

LP/DON/101/2016

CS03/171.

ANALYSIS OF ADOPTION OF AGILE PROJECT MANAGEMENT IN FINANCIAL ORGANIZATIONS THAT USE IN-HOUSE SOFTWARE DEVELOPMENT

LIBRARY
UNIVERSITY OF MORATUWA, SRI LANKA
MORATUWA

G.H.A.T. Hettiarachchi

(08/9059)

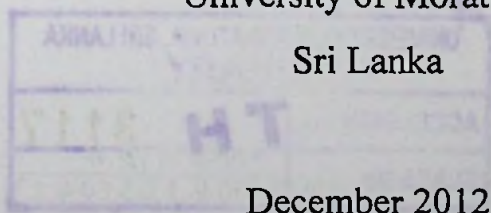
Degree of Master of Business Administration in Information Technology



Department of Computer Science & Engineering

University of Moratuwa

Sri Lanka



004-12
004-65(013)

TH3117

TH 3117

**ANALYSIS OF ADOPTION OF AGILE PROJECT
MANAGEMENT IN FINANCIAL ORGANIZATIONS
THAT USE IN-HOUSE SOFTWARE DEVELOPMENT**

G.H.A.T. Hettiarachchi

(08/9059)

The dissertation submitted in partial fulfillment of the requirements for the degree
Master of Business Administration in Information Technology

Department of Computer Science & Engineering

University of Moratuwa

Sri Lanka

December 2012

Declaration

I declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

Also, I hereby grant to University of Moratuwa the non-exclusive right to reproduce and distribute my dissertation, in whole or in part in print, electronic or other medium. I retain the right to use this content in whole or part in future works (such as articles or books).

future:

The above candidate has carried out research for the MBA in IT Dissertation under

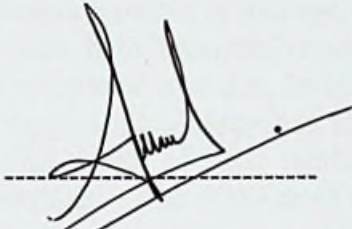
UOM Verified Signature

Signature of the supervisor:

| 2013

Copyright Statement

I hereby grant the University of Moratuwa the right to archive and to make available my thesis or dissertation in whole or part in the University Libraries in all forms of media, subject to the provisions of the current copyright act of Sri Lanka. I retain all proprietary rights, such as patent rights. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

A handwritten signature in black ink, appearing to be 'G.H.A.T. Hettiarachchi', is written over a horizontal dashed line. The signature is stylized and somewhat cursive.

G.H.A.T. Hettiarachchi

21/12/2012

Abstract

The custom developments of software to satisfy on-going and emerging organizational needs are typically recognized as a vital factor for the success and sustainability of modern enterprises. The dynamic changes that modern businesses face create an immense pressure on them to find solutions. They have to rely on modern technological and custom-built software based solutions that are developed rapidly and delivered to exacting customer requirements.

The traditional development methodologies used by software companies are no longer suitable to manage these volatile requirements of client organizations. This is since both business requirements and business environments undergo rapid and unexpected changes. In this context, the software development approach termed as Agile Methodology has introduced many advantages to modern software builders. The ability of agile methods to accommodate changes in volatile and ambiguous settings is one of the most appreciated factors.

In the widely used approach of in-house software development, it is common to find both the client and the development team in an on-site setting. This could occur because of necessity, as in-house software development demands to encourage better communication between the development team and the customer.

This research is a comparative study of in-house software development, specifically in the financial sector where developers may use both agile and traditional development methodologies. The study focused on two determined factors that motivate adoption of either agile methods or traditional methods and measured their significance.

This research, which is based on an empirical approach, used as its survey population software professionals working in licensed commercial banks, licensed specialized banks and financial organizations registered with the Central Bank of Sri Lanka.

This research comparatively studied the project management success with requirement engineering, customer commitment, team capabilities and management initiatives in agile and traditional project management environments. It found that projects in agile project management environments, in terms of explained variables are more successful compared to traditional project management environments. To apply agile methodologies, requirement engineering, customer commitment and management initiatives are important. On the other hand, these factors should be in satisfactory level to deliver projects successfully with a higher customer satisfaction. Recommendations based on the research findings of this study could help organizations to adopt agile project management successfully.

Acknowledgement

I wish to express my deep gratitude to all those who have helped me in successfully completing my research study on “Analysis of Adoption of Agile Project Management in Financial Organizations that use In-House Software Development”

First and foremost, my sincere thanks goes to my research supervisor, Dr. Chandana Gamage MBA in IT Course Coordinator and the Head of the Department of Computer Science and Engineering, University of Moratuwa, for his continuous support, encouragement and attention that was extended to me in realizing the research objectives. It was a great pleasure to work with Dr. Chandana Gamage and he was not only a supervisor but also a visionary leader for me.

Further, I wish to convey my special gratitude to the software professionals who helped me in many different ways. The courtesy and cooperation given by the software professionals working in the financial organizations in Sri Lanka in answering the questionnaire is very much appreciated.

