

---

ISSN 1391-8230

---

---

# JOURNAL OF MANAGEMENT

---

---

Volume IX No. 1

October 2013

---



**Published by the Faculty of Management & Commerce  
South Eastern University of Sri Lanka**

**Oluvil # 32360**

**Sri Lanka**

## Journal of Management



The Journal of the Faculty of Management and Commerce  
South Eastern University of Sri Lanka

### EDITORIAL BOARD

**Editor in Chief:** Mr. ALMA. Shameem  
Senior Lecturer, FMC, SEUSL

**Associate Editors:** Dr. S. Gunapalan Senior Lecturer, FMC, SEUSL  
Mr. MBM. Ismail Senior Lecturer, FMC, SEUSL

**Managing Editor:** Mr. MCM. Aswer Senior Assistant Librarian, SEUSL

**Editorial Advisory Board:** Dr. SM. Mohamed Ismail Senior Lecturer, FMC, SEUSL

Dr. A. Jahfer Senior Lecturer, FMC, SEUSL

Mrs. Sareena UMA Gafoor Senior Lecturer, FMC, SEUSL

Ms. FHA. Rauff Senior Lecturer, FMC, SEUSL

Mr. AMM. Mustahfa Senior Lecturer, FMC, SEUSL

Mr. A. Haleem Senior Lecturer, FMC, SEUSL

Mr. MBM. Irshad Senior Lecturer, FMC, SEUSL

**Publication:** The Journal of Management is published two times in a year in April and October by the Faculty of Management & Commerce (FMC), South Eastern University of Sri Lanka (SEUSL).

**Subscription:** Foreign: US \$ 12 (SAARC Countries)

US \$ 25 (Other Countries)

Local: Rs.500.00 inclusive of postage

Subscription will be accepted as standing orders. Single issues also will be provided on request for Rs. 700.00 per copy. All orders must be accompanied with pre-payment in favour of the "South Eastern University of Sri Lanka". Sales request should be addressed to Assistant Registrar, FMC, and SEUSL.

Editorial Policies: Manuscript of research papers, reviews, and short communications in the field of management sciences should be accepted for publication on the understanding that they have not been published or submitted simultaneously for publication elsewhere. Manuscripts should be clearly typed in single-spaced; length may be usually limited to 20 pages in A4 size paper. Every manuscript must include a 100 – 150 words long abstract. By submitting an article, the author transfers the copyright to Editorial Board of the Journal.

All papers submitted for publication are examined and evaluated and by referees, to assess the suitability for publication. The Editorial Board reserves the right to edit the materials to conform to the style and format of the journal.

The Editorial Board is not responsible for any shortcomings in the form of inaccurate or misleading data, opinion or statement appearing in the Journal leading to confusion and criticism. So, the author is entirely responsible for the contents of the article subject to the above consideration.

Correspondence: All correspondence regarding the Journal articles should be sent to:

Editor in Chief

Editorial Office

“Journal of Management”

Faculty of Management & Commerce

South Eastern University of Sri Lanka

Oluvil #32360

Sri Lanka.

TP / Fax : 0094-67-2255069

E-mail : alma\_shameem@seu.ac.lk

Copyright © Faculty of Management and Commerce, South Eastern University of Sri Lanka.

The Copyright covers the exclusive right to reproduce and distribute the article, including reprints, photographic reproductions, microforms or any other reproductions of similar nature and translations. No part of the article may be reproduced by the reader without permission in writing from the copyright holder.

**JOURNAL OF MANAGEMENT**  
**Volume XI No. 1 April 2014**

<b>Contents</b>	<b>Page No</b>
Owners' Demographics and Ownership information in explaining Credit Repayment Behavior of Micro Small and Medium sized Enterprises <b>HM. Nijam</b>	1
A Study of Students' Perspectives on the Adoption of LMS at University of Kelaniya. <b>Seiyathu Mohammathu Murshitha and A.P. Ruwan Wickramarachchi</b>	16
International Tea Marketing and Need for Reviving Sri Lankan Tea Industry <b>Mohamed Ismail Mujahid Hilal and Kaldeen Mohamed Mubarak</b>	25
Relative risk for TB in the Unprotected Small Industrial Environment: A Case Study <b>Athambawa Mohamed Razmy</b>	39
An Investigation on the Transaction Motivation and the Speculative Motivation of the Demand for Money in Sri Lanka <b>S.N.K. Mallikahewa and H. Nadeeka De Silva</b>	42
Factors affecting Competitive Rivalry of Rice Shop Owners: Multiple Regression Analysis <b>MBM. Ismail</b>	49
The Impact of Telecommunication Growth on the Service Sector: A Cointegration Analysis <b>Dhanushka Thamarapani</b>	58

