Chapter 1 - Introduction

1.1 Research background

The increasingly critical nature of software projects places a greater demand on project management. It has also been observed that the inability to deal with the increasing complexity of a software project increases the likelihood of the project failing [1]. Based on various studies reported in literature [1], there are many reasons commonly cited for failure of software projects. Among these, the following stand out.

- Rapid changes in user requirements

- Lack of user involvement

- Unrealistic expectations by developers

- Poor planning

- Ambiguous communication of requirements

1.2 Motivation

As software projects evolved in terms of complexity, and as pitfalls were identified, so grew the methodologies for managing them. Methodologies like the Waterfall approach, and the Spiral method were introduced in order to deal with the problems that were identified, but these did not deal well with issues like the rapid delivery to market and the frequent changes required during the development and maintenance cycle.

With the recent advent of Agile project management methodologies such as Scrum, proponents argue that these problems can be overcome [2], but the author was interested in studying whether, particularly in the Sri Lankan context, a quantifiable improvement has been made with the transition into Agile methodologies such as Scrum.

Further, the author was interested in studying the factors which influence the effectiveness of Scrum based project management, and whether it is possible to make a reasonable judgment at the onset of the project, as to whether Scrum is indeed a good choice for that project.

1.3   Research scope

This thesis is directed to the software companies in Sri Lanka that want to adopt Scrum, Project Managers in software projects who want to implement Scrum, and developers who are interested in the positive and negative aspects of Scrum. The report is also a starting point for research of Scrum in Sri Lankan context as an Agile development process.

1.4   Problem statement

Section 1.2 proposes the questions that the author raises, namely to identify whether Scrum is an effective methodology for project management in Sri Lanka, and investigate the factors which could affect the effectiveness of these projects.

The problem statement is therefore framed thus: "*What factors would have an impact on the effectiveness of Scrum in project management in the Sri Lankan context?*"

1.5   Research objectives

The main objective is to find out the factors which help in selecting Scrum as a methodology for a given project.

Following are the objectives to be achieved at the completion this study.

> a) Measure the level of adherence of Scrum in project management
> b) Identify the factors that have an impact on the effectiveness of projects which use Scrum
> c) Propose a framework for the selection of Scrum for project management

1.6   Research significance

Scrum has been proposed as a methodology that increases the effectiveness of software development, but there have not been any reports of whether this claim is applicable for the Sri Lankan context.

Further, given that adopting Scrum does pose some challenges, it would be useful if there was a way to identify whether a given project should utilize Scrum or not. To this extent this provides a list of factors that will be helpful in the analysis of applying Scrum for a given project.

1.7 Thesis structure

This thesis is structured in the following manner: this first chapter provides some background to the research carried out and reported here. It outlines the research problems that were identified, the scope of this research and states the research objectives.

The second chapter provides a detailed review of the literature available. In particular, it discusses the evolution of Agile methodologies and then focuses on Scrum, examining some of its key elements. It also discusses some approaches to measuring the effectiveness of Agile methodologies and provides the motivation for the research design.

The third chapter discusses how the findings of the literature review were used to formulate testable hypotheses, and how a platform was built for the research analysis.

The fourth chapter discusses the analysis of the data, including the preparation work carried out to assign weights for questions, internal consistency analysis, and basic descriptive statistics performed on this processed information. The main analysis carried out to test the hypotheses formulated previously is then presented. The results of the analysis on the project effectiveness measurements are also discussed here.

Finally, chapter five discusses the impact of this research study. A qualitative analysis is also performed, discussing some interesting trends seen in Scrum adoption in Sri Lanka. Finally some directions are proposed for future work.