Furthermore, my earnest thanks to the former Head of the Department, Mrs. Vishaka Nanayakkara, academic and non-academic staff of the Department of Computer Science, Moratuwa for the guidance and the resources provided to me during my studies.

A very special note of thanks to Mr. Ashan de Zoysa (Head of IT – Central Finance) for helping, guiding and facilitating me to complete my research as my superior.

My earnest thanks also to Dinusa for helping and guiding me in various ways. My sincere thanks to my colleagues who are in UK and Australia for helping me to find important research articles without hesitation, whenever the necessity arose.

My heartfelt appreciation should go to my loving wife Thilini and daughter Tara, for all the encouragement, care and unconditional support given to me throughout the good and bad times during the research period. A special thank goes to my brother,

Kasun Hettiarachchi for giving me a hand to make this a success. A very special note of thanks to my father in law, Mr. S.P.U. Peiris for helping me in proof reading to complete my research. Finally, it would be a great honour to thank my mother, the late Mrs. L.F. Hettiarachchi for encouraging and guiding me in various ways during the research period. Unfortunately, I lost her before I complete this research.

Finally, I wish to convey my heartfelt thanks to all those who helped me in many ways whose names not mentioned above, but who were instrumental in bringing this study a success.

Table of Contents

Declaration.....	i
Copyright Statement	ii
Abstract.....	iii
Acknowledgement	iv
Table of Contents.....	vi
List of Figures.....	ix
List of Tables	x
CHAPTER 1 INTRODUCTION.....	1
1.1. Background and Motivation.....	1
1.2. Research Problem Statement.....	4
1.3. Research Objectives	5
1.4. Expected Research Outcomes	6
1.5. Structure of the Thesis	6
CHAPTER 2 LITERATURE REVIEW.....	8
2.1. The Importance of Project Management in an Organization	8
2.2. Challenges in Traditional Project Management.....	11
2.3. Agile Project Management Methodologies.....	19
2.4. A Comparable Study of Agile and Traditional Project Management.....	22
2.5. Significance of the Agile Methods for Developments in Financial Sector..	26
2.6. Summary	28
CHAPTER 3 RESEARCH METHODOLOGY.....	32
3.1. Theoretical Framework	32

3.2.	Hypothesis Development	35
3.3.	The Role of Selected Variables in Project Management	39
3.4.	Questionnaire Development and Data Collection.....	44
3.4.1.	Design of the questionnaire	44
3.4.2.	Method of data collection	46
CHAPTER 4	ANALYSIS AND INTERPRETATION	49
4.1.	Reliability Test.....	49
4.1.1.	Preliminary survey	49
4.1.2.	Finalized research survey.....	52
4.2.	Descriptive Statistics for Demographic Analysis	53
4.3.	Inter-Item Correlation Analysis for Research Instrument.....	59
4.4.	Pearson Correlation Analysis for Hypothesis Testing	62
4.5.	Unpaired t-Test Analysis for Hypothesis Testing	73
4.6.	Regression Analysis for Hypothesis Testing	77
4.7.	Discussion on Results	81
CHAPTER 5	CONCLUSIONS AND RECOMMENDATIONS	83
5.1.	Research Implications	83
5.2.	Limitation of this Study	84
5.3.	Recommendations for Future Research	85
5.4.	Summary	85
REFERENCES	87
Appendix A	– In-depth interview’s Discussion guide.....	90
Appendix B	- The Profiles of the Interviewed Professionals	91
Appendix C	- Questionnaire Instrument.....	92



List of Figures

Figure 2.1: Project resolution history (1994 - 2000)	10
Figure 2.2: Waterfall method.....	12
Figure 2.3: Agile project management guiding principles	16
Figure 3.1: Theoretical framework -Success factors of agile software development	33
Figure 3.2: Theoretical framework	34
Figure 3.3: Four dimensions of project success.....	43
Figure 3.4: Calculating the sample size	48
Figure 4.1: Variation of the number of responses over time	53
Figure 4.3: Professional qualification of the respondents.....	54
Figure 4.4: Years of experience of the respondents in development projects	55
Figure 4.5: Organizational experience in in-house development	56
Figure 4.6: Designation of the respondents	57
Figure 4.7: Project management methodology used.....	58

List of Tables

Table 2.1: Traditional verses agile software development	24
Table 2.2: Risk exposure profile for agile and plan driven methods	25
Table 2.3: Survey questions and answers in agile and plan driven companies	26
Table 2.4: Key issues in migrating to agile	29
Table 2.5: Significant issues - Barriers to implementing agile process	30
Table 3.1: Summary of hypothesized relationships	39
Table 3.2: Instrument measures of independent variables	45
Table 3.3: Instrument measures of dependent variables	45
Table 4.1: Preliminary study- Reliability test for independent variables	50
Table 4.2: Preliminary study- Reliability test for dependent variable	51
Table 4.3: Reliability test for dependent variables	52
Table 4.4: Reliability test for independent variables	52
Table 4.5: Education level of the respondents	54
Table 4.6: Professional qualification of the respondents	55
Table 4.7: Years of experience of the respondents in development projects	56
Table 4.8: Organizational experience in in-house development	57
Table 4.9: Designation of the respondents	58
Table 4.10: Project management methodology used	59
Table 4.11: Inter – item correlation for requirement engineering	59
Table 4.12: Inter – item correlation for customer commitment towards the project .	60
Table 4.13: Inter – item correlation for development team capability	60
Table 4.14: Inter – item correlation for management initiatives towards the project	61



