

**THE ROLE OF TEAM LEADERSHIP IN
ACHIEVING LEED CERTIFICATION OF
A GREEN BUILDING PROJECT**

Hewamanage Prasanna Rajitha

(09/9777)



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Degree of Master of Science in Project Management

Department of Building Economics

University of Moratuwa
Sri Lanka

November 2012

**THE ROLE OF TEAM LEADERSHIP IN
ACHIEVING LEED CERTIFICATION OF
A GREEN BUILDING PROJECT**

Hewamanage Prasanna Rajitha

(09/9777)



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Thesis submitted in partial fulfillment of the requirement for the degree of
Master of Science in Project Management

Department of Building Economics

University of Moratuwa
Sri Lanka

November 2012

DECLARATION OF THE CANDIDATE & SUPERVISOR

“I declare that this is my own work and this thesis/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 thesis/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).

Signature:

Date:




The above candidate has carried out research for the Masters Dissertation under my supervision.

Signature of the supervisor:

Date:

ABSTRACT

Teamwork is vital for green building projects in achieving LEED certification. Members of the team and the team leader should be able to work as a team for a synergetic outcome, to manage the project scope, follow the LEED certification procedure and other activities together; communicate with the team and stakeholders, manage conflicts, solve disputes, make decisions, control resources, deal with project and LEED challenges, achieve milestones and deadlines and finally achieve the project objectives and LEED certification. To accomplish these objectives, the project team members should have appropriate leadership roles which should be employed in the team environment for effective performance outcomes. Literature findings confirm the need for managing green building projects differently from ordinary projects. This dissertation present a research aimed at explore the role of team leadership in achieving LEED certification for green building project through case study research approach. The research confirm the team leadership role of team members is very important for achieve LEED certification for green building projects successfully and observed the way of project leader adopted the team member's team leadership role within the team. Also the research identifies leadership traits for meet the LEED challenges and observes increasing level of interdependency among team members with the development of leadership. Based on these findings, the research suggests a new project team environment enabled by effective leadership to meet the LEED challenges. It is argued that the team leadership role of every team member is unique and best suited to achieving LEED certification for the project. The research further offered benefits and application of team leadership role in green building projects, also identifies the transformation of team relationship with the leadership development of team members. The research would be beneficial for professionals in green building projects and persons in the construction industry in general.



Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Keywords: *Team, Leadership, LEED Certification, Green Building, Project.*

ACKNOWLEDGEMENTS

This dissertation would not have been possible without the guidance, contribution, advice, and encouragement of many faculty members, friends, family members, colleagues.

I am grateful to my supervisor, Dr. Sepani Senaratne for excellent guidance, caring, patience, continuous follow up and sharing information to come up with this submission. I am also thankful to Prof. Harsha Munasinghe for valuable guidance on research methodologies and data analysis. I would also like to acknowledge Heeny Levy, OAA, Professor of Architecture, for his eye opening lectures and discussions on leadership development.

I would like to thank Pubudu Liyanagama, my colleague and friend, who was always willing to help and give updates on this exercise.

I am also deeply indebted to my family - parents, mother in law, Sanjeewa - brother in law for their support throughout the research and dissertation submission process. I would also like to thank Kathy Sharp, my OSLT - Project Management instructor for contribution of her valuable time and effort for proof reading and corrections of draft.

Finally, I would like to thank my wife, Upamali Kapugamage. She was always there cheering me up and stood by me through the good times and bad.


Last but not least, I am very thankful to my kids Manula, and Sanuli for their patience and understanding.

TABLE OF CONTENTS

	Page
Declaration of the Candidate & Supervisor	i
Abstract	ii
Acknowledgements	iii
Table of Contents	iv
List of Figures	viii
List of Tables	ix
List of Abbreviations	x
List of Appendices	xi
CHAPTER 1	1
1.0 Introduction to the Research	1
1.1 Background of the research	1
1.2 Aims and objectives	4
1.3 Research method	4
1.4 Scope and limitations	5
1.5 Chapter breakdown	5
CHAPTER 2	6
2.0 Literature Synthesis	6
2.1 Introduction	6
2.2 Concept of green building	7
2.2.1 Sustainable development	7
2.2.2 Sustainable design and construction	9
2.2.3 Green buildings	11
2.2.4 Green building movement and projects	12
2.3 Rating and certification of green buildings	14
2.3.1 Need of an evaluating system	14
2.3.2 Introduction to LEED certification	15
2.3.3 Process of LEED certification	19

2.3.4	Requirements of LEED certification	20
2.4	Concepts of project team and leadership role	21
2.4.1	Team and project team	21
2.4.2	Features of project team leadership role	23
2.4.3	Importance of team leadership role in green building project	28
2.4.4	Team leadership role towards LEED certification	30
2.4.4.1	Goal setting and building the team	34
2.4.4.2	Manage differently	36
2.5	Research problem and summary	37
CHAPTER 3	.....	40
3.0 Method of Study	.....	40
3.1	Introduction	40
3.2	Research Design	40
3.2.1	Research philosophy	41
3.2.2	Research approach	41
3.2.3	Research techniques	42
3.3	Research process	42
3.3.1	Initial impetus	42
3.3.2	Background study	43
3.3.3	Literature synthesis	43
3.3.4	Research problem statement	44
3.3.5	Case study design	44
3.3.5.1	Identification of unit of analysis	44
3.3.5.2	Defining number of cases	45
3.3.5.3	Selecting cases	45
3.3.6	Data collection	47
3.3.6.1	Interview structure	47
3.3.6.2	Interview process	48
3.3.7	Data analysis	49
3.3.7.1	Content analysis	49
3.3.7.2	Cognitive mapping	49

