

**Technology Issues in the Sri Lankan Tea Industry  
with an Emphasis on Regional Plantation Companies.**

**A Case Study based on  
Agalawatta Plantations and Maskelliya Plantations.**



A Dissertation submitted  
in partial fulfillment of the requirement of the  
Master of Business Administration  
in Management of Technology Programme of the  
University of Moratuwa  
Sri Lanka

65 "04"  
663.95 : 62 (548?)

University of Moratuwa



82556

By

K L U Senarathne

December 2004

82556

82556

Thesis

## Approval

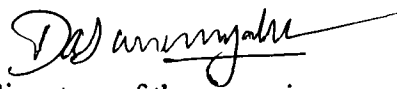
I certify that this Dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any University; and to the best of my knowledge and belief it does not contain any material previously published or written by any other person except where due reference is made in the text.



Candidates signature

Date : 18 / 12 / 2004

Approved for Submission



Signature of the supervisor

Date: 17 / 01 / 2005

Dr. S Dassanayake  
Head of Department  
Department of Management of Technology  
University of Moratuwa  
Moratuwa  
Sri Lanka

## Acknowledgement

---

I extend my sincere gratitude and appreciation to many people who made this masters thesis possible.

I am grateful to the Department Management of Technology, University of Moratuwa for giving me the opportunity to conduct this research as a part of the MBA programme in Technology Management. I am deeply indebted to my supervisor Dr. Sarath Dassanayake from the University of Moratuwa, Sri Lanka, whose help, stimulating suggestions and encouragement helped me in all the time of research and writing of this thesis. I appreciate the guidance of Dr. Krishnamurthy Ramanathan of University of Western Sydney, who spared his time to see me in his short stay and offered me valuable advice.

Special appreciation goes to Mr.Mahendra Wijerathne, Mr.Parakrama Hettiarachchi, Mr. Lal Perera, Mr. Pradeep Cabral, and other colleges of Agalawatta Plantations Limited and Mackwoods Limited, who helped me in numerous ways to make this research a success. I am grateful for the support and encouragement given to me by Mr. L Fonseka and Dr. C. N A Nonis, directors of Mackwoods Limited .

Dr. Ziyad Mohomad, Director TRI, Mr.T.T Chritie of Maskeliya Plantations Limited, Mr. Abynanada Dias, former Director General Tea Board, thank you for sparing your time for me with long interview sessions and providing me with valuable information.

Last but not least my parent and Rukshan Tennakoon for continuous support in making the thesis a success.

Thank You.

K L U Senarathne

6/62, 4<sup>th</sup> Lane,

Nagoda, Kalutara

Sri Lanka

Email : usenarathne@yahoo.com



## Abstract

---

In this research work, an attempt was made to identify the technology integration issues in the tea industry of Sri Lanka with an emphasis on the plantation management companies, who manage several estates dispersed over a large geographical area. The data collection was mainly based on interviews conducted through a wide category of people involved in different areas related to the tea industry, such as tea research, tea administration, ministry of plantations, suppliers to the industry, etc. The data collection was focused on Agalawatta Plantations Limited (APL) and Maskeliya Plantations Limited (MPL), the latter being a lead performer in the industry, in comparison with an average performing company APL. The data collection was further strengthened through informal interviews conducted with other plantation management company personnel involved with the tea industry.

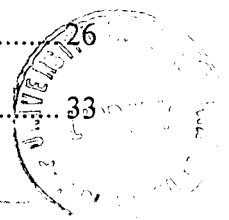
The research scope extended from the field related activities to the production of tea and did not focus on the market development aspects of the tea industry. The process was modeled to a simplified value chain, which identified three primary activities along with the support activities. This modeling enabled the simplification of the processes involved and the present technology status of the industry was analyzed based on this model. Technology components related to each industry process was identified along with the technological gaps in relation to the best practices and technologies available. Through the collected data, the research work has attempted to identify the technology integration issues, which are the underlying reasons for the technological gaps seen amongst industry players.

Based on identified reasons behind technology issues, several strategies in overcoming these issues are being suggested. A model framework has been suggested for the viewing of technology in the integration of the same in to the tea industry based on the initial definition of technology, which was used in the research design.



# CONTENTS

1.0	INTRODUCTION .....	1
1.1	Purpose of the Study .....	1
1.2	Research Problem .....	2
1.3	Research Objectives .....	2
1.4	The Significance of the Research .....	3
1.5	The Scope of the Research .....	4
1.6	Limitations of the Research .....	5
2.0	LITERATURE REVIEW .....	6
2.1	Importance of Technology in Business Survival .....	6
2.2	Technology – A definition .....	8
2.3	Issues Related to the Tea Industry .....	9
2.4	Technology Integration for the Sustainability in the Tea Industry .....	10
2.5	Addressing the Issues in Technology Integration .....	16
3.0	RESEARCH METHODOLOGY .....	17
3.1	Why the Case Study Approach .....	17
3.2	Qualitative Vs Quantitative Method .....	19
3.3	Research Base and Measurements .....	20
3.4	Data Collection Method .....	20
3.5	Modelling of the Process .....	22
3.6	Difficulties Encountered in Data Collection, Translation and Analysis .....	24
4.0	BACKGROUND TO THE TEA INDUSTRY .....	26
4.1	Sri Lankan Tea Industry .....	26
4.2	An Insight in to the Basics of Tea Production Process .....	33



5.0	PRESENT TECHNOLOGY STATUS OF THE TEA INDUSTRY .....	38
5.1	PROCESS 1: Plantation and Field Related Activities .....	39
5.2	PROCESS 2: Harvesting Activities .....	44
5.3	PROCESS 3: Factory Processing Activities .....	48
5.4	Supporting Facilities and Activities.....	51
6.0	TECHNOLOGY COMPONENT MAPPING AND GAP ANALYSIS .....	53
6.1	Technology Analysis of Field Related Activities .....	53
6.2	Technology Analysis of Harvesting Activities .....	61
6.3	Technology Analysis of Factory Processing Activities .....	70
6.4	Technology Analysis of Supporting Activities.....	76
7.0	TECHNOLOGY INTEGRATION IN THE TEA INDUSTRY .....	84
7.1	Technology Integration Issues in the Tea Industry .....	84
7.2	Strategies for Successful Technology Integration .....	91
7.3	Framework for Technology Integration.....	99
8.0	FINDINGS AND CONCLUSION .....	101
8.1	Summary .....	101
8.2	Findings of the Research Activity.....	102
8.3	Conclusion .....	103
8.4	Policy Recommendations.....	103
8.5	Agenda for Future Research .....	104
9.0	BIBLIOGRAPHY .....	106
10.0	APPENDICES .....	111

## **List of Figures**

Figure 1: Source of information to the estates .....	14
Figure 2: Value Chain Model (Porter 1985) .....	22
Figure 3: Simplified Value Chain Model Adopted by the Author .....	23
Figure 4: Changing Scenario of Tea Areas in Sri Lanka .....	27
Figure 5: Trend in the Tea Production based on the Elevation (1990-2002) .....	28
Figure 6: Organisation of the Tea Industry.....	32
Figure 7 : Tea Exports from Sri Lanka 2003 .....	33
Figure 8: Steps in the Processing of Black and Green Tea.....	35
Figure 9: Simplified Value Chain Model Adopted by the Author .....	38
Figure 10 : Mechanical Pruning Machine.....	43
Figure 11 : Mechanical Harvesters used in Japan .....	45
Figure 12 : Maneuverable Mechanical Shears of Sri Lanka.....	46
Figure 13 : Improvements to Harvesting Process .....	65
Figure 14 : Improvements to Harvesting Process 2 .....	66
Figure 15 : Framework for the identification of technology in its integration in to the tea industry.....	100

## **List of Tables**

Table 1: Extent of Land under tea cultivation in Major Producing Countries .....	27
Table 2: Elevation distribution of tea in Sri Lanka- 2002 .....	28
Table 3 :Process 1 : Technology Analysis .....	59
Table 4: Process 2: Technology Analysis .....	67
Table 5 : Technology Gap Analysis of Factory Operations in Tea Production.....	74
Table 6 : Technology Gap Analysis of ICT involvement in Tea Industry .....	79
Table 7 : Technology Gap Analysis of Power and Energy System .....	82