# OWNERS' DEMOGRAPHICS AND OWNERSHIP INFORMATION IN EXPLAINING CREDIT REPAYMENT BEHAVIOR OF MICRO SMALL AND MEDIUM SIZED ENTERPRISES

**HM. Nijam**

*Department of Accountancy and Finance, Faculty of Management and Commerce  
South Eastern University of Sri Lanka  
nijamhm@seu.ac.lk*

## ABSTRACT

*Small Medium Enterprises (SMEs) in developing countries are subject to higher degree of information opacity causing substantive constrains on lenders in their pursuit of predicting credit risk associated with SME lending. Driven by this context, the lending for SMEs is often characterized as relationship lending and credit risk predictions therefore necessarily resort to qualitative information which is often deemed to be the cost effective, viable and technically sound alternative. Therefore, this research sought to investigate the influence of owners' demographic and ownership information of Micro and Small Medium sized Enterprises (MSMEs) in explaining their credit default risk using primary data collected from randomly selected 62 MSME borrowers from Trincomalee District of Sri Lanka. Owners' demographics studied by gender, civil status, size of family, age and age group, ethnicity, education and mobility (the distance between lender and enterprise) of the owners' of MSMEs under study. Ownership information was proxied by the information whether the business is of sole proprietorship or partnership or of any other type. This study contributes to the literature a novel concept of Loan Repayment Risk Matrix (LRRM) as a comprehensive framework to approach credit repayment risk/credit default risk. Chi-Square Test has been employed to examine the relationship between dependent and independent variables and where the independent variables take continuous values (in the case of mobility), the difference of mean is*

*tested with one-way analysis of variance (ANOVA) with post hoc comparison using Turkey's honestly significant difference (HSD) test. It has been found that owners' gender, age, education, language and mobility and ownership information are significantly correlating with loan default risk of MSMEs and statistically significant relationship could not be found with respect to civil status, ethnicity and family size.*

**Key words:** *SME, Micro Small and Medium Enterprises, Loan Default, Credit Risk, Trincomalee, Demographics*

## Introduction

Lending to Micro and Small Medium sized Enterprises (MSMEs) (the acronym SMEs and MSMEs have been interchangeably used in this study) is crucial for economic and social development on one hand, it is deemed to be highly riskier as lending decision on SME sector is characterized by higher asymmetry of information particularly in developing economies on the other. Though asymmetric information between borrowers and lenders is a general feature of all credit markets around the globe, it is acute in SME segment as information assisting default prediction are not often adequately, reliably and fairly disclosed by the SMEs. Lending decisions of financial institutions are not hence simply characterized by just the demand of borrowers for credit but it is a matter of comprehensive investigation of potential clients' credit repayment behaviors.

Though, the evaluation of creditworthiness of the SME borrowers in particular is thus an important concern of all lending organizations, SMEs particularly in developing countries pose huge challenge for lenders in prediction of their credit worthiness as they are in informationally opaque market. As Berger and Udell (2006) mention it is due to lack of audited financial statements, commingling of the owner's personal finances and those of the business and because of their diversity. The problem of information opacity is more acute when loan applicants are from micro and small enterprises. Lenders therefore rely on different lending technologies for assessing borrowers' creditworthiness. All lending technologies are ultimately sought for prudent lending by predicting the possibility of credit repayment or defaults by borrowers.

Berger and Udell (2006) categorized lending technologies into two types which are transactions lending that is based primarily on "hard" quantitative data and relationship lending, which is based significantly on "soft" qualitative information and it is designed to address information problems that are not feasible or cost-effectively solved by the other technologies. Under this categorization, transactions lending is generally viewed as being focused on informationally transparent borrowers, while relationship lending is seen as used for informationally opaque borrowers. Relationship lending is the one which is often identified as most feasible approach when it comes for the small business loan environment.

Various lending technologies and credit risk prediction models are sought for the prediction of risk factor in a SME lending decision primarily based on the information pertinent to the organization and its business and governance. Thus, such lending technologies and risk models evolve around the business and the organization corresponding to the borrower/s. However, the studies on credit repayment behavior appear to investigate creditworthiness of borrowers primarily based on information that may

characterize the borrowers' attitudes about loan repayment. Thus, studies on credit repayment behavior involve primarily around the personal and environmental factors that might have influence on borrowers' attitudes on repayments. The current literature appears to lack a cohesive and conclusive framework for analyzing micro small medium enterprises' loan default characteristics on one hand and lending institutions that service small and medium business segment in developing countries like Sri Lanka cannot reasonably be expected on the other to employ sophisticated default prediction models and techniques to assess credit worthiness of SME clients whose financial reporting practices are largely substandard and or not easily accessible. Yet, before underwriting a loan to borrowers of any type, all lenders are performing a risk assessment using their own methodologies developed through their practice over time. Commonly said, there are two types of risk analysis which are quantitative and qualitative. According to Coravos (2010), loan officers perform a qualitative risk analysis when they interview the potential borrower, look over the business plan (if available) and review past financial history. He also comments that quantitative risk analyses are more expensive and time consuming, because they require keeping track of loan data both during loan origination and monitoring.

Quantitative analyses are often combined to create a "credit score," which quantifies the predicted risk of the borrower. Each credit-scoring model provides the best predictions when it is individually developed for a particular bank's loans and lending practices (Coravos, 2010). Thus, the existing models assisting to quantitatively measure risk associated with SME lending cannot accurately be relied upon for default predictions if such exercises are not incorporated with qualitative measures of SME defaults. This position is mainly attributed to unavailability or confined accessibility to financial data and information of SME borrowers.

As concluded by Dietsche and Petey (2004) who analyzed a set of German and French SMEs, SMEs are riskier but have a lower asset correlation with each other than large businesses. Hence, for many reasons SMEs are considered as different from large corporates and are increasingly subject to tailored approaches in default prediction. Altman and Sabato (2008) thus validated their hypothesis that applying a default prediction model developed on large corporate data to SMEs will result in lower prediction power and likely a poorer performance of the entire corporate portfolio than with separate models for SMEs and large corporates.

The main goal of this work is therefore to analyze MSME borrowers' characteristics captured by demographic and ownership information and to identify potential ability of such qualitative information to predict credit worthiness of entities in MSME sector. This study is driven by the importance for banks of predicting credit risk for MSMEs separately from large corporates. This research thus focuses on qualitative information and seeks to analyze credit repayment behavior of Micro and Small sized Enterprises using data from Trincomalee District of Sri Lanka. Analysis of credit repayment behavior based on qualitative information would be instrumental for predicting and evaluating credit risk or creditworthiness of borrowers especially when the borrowers are of small business and the lending is of relationship lending.

## **Research Problem**

While a vast literature exists on credit risk modeling for large publicly-listed corporates, for whom relevant information is readily available to the researcher, literature on the credit risk of Small and Medium Enterprises (SMEs) has been relatively limited (McCann and McIndoe-Calder, 2012). In the contexts of increasing trend of SME lending as indicated in Financial System Stability Review -2012 of the Central Bank of

Sri Lanka and recent deterioration in assets quality of commercial banks by an increase in Non-Performance Loan as revealed in Sri Lanka Banking sector special report of Fitch rating in 2012, studies on SME credit risk should be considered as an important economic issue in Sri Lanka.

Prudent management of the risk on SME lending requires prediction of financial distress of borrowers from SMEs which in turn require published financial statements under applicable accounting standards which are difficult to be obtained in the contexts of the SMEs in Sri Lanka. Developing risk prediction models for SMEs therefore require to be based on or supplemented by non- accounting and qualitative information.

It is common that for most of the MSMEs the managers of the business are the owner/s of capital. Therefore MSMEs are highly depended on factors that influence the capacity, skills and attitudes of the owners of the business. Therefore the main question that this study seeks to address is whether MSMEs differ in credit repayment pattern depending on the differences in demographics of the SME borrower? Is 'demographic information' a useful predictor of SMEs credit risk prediction?

## **Research Objective**

Therefore the main objective of this paper is to examine the relationship between the demographic characteristics of borrowers in micro and small enterprises and their tendency on credit repayment or default. That is, to examine whether demographic information can be used to predict the credit repayment behavior of micro and small businesses.

## **Review of Literature**

This study basically seeks to analyze the credit repayment behavior of MSME borrowers based on demographic information of owners of micro

and small industry. Borrowers' demography and socio economic characteristics have been proved to matter in loan default. It is however noteworthy that this relationship has been studied in quite a lot of recent studies most of which have focused on students loan, consumer credit, housing loans, micro credit and commercial advances for micro small and medium enterprises etc.

Loan default studies on students' loan, consumer credit, housing loans micro credit have extensively focused the influence of demographic variables on loan repayment. Accordingly, borrowers' race has been found to have significant correlation with loan default according to Greene (1989), Wilms, Moore and Bolus (1987), Steiner and Teszler (2005) and Herr and Burt (2004). Gender is a significant factor in loan default according to many studies including Woo (2002), Podgursky et al. (2002), Steiner and Teszler (2005), and Herr and Burt (2004). Age tends to significantly and positively correlate with loan default rate according to Christman (2000), Harrast (2004), Herr & Burt (2004), and Woo (2002). However, Knapp and Seaks (1992) found no relationship with age and default, while Steiner and Teszler (2005) found this pattern only among students older than 34. However, Hillman (2012) claims that taken as a whole, race, age, and gender are likely to account for a degree of variation in default probability, but the nature of these relationships (particularly age and gender) is not entirely clear.

