

Methodology

3.1 Introduction

The methodology adopted for the execution of research is shown in Figure 3.1. Each process was clearly studied in detail a systematic approach was used to perform the assessment of ICT in road infrastructure development.

In the literature survey the project reports of various projects conducted by the Ministry of Highways were studied. In addition to above, the study of articles published in text books and journal papers were suggested. The ICT status in relation to tasks and their sub components of road sector was obtained through web sites. Data were collected through questionnaires. Individuals from reputed road sector organizations .

A questionnaire was designed to collect data in relation to the ICT usage in road sector organizations. The data can be analyzed through statistical methods and the results were obtained in graphical and tabular formats.

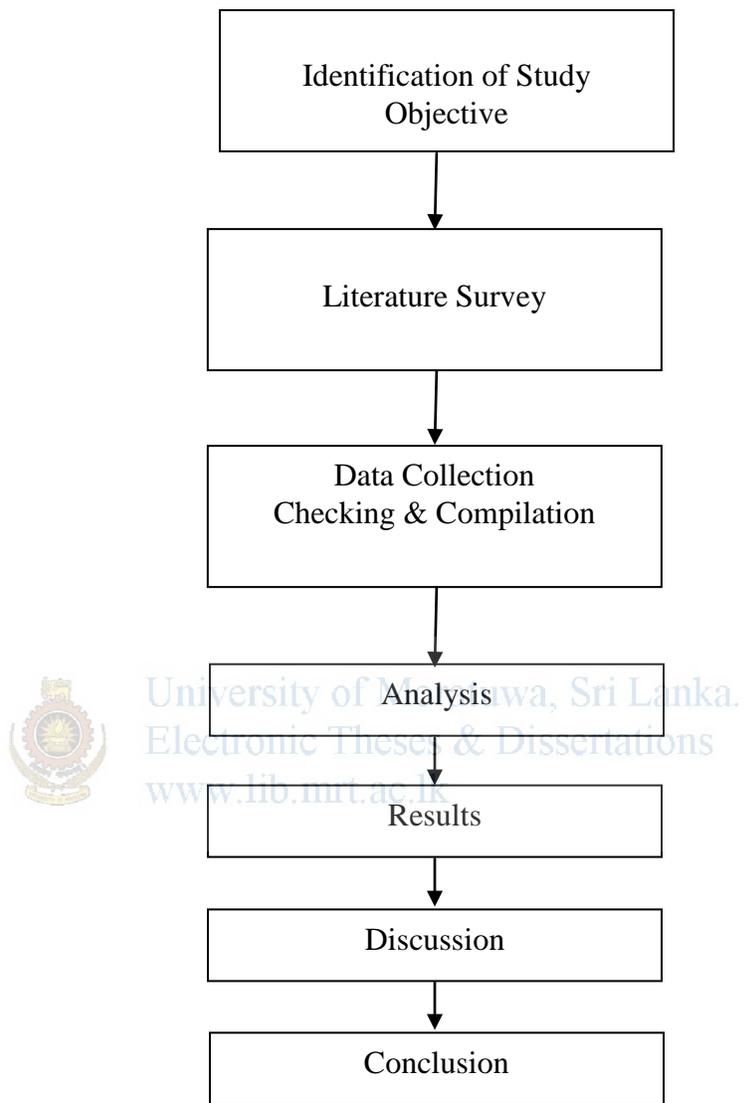


Figure 3.1-Overall Process Flow Chart of Research and Report

3.2 Methodology

3.2.1 Field Data Collection

The usage survey was commenced with the available literature and reports on ICT, ICT use in general and ICT use in road sector. Initial report collections on various aspects of ICT use revealed that most of the reports are on environmental studies, feasibility reports etc. The list of documents collected from agencies is shown in Appendix A

Questionnaire survey development was conducted with a literature survey of available methods to arrive at a suitable format for interview based questionnaire. A trial questionnaire was developed for the assessment through data collection from individuals. As the questionnaire needs to identify ranges for qualitative ranking, the preliminary survey questionnaire identified the percentages of use.

