

**CRITICAL SUCCESS FACTORS AND
FAIR PERFORMANCE IN
PUBLIC CONSTRUCTION PROJECTS**

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PUBLIC CONSTRUCTION PROJECTS**

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CERTIFICATE

This is to certify that the thesis entitled, “**Critical Success Factors and Fair Performance in Public Construction Projects**”, being submitted by **S. Z. S. Tabish** to the Indian Institute of Technology Delhi for the award of the degree of **DOCTOR OF PHILOSOPHY** is a bonafide record of the research work carried out by him under my supervision and guidance. The thesis work, in my opinion, has reached the requisite standard, fulfilling the requirements of the said degree. The contents of this thesis, in full or in parts, have not been submitted to any other University or Institute for the award of any degree or diploma.

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ABSTRACT

Achieving success in public construction projects is difficult because it requires economy, efficiency, quality, fairness and transparency. Such projects are taken up on the requisition of owners/clients and almost always involve multiple entities and are also accountable to external financial audit and vigilance agencies. Identification of the success factors is considered the key to achieving success in these projects. Through an extensive literature review, 36 success attributes were identified and a questionnaire-based survey was undertaken to elicit views of professionals on these success attributes. The responses from 105 professionals with an average of 22 years of experience in public construction projects in India were collected and analysed. The study has revealed the significant success attributes and ranked them on the basis of different project performance criteria.

In order to understand the success attributes in better way and to reduce the number of attributes, the attributes were subjected to factor analysis separately. After factor analysis, multivariate regression analysis has been used to explore the relative importance of the factors extracted from factor analysis on various criteria of the success of public construction project. The factor analysis yielded four success factors for overall success: awareness of and compliance with rules and regulations; pre-project planning and clarity in scope; effective partnering among project participants; and external monitoring and control. Similarly, success factor for schedule performance is competent participant team, owner competency and thorough pre-qualification, availability of resources and incentive clause; for cost performance scope clarity among project participants; for quality performance: scope clarity, trust and monitoring, full cooperation and manpower, awareness of and compliance with anti-corruption rules and regulations, competent project manager, owner competency, experienced project manager; and for no-dispute performance: effective monitoring and understanding,

top management support, contractor's design consultant. These success factors were also used in multivariate linear regression in order to explore their relative significance for overall performance, compliance with anti-corruption and financial norms, compliance with safety norms, compliance with schedule, compliance with cost, compliance with quality and no-dispute performance. The most important factor for overall performance is found to be 'awareness and compliance of rules and regulations'. 'Pre-project planning and clarity in scope' is the most important factor when objective is compliance with anti-corruption norms. The factor 'awareness and compliance of rules and regulations' is the most important when objective is compliance with financial/audit norms. The most important factor contributing to safety in public projects was found to be the 'pre-project planning and clarity in scope'. The factor 'owner competence and thorough PQ' is the most important when objective is schedule performance. The factor 'scope clarity among project participants' is the most important when objective is cost performance. The factor 'owner competency' is the most important when objective is quality performance, and factor 'top management support' is the most important when objective is no-dispute performance. The results would be helpful to public construction project professionals in taking proactive measures for successful completion of public projects.

Then a framework for corruption-free performance for public procurement based on irregularities has been developed, and impact of various strategies being used for corruption-free performance has been assessed and recommendations are made for policy makers.

Fighting corruption in and improving the effectiveness, efficiency, fairness and transparency of public procurement systems is a major concern for various public departments. Irregularities observed during technical vigilance inspection by experts and in reported cases have been studied to develop a comprehensive list of irregularities in public procurement. A questionnaire-based survey was conducted to gather views from experts engaged in technical

vigilance inspection. Delphi method of analysis was used to obtain the most reliable consensus among the relatively small group of experts. An empirical investigation of the dynamics of irregular practices in public procurements has been carried out. The findings of the survey reveal the top 15 frequently occurring irregularities. The irregularities have been classified under five categories, namely (1) Transparency, (2) Professional standards, (3) Fairness, (4) Contract monitoring and regulation and (5) Procedure related irregularities. The ranking of these categories reveals that transparency is the key factor requiring prime attention. The other categories are found to be of nearly equal importance. A framework for corruption-free performance has been developed, and actions have been proposed under five categories to bridle corruption in public procurement. The framework and the irregularities can be related systematically to various aspects of combating corruption, and hence should fulfil the urgent need of policy makers, professional staff, regulators and consumers.

After developing a framework for corruption-free performance, a number of independent constructs with the potential to develop anti-corruption strategies have been identified. A research model was developed on the basis of the hypothesis that anti-corruption strategies lead to corruption-free performance in public construction projects. A questionnaire survey was administered and 105 responses were collected. 'Anti-corruption strategies' was defined as a second-ordered construct composed of four latent constructs: leadership, rules and regulations, training and fear of punishment. The study utilises the structural equation modelling (SEM) technique to test the hypothesised positive inter-relations between anti-corruption strategies and corruption-free performance. The results corroborate the importance of the role of leadership, rules and regulations, training, as well as fear of punishment in achieving good corruption-free performance. The results will aid policy makers and construction institutions in understanding the role of various anti-corruption strategies in public construction projects more deeply.

Keywords: Public projects, critical success factors, questionnaire survey, factor analysis, multiple regression, irregularities, structural equation modelling.

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