

CHAPTER 3: METHODOLOGY

In attempting to respond to the above research objectives and aims, this research project employed an inductive qualitative research methodology through a combination of critical literature review and a process of case study survey.

A case study is a research methodology common in research field. It is based on an in depth investigation of a single, inductive group or event. Rather than using samples and following a rigid protocol to examine a limited number of variables, case study methods involve an in-depth, longitudinal (over a long period of time) examination of a single instance or event.

The term “case study” has multiple meanings. It can be used to describe a unit of analysis or to describe a research method. A case study is generally accepted as a qualitative research method (Alavi and Carlson 1992): (Orlikowski and Baroudi 1991) and according to (Saunders, Lewis and Thornhill 2000) it is an approach particularly suited to generate answers to the questions “why”, “how” and “what”.

An inductive approach starts with a question or “problem statement” (Glesne and Peshkin 1992) followed by conclusions that are generated from the existing data. Research using this approach is particularly concerned with context in which such events take place: therefore, the study of a small sample of subjects may be more appropriate than a large number (Easterby-Smith 2002).

Thus, it is hoped that the selection of a meaningful and representative sample of case studies may provide a good basis for a good critical analysis that may result in generalisable understandings (Bhandari, Nunes and Annansingh 2005). Furthermore, as stated by (Saunders, Lewis and Thornhill 2000) inductive research allows a more flexible approach, as changes, instance and sample, can be made as the research progresses. Based on these arguments, the methodological framework in Figure 01 was adapted from (Bhandari, Nunes and Annansingh 2005). This framework encompasses the following four inductive steps and is based on the framework proposed by (Yin 1984).

- 1) Performing a literature review on risk factors and risk causes was carried in order to provide a theoretical background to the study and establishing an initial proposition of main categories of risk in bridge projects for further exploratory and critical analysis.
- 2) Establishing an appropriate set of case studies was selected on the basis of its validity, descriptive value and reliability
- 3) Performing an analysis of individual case studies to provide a response to the research question and to establish the risk identification.
- 4) Producing a synthesis of the different case studies to provide a response to the research question and to establish the risk identification ontology.

3.1 Case Selection

When selecting the cases for study, information – oriented bridge projects were used, as opposed to random sampling. This is because an average case is often not the richest in information. Extreme or typical cases reveal more information because they activate more basic mechanism and more actors in the situation studied. In addition, from both an understanding – oriented and an action – oriented perspective, it is often more important to clarify the deeper causes behind a given problem and how frequently they occur. Random samples emphasizing representativeness will seldom be able to produce this kind of insight: it is more appropriate to select a few cases, chosen for their validity, but this is not always the case.

The approach adopted in this research is the study of the documentary records and information of completed bridge projects available in RDA, and identify the high risk projects. The strategy is to study and analyse cases of financially unsuccessful bridge projects of initial contract amount below 25 million rupees. The additional quality criteria for the selection of case studies include the following characteristics.

- Clear and descriptive
- Focus on failure description
- Findings are unbiased

3.2 Evaluation of the Selected Methodology

The study is based on some previous understanding of the nature of the research problem. That most road and bridge projects encountering the cost overruns due to risk or non risk factors.

Here the main aim is to identify the major risk factors which cause cost overrun and allocate the contingency amount to suit the potential risk factors, if the prevailing percentage figure is inadequate.

In these kinds of descriptive research, accuracy is very important. If the study does not present a precise measurement of the cost overrun, it will mislead the managers who are making the contingency budgeting and other decisions based on this study.

Therefore the method adopted is the directly take out the data from the available records rather than for Questionnaire survey, Interview or any other research methods.

