



**IMPROVE THE PROFITABILITY OF MONO
CROP AGRICULTURE PROJECTS BY
DEVELOPING AS INTEGRATED AGRICULTURE
IN SRI LANKA**

By

J M C K Rajakaruna

Supervised By

Dr. R U Halwathura

The Dissertation was submitted to the Department of Civil Engineering of
the University of Moratuwa in partial fulfillment of the requirement for
the Degree of Master of Business Administration

DEPARTMENT OF CIVIL ENGINEERING
UNIVERSITY OF MORATUWA
SRI LANKA.

2009

94535



Abstract

Agriculture sector is the most important sector among three economic sectors established in the world. Asian region is very important in world economy, mainly China and India with higher GDP growth. And also the Asian region plays vital role in agriculture sector as well as dairy farming. Agriculture will continue to play an important role in the economic development and poverty elevation in Asia.

The economy of Sri Lanka is mainly based on agriculture sector and nearly 80 per cent of the population is lived in rural areas. The main source of income of nearly 90 per cent of the rural population is agriculture and animal husbandry. Hence, the profitability plays a major role in agriculture sector in Sri Lanka to develop the economy.

In this research study the researcher has focused to find out the variables of profitability as well as to identify that which profit portion is attractive among mono crop farming and integrated farming. This study will give an idea to farmers to identify the variables of profitability and which type of farming to be used to earn more profit.

Literature review on world agriculture, Asian Agriculture and Sri Lankan agriculture revealed that the economies of most of the countries are depending on agriculture, industry or services. Though, most of the countries have reported that the considerable percentage of human resources are engaged in agriculture, the income and , productivity are very low. Some of the-foreign studies have identified the variables of profitability as unit price of harvest, cost of production of harvest and unit yield. But others have determined that the cost of production and unit yield as variables. Further to that the profitability of mono crop farming and integrated farming are depending on the above variables. References on literature indicate that the productivity and yield of integrated agriculture is greater than primary agriculture and mono cropping. But most of the previous studies revealed that the profitability of



mono crop projects are greater , than integrated projects in developed countries where more extent of farming is involved.

The study has been carried out within a frame of area with selected districts and limited for the farmers who are engaged in coconut and paddy cultivation. Also it was considered only two types of agriculture namely, mono crop and integrated farming by conducting a questioner survey. In this study the cost of production, unit price and unit yield were taken as the variables of net profit. Several measures were considered under the above variables and were evaluated further in detail.

Descriptive statistical analysis has done to test the strength of correlation of variables and the results showed that most of the variables are accepted. But the unit price is not accepted as a variable of net profit. There was a correlation among most of the identified variables of net profit and also among the variables of cost of production and yield.

Apart from that a Statistical analysis was done to verify whether the profit of integrated farming is greater than mono crop farming or the other way. Though the previous researches on other countries indicate a larger extent of mono crop farming reported higher net profit than integrated farming, this research study revealed that the sample group has agreed on the profit of integrated farming is better than mono crop farming in SL.

It is recommended to the farmers to implement the integrated farming activities to maximize the net profit, yield and minimize the cost of production. The selected group has agreed that the most of integrated farming activities can be carried out in coconut cultivation projects, but not with paddy cultivation. Also sample information revealed that the paddy cultivation does not much suitable for integrated farming activities in SL, than mono crop cultivation.

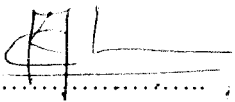
Finally as a conclusion, the study determined that by considering the SL consists with limited arable lands and higher return net profit than mono crop cultivation



projects, the integrated farming activities are the most suitable type of agriculture to SL.

Declaration

I do hereby declare that this dissertation is done by me and this is not a reproduction of any other dissertation. Also I declare that this has not been submitted for any other academic qualification at any institute.



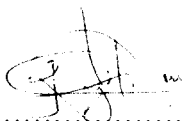
..... 27/12/2010

J M C K Rajakaruna

According to my knowledge this is not a reproduction and recommended.



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



..... 07/02/2010

Dr R U Halwathura

Department of Civil Engineering

Faculty of Engineering

University of Moratuwa

Acknowledgement

I am indebted to my supervisor Dr R. U. Halwathura for guiding me through this research, letting me design my own research method & questionnaire and giving me timely advice. He made it possible for me to be creative and think creatively.

I take this opportunity to thank Dr Asoka Perera and Dr Lesley Ekanayake of Civil Engineering Department of University of Moratuwa for the corporation and guidance to make this research a success.