Table 4.15: Inter – item correlation for successful delivery of project.....	61
Table 4.16: Inter – item correlation for customer satisfaction of project deliverables	61
Table 4.17: Independent and dependent variables with abbreviations	62
Table 4.18a: Pearson correlation - Requirement engineering and successful delivery of projects – considering an entire sample.....	63
Table 4.18b: Pearson correlation - Requirement engineering and successful delivery of projects in TPM.....	63
Table 4.18c: Pearson correlation - Requirement engineering and successful delivery of projects in APM.....	64
Table 4.19a: Pearson correlation - Customer commitment towards the project and successful delivery of projects– considering an entire sample	64
Table 4.19b: Pearson correlations -Customer commitment towards the project and successful delivery of projects in TPM.....	65
Table 4.19c: Pearson correlations - Customer commitment towards the project and successful delivery of projects in APM	65
Table 4.20a: Pearson correlations - Development team capability and successful delivery of projects – considering an entire sample	66
Table 4.20b: Pearson correlations - Development team capability and successful delivery of projects in TPM	66
Table 4.20c: Pearson correlations - Development team capability and successful delivery of projects in APM.....	66
Table 4.21a: Pearson correlations - Requirement engineering and customer satisfaction of project – considering an entire sample	67
Table 4.21b: Pearson correlations - Requirement engineering and customer satisfaction of project deliverables in TPM	67
Table 4.21c: Pearson correlations - Requirement engineering and customer satisfaction of the project deliverable in APM	67
Table 4.22a: Pearson correlations - Customer commitment towards the project and customer satisfaction of project deliverables – considering an entire sample	68

Table 4.22b: Pearson correlations - Customer commitment towards the project and customer satisfaction of project deliverables in TPM	68
Table 4.22c: Pearson correlations - Customer commitment towards the project and customer satisfaction of project deliverables in APM	68
Table 4.23a: Pearson correlations - Development team capability and customer satisfaction of project deliverables – considering an entire sample.....	69
Table 4.23b: Pearson correlations - Development team capability and customer satisfaction of project deliverables in TPM	69
Table 4.23c: Pearson correlations - Development team capability and customer satisfaction of project deliverables in APM.....	70
Table 4.24a: Pearson correlations - Management initiatives towards the project and successful delivery of projects– considering an entire sample	70
Table 4.24b: Pearson correlations - Management initiatives towards the project and successful delivery of projects in TPM.....	70
Table 4.24c: Pearson correlations - Management initiatives towards the project and successful delivery of projects in APM	71
Table 4.25a: Pearson correlations - Management initiatives towards the project and customer satisfaction of project deliverables– considering an entire sample	71
Table 4.25b: Pearson correlations - Management initiatives towards the project and customer satisfaction of project deliverables in TPM	72
Table 4.25c: Pearson correlations - Management initiatives towards the project and customer satisfaction of project deliverables in APM.....	72
Table 4.26a: t-Test - Group statistics of customer commitment towards the project	73
Table 4.26b: t-Test - Independent samples test of customer commitment towards the project	73
Table 4.27a: t-Test - Group statistics of management initiatives towards the project	74
Table 4.27b: t-Test - Independent samples test of management initiatives towards the project	74
Table 4.28a: t-Test -Group statistics of successful delivery of projects	75
Table 4.28b: t-Test - Independent samples test of successful delivery of projects....	75

Table 4.29a: t-Test - Group statistics of customer satisfaction of project deliverables	76
Table 4.29b: t-Test - Independent samples test of customer satisfaction of project deliverables	76
Table 4.30a: Successful delivery of projects in TPM - Regression analysis -Model summery	77
Table 4.30b: Successful delivery of projects in TPM - Regression analysis – ANOVA	77
Table 4.30c: Successful delivery of projects in TPM - Regression analysis – Coefficients	78
Table 4.31a: Successful delivery of projects in APM - Regression analysis - Model summery	78
Table 4.31b: Successful delivery of projects in APM - Regression analysis – ANOVA	78
Table 4.31c: Successful delivery of projects in APM –Regression analysis – Coefficients	79
Table 4.32a: Customer satisfaction of project deliverables in TPM - Regression analysis - Model summery	79
Table 4.32b: Customer satisfaction of project deliverables in TPM - Regression analysis - ANOVA	79
Table 4.32c: Customer satisfaction of project deliverables in TPM - Regression analysis - Coefficients	80
Table 4.33a: Customer satisfaction of project deliverables in APM - Regression analysis - Model summery	80
Table 4.33b: Customer satisfaction of project deliverables in APM - Regression analysis - ANOVA	81
Table 4.33c: Customer satisfaction of project deliverables in APM - Regression analysis - Coefficients	81