3.3.7.3 Conclusion drawing	50
3.3.8 Write – up	50
3.4 Research validity	50
3.5 Summary	52
CHAPTER 4	53
4.0 Research Findings	53
4.1 Introduction	53
4.2 Case study description	53
4.2.1 Cross case analysis	55
4.2.2 Planning	55
4.2.2.1 Proactive	56
4.2.2.2 Objective of Project	58
4.2.2.3 Objective of team members	58
4.2.2.4 Concerns	58
4.2.2.5 Limitations	59
4.2.3 Visualizing of strategy	60
4.2.3.1 Knowledge	60
4.2.3.2 Experience	62
4.2.3.3 Project scope	62
4.2.3.4 Problem identification	63
4.2.4 Scheduling	63
4.2.4.1 Interdependency	64
4.2.4.2 Communication	64
4.2.4.3 Understanding	66
4.2.4.4 Facilitation	66
4.2.5 Work for win-win	67
4.2.5.1 Responsibility	67
4.2.5.2 Contribution	69
4.2.5.3 Communication	70
4.2.5.4 Interactions	70
4.2.5.5 Win-win	71

4.2.6	Expertise and inspiration	72
4.2.6.1	Knowledge and experience	72
4.2.6.2	Perception	74
4.2.6.3	Influence	74
4.2.6.4	Responsibility	75
4.2.7	Commitment for synergy	75
4.2.7.1	Interactions	76
4.2.7.2	Performance	76
4.2.7.3	Credibility	78
4.2.7.4	Teamwork	78
4.2.8	Renewal of knowledge and experience	79
4.2.8.1	Learning at project	79
4.2.8.2	Previous experience	82
4.2.8.3	Update of information	82
4.2.8.4	Knowledge transfer	83
4.3	Summary	84
 University of Moratuwa, Sri Lanka. Electronic Theses & Dissertations www.lib.mrt.ac.lk		
CHAPTER 5	.....	85
5.0 Conclusions and Recommendations	.....	85
5.1	Introduction	85
5.2	Conclusions	85
5.3	Recommendations	89
5.3.1	Implications to theory	89
5.3.2	Implications to construction industry and green building projects ..	89
5.4	Limitations of the Research	92
5.5	Further Research Directions	92
References	.....	94
Appendices	.....	98

LIST OF FIGURES

	Page
Figure 2.1 Sustainable Development	8
Figure 2.2 Evolution of green buildings.....	13
Figure 2.3 Evolution of LEED rating system.....	18
Figure 2.4 GBCI certification overview.....	19
Figure 2.5 Conventional project team	24
Figure 2.6 Integrated design project team.....	25
Figure 2.7 Seven habits of leadership	26
Figure 2.8 Hill’s model for team leadership	27
Figure 2.9 Framework adopted from Hill’s model	38
Figure 3.1 The “Nested” Research model.....	40
Figure 3.2 Unit of analysis	44
Figure 3.3 Criteria for selecting cases	46
Figure 4.1 Coding structure for planning	56
Figure 4.2 Cognitive map for planning	57
Figure 4.3 Coding structure for visualizing of strategy	60
Figure 4.4 Cognitive map for visualizing of strategy.....	61
Figure 4.5 Coding structure for scheduling.....	63
Figure 4.6 Cognitive map for scheduling	65
Figure 4.7 Coding structure for Work for win-win.....	67
Figure 4.8 Cognitive map for Work for win-win.....	69
Figure 4.9 Coding structure for expertise and inspiration.....	72
Figure 4.10 Cognitive map for expertise and inspiration.....	73
Figure 4.11 Coding structure for commitment for synergy	75
Figure 4.12 Cognitive map for commitment for synergy.....	77
Figure 4.13 Coding structure for renewal of knowledge and experience	79
Figure 4.14 Cognitive map for renewal of knowledge and experience	81
Figure 5.1 Team leadership role model developed based on the empirical findings	86
Figure 5.2 Team leadership at project from combined cognitive maps with level of interdependency of team members	87

LIST OF TABLES

	Page
Table 2.1 Common functions of the team.....	29
Table 3.1 Structure of interview guidelines.....	46
Table 3.2 Measures taken to ensure the validity of the research	50
Table 4.1 Brief description of selected cases.....	53
Table 4.2 Demographical information of interviewees	54



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

LIST OF ABBREVIATIONS

Abbreviation	Description
ASTM	American Society for Testing and Material
BREEAM	Building Research Establishment Environmental Assessment Method
GBCI	Green Building Certification Institute
ICTAD	Institute for Construction Training and Development
IDP	Integrated Design Process
LEED	Leadership in Energy and Environmental Design
LEED AP	LEED Accredited Professional
LEED NC	LEED New Constructions
USGBC	United States Green Building Council



LIST OF APPENDICES

	Page
A. Interview questioner guide.....	97
B. Sample interview questioner.....	104
C. Coding structure.....	117
D. LEED 2009 v3 check list.....	118
E. LEED score card project ‘A’	120
F. LEED score card project ‘B’.....	121



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk