 | 4.1204 | .83234 | .095 |
| SCHEDULING AND CONTROLLING | 87 | 2.00 | 3.00 | 5.00 | 4.5402 | .58676 | .344 |
| PROCEDURES FOR TRANSFERRING PROJECT TO | 87 | 4.00 | 1.00 | 5.00 | 3.5977 | .85535 | .732 |
| CLIENT | 07 | 4.00 | 1.00 | | 5.5911 | .05555 | .132 |
| DISPUTE RESOLUTION SYSTEM | 87 | 4.00 | 1.00 | 5.00 | 3.3793 | .83862 | .703 |
| RISK RESOLUTION | 87 | 4.00 | 1.00 | 5.00 | 3.0690 | 1.05426 | 1.111 |
| GOVERNING BODY | 87 | 4.00 | 1.00 | 5.00 | 3.0115 | .99410 | .988 |
| UNSTABLE GOVERNMENT | 87 | 4.00 | 1.00 | 5.00 | 2.1839 | 1.07323 | 1.152 |
| LEGAL FRAMEWORK | 87 | 4.00 | 1.00 | 5.00 | 3.9310 | .83238 | .693 |
| POLITICAL ENVIRONMENT | 87 | 4.00 | 1.00 | 5.00 | 2.9540 | .79106 | .626 |
| INVESTMENT SCHEDULE & GUARANTEE | 87 | 3.00 | 2.00 | 5.00 | 3.8161 | .65643 | .431 |
| REVENUE SYSTEM | 07 | 5.00 | 2.00 | 5.00 | 5.6101 | .03043 | .431 |
| GUARANTEE | 87 | 3.00 | 2.00 | 5.00 | 3.7816 | .85488 | .731 |
| GOVERNMENT ACTS EX RERA | 87 | 4.00 | 1.00 | 5.00 | 2.6322 | 1.24932 | 1.561 |
| PREQUALIFICATION OF CONTRACTOR | 87 | 3.00 | 2.00 | 5.00 | 4.0805 | .70246 | .493 |
| PARTNERSHIP FORMATION | 87 | 3.00 | 2.00 | 5.00 | 3.8966 | .80744 | .652 |
| DELAY IN APPROVALS PERMITS | 87 | 4.00 | 1.00 | 5.00 | 3.8966 | .83575 | .698 |
| FORMATION OF CLAUSES | 87 | 3.00 | 2.00 | 5.00 | 3.9425 | .91951 | .845 |
| INFLATION | 87 | 3.00 | 2.00 | 5.00 | 3.7471 | .68571 | .470 |



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| PRICE CHANGES& TARIFF CHANGES | 87 | 3.00 | 2.00 | 5.00 | 3.8621 | .79493 | .632 |
|---|----|------|------|------|--------|---------|-------|
| PUBLIC CREDIT | 87 | 4.00 | 1.00 | 5.00 | 3.7356 | .81354 | .662 |
| CONCESSIONAIRE CHANGES | 87 | 3.00 | 2.00 | 5.00 | 4.1034 | .79291 | .629 |
| ESCALATION | 87 | 4.00 | 1.00 | 5.00 | 3.2874 | 1.01050 | 1.021 |
| OPERATIONAL COST OVERRUN | 87 | 3.00 | 2.00 | 5.00 | 4.0460 | .72989 | .533 |
| SAFETY CONSIDERATION | 87 | 3.00 | 2.00 | 5.00 | 3.8851 | .85488 | .731 |
| ASSISTANCE IN PPP | 87 | 4.00 | 1.00 | 5.00 | 3.2874 | 1.17045 | 1.370 |
| FORCE MAJEURE | 87 | 3.00 | 2.00 | 5.00 | 3.8736 | .77467 | .600 |
| POLITICAL & SOCIAL SUPPORT IN DRAFTING PHASE | 87 | 4.00 | 1.00 | 5.00 | 3.5517 | .94940 | .901 |
| GOOD GOVERNANCE | 87 | 3.00 | 2.00 | 5.00 | 3.8966 | .68258 | .466 |
| VALID N (LISTWISE) | 87 | | | | | | |

From these mean values ranks are given to the critical success factors. Following table shows the ranks of critical success factors in descending order of mean value.

| | RANKS IN DESCENDING | MEAN VALUE |
|---|---------------------|------------|
| FACTORS | ORDER | |
| PROJECT DURATION | R1 | 4.5862 |
| SCHEDULING AND CONTROLLING | R2 | 4.5402 |
| COORDINATION IN SYSTEM WITHIN CONSORTIUM | R3 | 4.1264 |
| CONCESSIONAIRE CHANGES | R4 | 4.1034 |
| PREQUALIFICATION OF CONTRACTOR | R5 | 4.0805 |
| OPERATIONAL COST OVERRUN | R6 | 4.0460 |
| FORMATION OF CLAUSES | R7 | 3.9425 |
| CONSTRUCTION TECHNOLOGY AND METHOD | R8 | 3.9424 |
| LEGAL FRAMEWORK | R9 | 3.9310 |
| PARTNERSHIP FORMATION | R10 | 3.8966 |
| DELAY IN APPROVALS PERMITS | R11 | 3.8966 |
| GOOD GOVERNANCE | R12 | 3.8966 |
| SAFETY CONSIDERATION | R13 | 3.8851 |
| FORCE MAJEURE | R14 | 3.8736 |
| PRICE CHANGES AND TARIFF CHANGES | R15 | 3.8621 |
| PUBLIC GUARANTEE FOR LOAN | R16 | 3.8506 |
| PRE-PROJECT ASSESSMENT | R17 | 3.8276 |
| INVESTMENT SCHEDULE AND GUARANTEE | R18 | 3.8161 |
| REVENUE SYSTEM | K10 | |
| AVAILABILITY OF FINANCE AND ITS PROVISION | R19 | 3.8046 |
| GUARANTEE | R20 | 3.7816 |
| GEOTECHNICAL CONDITIONS | R21 | 3.7701 |
| INFLATION | R22 | 3.7471 |
| PUBLIC CREDIT | R23 | 3.7356 |
| DESIGN DEFICIENCY | R24 | 3.7126 |
| RESOURCE AVAILABILITY | R25 | 3.6092 |
| PROCEDURES FOR TRANSFERRING PROJECT TO | R26 | 3.5977 |
| CLIENT | 1120 | |
| POLITICAL AND SOCIAL SUPPORT IN DRAFTING | R27 | 3.5517 |
| PHASE | 1 | |

Table Ii Ranking Of Critical Success Factors



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| PLANNING AND DESIGNS WITH APPROVALS | R28 | 3.4713 |
|-------------------------------------|-----|--------|
| POOR QUALITY OF WORKMANSHIP | R29 | 3.4253 |
| APPLICABILITY | R30 | 3.3908 |
| DISPUTE RESOLUTION SYSTEM | R31 | 3.3793 |
| TRANSPARENT PROCUREMENT PROCESS | R32 | 3.3448 |
| AUDIENCE ACCEPTANCE | R33 | 3.3103 |
| ASSISTANCE IN PPP | R34 | 3.2874 |
| ESCALATION | R35 | 3.2874 |
| RISK RESOLUTION | R36 | 3.0690 |
| LATEST TECHNOLOGY | R37 | 3.0460 |
| GOVERNING BODY | R38 | 3.0115 |
| DIFFERENCES IN WORKING | R39 | 3.0000 |
| POOR DECISION MAKING | R40 | 2.9655 |
| POLITICAL ENVIRONMENT | R41 | 2.9540 |
| GOVERNMENT ACTS (EX RERA) | R42 | 2.6322 |
| UNSTABLE GOVERNMENT | R43 | 2.1839 |

V. RESULT AND DISCUSSION

The results of this paper shows that 6 factors out of 43 are found out to be extremely critical then 33 factors are very critical and 4 are average critical. The extremely critical factors require higher degree of attention and control to manage the funds and resources in most efficient manner as compared to very critical and average critical.

| 6 |
|--------------------|
| IMPACT |
| NOT CRITICAL |
| FAIRLY CRITICAL |
| AVERAGE CRITICAL |
| VERY CRITICAL |
| EXTREMELY CRITICAL |
| |

| Table Iv Rating Of Critical Success Factor And Their Numbers |
|--|
|--|

| CSF | TOTAL NUMBER | | | | |
|--------------------|--------------|--|--|--|--|
| NOT CRITICAL | 0 | | | | |
| FAIRLY CRITICAL | 0 | | | | |
| AVERAGE CRITICAL | 4 | | | | |
| VERY CRITICAL | 33 | | | | |
| EXTREMELY CRITICAL | 6 | | | | |

VI.CONCLUSION

The findings of the study shows that the critical success factors help the project manager and top authorities to identify the critical areas that affect the performance of the project. Also CSF are very important to identify and analyse the potential risks that may occur in any project. Also the manager can apply degree of control to CSF according to their criticality.

VII. ACKNOWLEDGMENT

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