Mrs. Yamuna Senevirathna – Statistician of Census and statistical Department, Pujitha Jayawardena – Agriculture executive of development division of Hatton National Bank Ltd (HNB), Nadee Jayamanne- Librarian of Lanka Hydraulic Institute (Moratuwa), Mr. Owitige and his library staff of Chartered Institute of Management Accounting (Colombo Branch) had been a source of information and encouragement for my research work.

I place my grateful gratitude for Team Leaders, Agriculture Executives & Field Officers of HNB who contributed to this research by interviewing farmers in many districts and sending their answers to questionnaires.

Without the friendship and support of my fellow graduates, all the staff of Civil Engineering department of University of Moratuwa, Mr. Chameera Rajapaksha-Engineer at AirTel Ltd for the computing aspects, my time here would not have been as pleasant.

Finally, I extend my gratitude to all my family members for their patience and cooperation during this hard period of study. Thank you all!

J M C K Rajakaruna

Table of Content

Declaration	I
Abstract	II
Acknowledgement	IV
Table of contents	V
List of tables	VIII
List of figures	X
Abbreviations	XI

1.0 Introduction.....	1
1.1 World Economic Sectors and Agriculture.....	1
1.2 Economy and Agriculture in Asia.....	3
1.3 Economy and Agriculture in Sri Lanka.....	4
1.4 Categories of agriculture.....	6
1.4.1 Mono crop agriculture.....	6
1.4.2 Inter-crop agriculture.....	7
1.4.3 Integrated farming Agriculture.....	8
1.5 Profitability.....	8
1.6 Problem statement.....	9
1.7 Objectives.....	11
1.8 Scope and limitations.....	12
1.9 Methodology.....	13
1.10 Proposed Results & Conclusions.....	15
2.0 Literature Review.....	16
2.1 World Economy and Agriculture.....	16
2.2 Economy and Agriculture in Asia.....	19

2.2.1	Dairy Industry and Livestock Farming in Asia.....	23
2.3	Sri Lankan Economy & Agriculture Sector	27
2.4	Profitability Statements and budgets.....	32
2.4.1	Enterprise Budget.....	33
2.4.2	Draft of Profitability Statement of Crop Agriculture and Live Stock Farming Activity.....	36
2.4.3	Draft of Profitability Statement of Integrated Farming Systems...	36
2.5	Determinants of Profitability of Sri Lanka.....	38
2.5.1	Yield per Unit of Cultivation.....	38
2.5.2	Cost of Production.....	38
2.6	Impact on Profitability Determinants by New Processes, New Policies, New technology and New Markets.....	42
2.7	Finance Cost as a Determinant of Profitability of Mono Crop Agriculture and Integrated Agriculture.....	47
2.8	Impact of North & East developments for Agriculture.....	48
2.9	Post Conflict opportunities for Agriculture	49
2.10	Correlation Analysis.....	50
2.11	Summary.....	53
3.0	Methodology.....	54
3.1	Sample.....	55
3.2	Reasons for selection of the sample.....	56
3.3	Measures.....	59
3.4	Design of Questionnaire.....	60
3.5	Method of Analysis of Data.....	62
3.6	Summary.....	63

4.0	Data Analysis and Discussion of Results.....	64
4.1	General Information of Respondents.....	64
4.2	Farmer Information on Mono crop agriculture and integrated agriculture.....	70
4.3	Critical Variables of Net Profit.....	72
4.4	Critical Variables of Cost of production.....	74
4.5	Critical Variables of Yield.....	77
4.6	Profitability of mono crop agriculture farmers and integrated farmers.....	79
4.7	Summary.....	82
5.0	Conclusion and Recommendation.....	83
5.1	Recommendations for further studies.....	84
5.2	Suggestion to Sri Lanka	84
	List of Reference.....	88
	List of Bibliography.....	91
	Appendixes	93
Appendix I	: Management Framework (Comparative Model).....	93
Appendix II	: Profitability for Crop Cultivation.....	94
Appendix III	: Profitability for Live stock Farming Project.....	95
Appendix IV	: Profitability for cultivation and live stock / Dairy Farming Project Integrated Farming systems.....	96
Appendix V	: Questionnaire.....	97