3.3 Questionnaire Survey

It is decided to prepare fixed alternative type questionnaires to cover major components and tasks of road infrastructure development so that respondents have to tick the appropriate box out of several alternatives. Attention has to be given for easy understanding of the users. It is proposed to the feedback from individual level and from organization level [35].

3.3.1 Preliminary Field Survey Questionnaire for Individuals –stage 1

Preliminary Field Survey questionnaire is prepared to get the ICT usage in percentage wise for the sub components of the four major components of road infrastructure development as described in the literature survey. These sub components and tasks in road infrastructure development are given in Table 3.1

Table 3.1- Components and tasks of Road Sector Infrastructure Development

Feasibility studies	Detailed Design	Construction	Maintenance
Data Collection	Pavement Design	Road pavement	Survey and investigation
Data Checking and Analysis	Drainage Design	Bridges & culverts	Rehabilitation
Selection of Project alternatives	Bridges & culverts Design	Lighting	Estimation
EIA	Lighting safety	Drainage Safety	Preventive maintenance
		Provision of utilities	

Trial filling was done for a sample of five senior engineers from road sector agencies. After getting the feedback from them the questionnaire was redesigned after analyzing the issues when collecting information. The amended questionnaire was distributed to many individuals to collect data in the first stage. This basic data was used to get the maximum, minimum ranges and considering the average value and finding a range for tasks. For example, Very High, High, Moderate, Low, and very Low. The purpose of this was to give an easy understanding of the questions for the respondents to easily provide answers. The sample is shown in Annexure B.

3.3.2 Preliminary Field Survey Questionnaire for Individuals – stage 2

The second stage questionnaire too was of the fixed alternative type to incorporate the same major components and tasks with the qualitative ranking. This questionnaire was distributed to many people in the road sector organizations and others who have knowledge in road development activities. The sample questionnaire used in the survey is shown in Annexure C

3.3.3 Organizational Questionnaire

This questionnaire is developed to identify major components that would reflect the ICT usage in particular organizations. Major components of the ICT usage was identified as

- General:
- Enabling Environment:
- Institutional Role:
- Management Instruments

The detail questions of each section are shown in the sample questionnaire (Appendix D)

3.3.3.1 Enabling Environment

The details of ICT systems available at particular sectors in respective organizations were categorized in this section. Development of ICT policies, specially, policies for road sector were studied further. In addition the availability of Internet, E-Mail facilities and the usage of these for day to day management were discussed. Further, the expenditure for ICT promotion in organizations has been described.

3.3.3.2 Institution Role

ICT tasks assigned and executed by the organization, ICT promotion expenses and staff attached to ICT divisions were considered as the Institutional role of a particular organization.

3.3.3.3 Management Instruments

The details of available human resources and the equipment at respective organizations were analyzed. The strength of ICT related equipment in the organization have been presented and discussed. In addition to above, the status of soft ware used for road sector development was found. Training in relation to new ICT developments as well as ICT in road development have been discussed in detail.

It was decided to prepare a detailed questionnaire to cover above aspects in order to get the status of ICT in road sector organizations. Questionnaire will be designed considering major tasks of road sector, staff attached to the organizations, policy of ICT, and the equipment, software available, and financial aspects of the institutions. Attention is given for easy understanding, easy filling of the questions. Sample questionnaire used in the Organizational Survey is shown in Appendix D

3.4 Summary



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The available literature are based on the tasks of road sector components. These reports are produced by the foreign funded projects in relation to road construction in Sri Lanka. Questionnaires were developed on the information available in the Literature Survey. The questionnaire was prepared as “interview based questions”. For easy understanding, fixed alternative type was selected. A similar questionnaire was developed to collect data in relation to ICT usage in road sector organizations.



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