3.3 Methodology

Most recently completed and records available bridge projects in RDA (Table 3) were studied, which have an initial contract amount below 25 million rupees and follows the procedure given in the flow chart (Figure 1). The data gathered for the purpose is given in the Appendices A

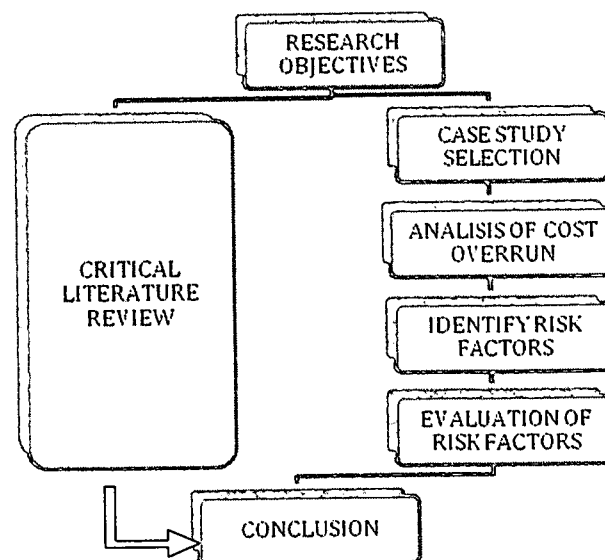


Figure 1 : Flow chart

Table 3 : Records of small bridge projects of GOSL funding

No:	Contract No	Project Name	Contract Amount (Mn)	Completed		Cost Overrun
				No	Yes	
1	RDA/MMC/BD/02	Widening of bridge No:2/2 on Hendala Hunupitiya Road	91.49		√	√
2	RDA/MMC/BD/05	Reconstruction of bridge No:5/1 on Hendala Uswetakeiyawa Road	42.09	√		
3	RDA/MMC/BD/06	Reconstruction of bridge No:25/6 on Wanduramba Ethumale Yakkatuwa Road	18.08		√	-
4	RDA/MMC/BD/07	Construction of bridge No:25/3 on Galle Udugama Road	15.84		√	-
5	RDA/MMC/BD/08	Reconstruction of bridge No:31/4 on Galle Deniyaya Madampe Road	20.63		√	√
6	RDA/MMC/BD/10	Construction of suspension bridge across Ma-Oya at Waddeniya	22.61		√	-
7	RDA/MMC/BD/17	Reconstruction of bridge No:2/1 on Narahenpita Nawala Nugegoda Road	66.75		√	
8	RDA/MMC/BD/21	Widening and Redecking of bridge No:5/3 on Jaela Ekala Gampaha Road	21.34	√		
9	RDA/MMC/BD/22	Widening of bridge No:7/1 on Hendala Uswetakeiyawa Road	Not commenced	√		
10	RDA/MMC/BD/30	Widening and Redecking of bridge No:12/1 on Alawwa Dampaiaassa Road	23.99		√	√
11	RDA/MMC/BD/31	Reconstruction of bridge No:13/5 on Kiriella Nadurana Eheliyagoda Road	Mutual termination			
12	RDA/MMC/BD/33	Construction of bridge No:27/1 on Passara - Hingurukaduwa - Pelawatta Road	51.21	√		
13	RDA/MMC/BD/36	Reconstruction of bridge No:79/2 on Peliyagoda Puttalama Road	8.46		√	
14	RDA/MMC/BD/50	Reconstruction of bridge No:31/3 on Wattegama Kandenuwara Wariyapola Road	43.95	√		
15	RDA/MMC/BD/52	Construction of bridge No:11/1 on Passara - Hingurukaduwa - Pelawatta Road	48.55	√		
16	RDA/MMC/BD/55	Reconstruction of bridge No:6/1 on Kurunegala Narammala Madampe Road	36.11		√	
17	RDA/MMC/BD/63	Construction of bridge over Mahaweli ganga at Balantota on Balantota - Dekinda Road	18.6		√	√

Since there is a time value for the money, particular time period also selected for the research. The attempt was to utilize the most recently completed small bridge projects. As per the general practice, 2 years is more fairly enough to complete a bridge project. Therefore 2006-2008 period was selected as most recently completed bridge projects.

Among the listed bridge projects of Table 03, only 7 projects are coming under the specified cost range. From those, still one project is not completed. Hence only 6 projects have been considered for the research.

Among those selected bridge projects, 3 projects have accompanying cost overrun. This gives the understanding of prevalence of 50% cost overrun in small scale bridge projects. Those adverse bridge projects were analysed in depth to identify critical causes and then, those causes were evaluated.



University of Moratuwa, Sri Lanka.
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