Risk identification based on Historic Data Analysis and Questionnaire Related to Highway construction Projects

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***Abstract*: The present work aims at developing an conclusive idea for risk identification framework from the perspectives of project life cycle, and based on the questionnaire received from experts. The reviewers of current literature, has been selected to identify common risks in PPP infrastructure projects and classification methods. The risks identified from the literature were classified using project life cycle perspectives for Risk assessment. An assessment framework for risks associated with PPP project using fuzzy analytical hierarchy process (FAHP).**

This paper provides a framework for assessment of risks in PPP projects followed by an illustrative example where the data will be obtained from survey questionnaires. To find that in this work that risks associated in PPP infrastructure projects are unique and therefore it is beneficial to classify them from project life cycle perspectives.

***Keywords*: Risk Identification, Data Collection, Questionnaire, Cost and Time management, Forecasting, Highway construction.**

I. Introduction:

It was considered that the reasons documented were true and factual representations of the historic project data. Since that data was contained within documents which represented public statements of the organization's planning, construction and maintenance activities of the state government, then it was considered that the individual reasons for projects overrunning in costs contained within these documents were true and factual as each document was authorized for publication by both the state government Minister and the Director General of the state highway organization(Ramanathan *et al*., 2002).These reasons were transferred from the public documents and recorded in an Excel spreadsheet by the researcher for further analysis. Where common cost overrun factors occurred across projects, single cost factors were recorded to cover incidences. All unique reasons were recorded individually(Warszawski *et al*., 2004). This step in the research process drew on the experience in highway construction and the professional judgment of the researcher to extract a consistent group of reasons for the project overruns(Tran and Molenaar, 2014).

II. Determination of cost overrun factors from historic project data

This step in the research required the determination of project cost overrun factors from historic data. The focus of this analysis was based on the client's exposure to project cost overrun, not that of contractors delivering the projects(Ebrat and Ghodsi, 2014). A client focus required a number of considerations identified in the literature to be taken into account when reporting the cost overrun factors. These included: the use of design-bid-build contracts that could lead to higher client exposure to design risks, pre-qualification of contractors that has the potential to limit client risk exposure to contract default, contract payment types that focused on schedule of rates and bill of quantities, contract clauses that were designed to reduce the clients' exposure to certain construction risks, tender evaluation techniques, contract provisions that limit the clients' exposure to adverse physical and latent conditions and wet weather events. For the purpose of the research, cost overrun variable 'EU Extras unspecified' occurred across six projects. These projects also had other identified variables also attributed to cost overrun in those specific projects. Review of the project data revealed that those six occurrences of 'EU Extras unspecified' were all attributed to one type of construction project, namely the upgrading from four lanes to eight lanes of highway. These projects made up the various stages of the Pacific Motorway project that linked Brisbane to the Gold Coast in the south-east corner of Queensland. An interview with a senior motorway project staff member advised that more detailed cost overrun details for the specific projects were not available as research materials as this information now formed parts of various contract finalization arrangements under specific deeds of agreements between the client and the specific motorway constructors (Creedy, 2004). Therefore, those six motorway projects were excluded from further data analysis of cost overrun reasons. Use factor analysis (principal component analysis) and factor rotation on cost overrun factors to consolidate data(Rezakhani, 2012).

III. Assessment of Risk factors from historic project data using Survey (Based on questionnaire)

The internal processes and external factors which can influence the N.H.A.I. processes has been classified into two categories (Wilmot, Asce and Mei, 2005)

(1) Internal Risk factors identified-36,

(2) External Risk factors identified-07.

The previously reported works have not considered an important issue related to litigations which depends on 8 type cause. There are 5114 court & arbitration Cases. Questions were closed ended for quick responses and pre-coded to allow for

statistical analysis. The last question was open ended and asked. The respondent to provide his or her suggestions for solutions. On a five –category Likert scale varying from 1(Strongly Agree) to 5(Strongly Disagree), Respondents rated each factor based on their experience. The survey took ten to fifteen minutes on average to complete. In addition to the use of a Likert scale, because respondents were anonymous during the survey. The coding process was used to record each respondent's characteristics.
Survey performed in their office for whom involved with highway and bridge project management. The investigator had informative telephone meetings with top managers of the ministry departments to request participation of their unit in the survey. Lastly, contractors and consultants who were active, Field engineers, superintendents, field supervisors and project managers were targeted for the survey.

Therefore, this study tries to identify what the risks are and assess those the private sector faces in holding a PPP/BOT project. The models in this study are developed from the perspective of the EPC/BOT concession Company,

IV. Conclusion:
Therefore, this study adopted the utility approach and the multi-attribute utility model [18], with some modifications to the risk identification and assessment for BOT projects. The purpose of this study was to identify which uncertainty factors are risk factors, and which are non-risk factors, and then to distinguish the primary risk factors from the secondary through the Govt.(Client).

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