List of Tables	Page
Table 1.1 Average Annual GDP Growth for years 2007-2017	2
Table 1.2 National Outputs and Expenditure	5
Table 2.1 Expected Average GDP growth for year 2009 to 2015	17
Table 2.2 Main Crop statistics of the world-2008	18
Table 2.3 Dairy Milk statistics of the world-2008	18
Table 2.4 Live stock Farming and Meat Production statistics-World	18
Table 2.5 Comparison of crop production in world and Asia	19
Table 2.6 Comparison of Live stock Farming in world and Asia	23
Table 2.7 Comparison of meat production in world and Asia	23
Table 2.8 Comparison of Dairy Milk production in world and Asia	24
Table 2.9 Milk production in Asian countries for selected years	24
Table 2.10 Agriculture Production Index- Annual (2001- 2008)	29
Table 2.11 Gross Domestic Product by Industrial Origin at Current Prices by Major Sectors - Quarterly (2004-2007) - Rs. Million	31
Table 2.12 Factors of profitability of mono crop agriculture and livestock /dairy farming of foreign countries	37
Table 2.13 Informal Sector Daily Wage Rates - Monthly in 2007	41
Table 3.1 Extent of Cultivation as a Single Crop 2002 – 2008	56
Table 3.2 Paddy & Coconut– District wise extent as single crop	57
Table 3.3 Cultivated Extents of Highland Crops by District	58
Table 3.4 Measurement of variables of net profit	59
Table 3.5 Measurement of variables of yield	59

Table 3.6	Measurement of variables of cost of production	59
Table 4.1	Distribution of data among districts	64
Table 4.2	Farmers distribution on educational background	65
Table 4.3	Farmers distribution on type of Crop / farming activity	66
Table 4.4	Farmers distribution on knowledge on agriculture	67
Table 4.5	Farmers distribution on technology used in agriculture	67
Table 4.6	Farmers distribution on awareness programmes Participated	68
Table 4.7	Farmers distribution on extent of cultivation / farming	69
Table 4.8	Farmers distribution on Preference for Suggestion	70
Table 4.9	Farmers distribution on type of mono crop projects	70
Table 4.10	Farmers distribution on type of integrated projects	71
Table 4.11	Farmers distribution on type of projects	72
Table 4.12	Response of farmers & results of variables of net profit	73
Table 4.13	Results of Variables of Net Profit	74
Table 4.14	Response of farmers & results of variables of cost of Production	75
Table 4.15	Result of Variables of cost of production	76
Table 4.16	Response of farmers & results of variables of yield	77
Table 4.17	Response & results of farmers on type of technology used	77
Table 4.18	Response & results of farmers on type of knowledge used	77
Table 4.19	Response & results of farmers on awareness programmes Attended	78

Table 4.20	Result of Variables of Unit Yield	78
Table 4.21	Response of farmers & results of average net profit of Integrated projects and mono crop projects	80
Table 4.22	Result of average net profit of integrated farming projects And mono crop farming projects	81

List of Figures

Figure 1.1	Average Annual GDP Growth for years 2007-2017	2
Figure 2.1	Expected Average GDP growth for year 2009 to 2015	17
Figure 2.2	Rice yields by sub region, 1961 – 2005	20
Figure 2.3	Percentage of labour force in agriculture, South and Southwest Asia in 2004	21
Figure 2.4	Percentage of labour force in agriculture, Southeast Asia	22
Figure 2.5	Percentage of labour force in agriculture, East Asia and The developed economies, 2004	22
Figure 2.6	variation of correlation with sample correlation	52
Figure 4.1	Group of survey among districts	65
Figure 4.2	Farmers distribution on educational background	65
Figure 4.3	Farmers distribution on type of Crop / farming activity	66
Figure 4.4	Farmers distribution on knowledge on agriculture	67
Figure 4.5	Farmers distribution on technology used in agriculture	68
Figure 4.6	Farmers distribution on awareness programmes Participated	68
Figure 4.7	Farmers distribution on extent of cultivation	69
Figure 4.8	Farmers distribution on type of mono crop projects	71
Figure 4.9	Farmers Distribution on type of integrated projects	71
Figure 4.10	Farmers Distribution on type of projects	72

Abbreviations

CBSL	- Central Bank of Sri Lanka
GDP	- Gross Domestic Product
GNP	- Gross National Product
FAPRI	- Food and Agricultural Policy Research Institute
SL	- Sri Lanka
UN	- United Nations
SWOT	- Strength-Weaknesses-Opportunities and Treat analysis
FCCISL	- Federation of Chamber of Commerce and Industry of Sri Lanka
HACCP	- Hazard Analysis Critical Control Point certification
ISO	- International Standard Organization
USA	- United States of America
EB	- Enterprise Budget
FAO	- Food and Agriculture Organization
EDB	- Export Development Board
IPHT	- Institute of Post Harvest Technology
ALDL	- Agro-Livestock Development Loan
CCPI	- Colombo Consumer Price Index
HARTI	- Hector Kobbekaduwa Agriculture Research and Training Institute
NLDDB	- National Livestock Development Board
MADAS	- Ministry of Agriculture Development and Agrarian Services