Similarly, the influences of demographic variables on loan repayment have also been a matter of academic research for many years. Pandey and Muralidharan (1979), using data from the Uttar Pradesh State in India, attempted to develop criteria for classifying borrowers as to their willingness to repay their loans on the basis of differences in their socio-economic characteristics. The discriminant function analysis indicated that the percentage of total income derived from sources other than crop production, the amount of loan, the purpose of loan, per capita consumption expenditure, and

the ratio of cash expenditure to total expenditure were the major characteristics that classified borrowers into defaulter and non-defaulters.

Arene (1992) employed a regression analysis to identify the factors that significantly influence credit repayment performance of farmers associations in Anambra state in Nigeria and found that inter alia variables such as size of loan, income, education level and number of years of farming experience were statistically significant while distance and size of the households were not significant. Mbata (1994) had hypothesized that credit repayment performance from external source depends on duration of loan servicing, size or amount of credit obtained and income generated from the capital, while credit repayment performance from internal sources (member capital) depends on duration of membership, size of the household, amount of credit available, income generated from sales, gender of the household, income transfers received, the type of information and the extent of business diversification. Mbata (1994) employing standard probability model established that gender, amount of loan, member experience and household size were not statistically significant in various specification while crop sales, the size of enterprise, the degree of diversification, income transfers and quality of information were statistically significant. Nikhade et al. (1994) investigated crop loan repayment behavior among cotton growers with the aim of analysing behaviors and characteristics of borrowers along with the causes of non-repayment in crop loans. Relational analysis revealed that the social personal characteristics such as education, annual income, land holding and irrigation influenced positively the borrowing pattern and repayment behaviour of the borrowers.

Rambabu et al. (1994) studied factors influencing attitudes of the farmers towards farm credit with the aim of understanding the attitudes of the borrowers and non-borrowers towards farm credit. It was found that there is negative and significant relationship between age and attitudes



of both borrowers and non-borrowers. it was further noted that education exposure to mass media and extension contact were found to be positively significant related with attitude of borrowers and non-borrowers. Harikumar (1991) investigated the utilization of loans, over dues and factors affecting proper repayment and over dues and found that socio-economic factors do not influence loan repayment. This conclusion however is contrary to that of Nikhade et al. (1994) and Rambabu et al. (1994). According to Harikumar (1991) crop failure and fall in prices were the major factors influencing loan defaulting.

According to Oni O.A et al., (2005) study on factors influencing loan default among poultry farmers in Ijebu Ode Local Government Area of Ogun State Nigeria; the result from the profit model revealed that flock size of the farmers significantly influence default in loan repayment at ( $P < 0.10$ ) level. Age of the farmers significantly influence default in loan repayment at ( $P < 0.01$ ) level, while Educational level and Income of the farmers also significantly influences default in loan repayment at ( $P < 0.05$ ) level.

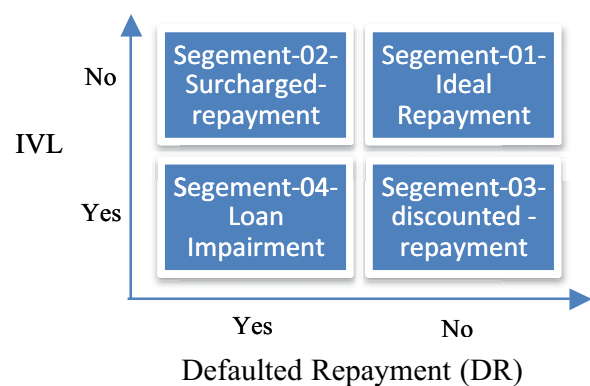
Papias and Ganesan (2008) employed primary data collected in rural Rwandan on variables contributing to the repayment behaviour in savings and cooperative societies and used a binary logistic regression empirical model to estimate the contribution of each variable to credit repayment rate. They showed that age, gender and size of the household, purpose for credit, interest rate charges and number of official visits to the credit societies, have a strong effect on loan repayment performance (statistically significant at  $p, 0.05$ ) whereas size of credit disbursed, credit processing and disbursing time, borrowers' market place and income transfer from relatives and friends are more or less statistically significant at  $p, 0.20$  level.

Antwi et al (2012) studies the risk factors that influence loan default repayment among customers in Akuapem rural bank using secondary data from 2006 to 2010 and employed a logistic regression model. They found that Security and Type of Loan were significant to the study whereas Sex, Marital Status, Age, Educational Level, Town were not significant to the study.

## Research Model and Design

Generally, a loan is said to be defaulted when it is not repaid or settled fully or partially as agreed. Broadly speaking, a loan is defaulted if the Expected Value of the loan(considering all factors that will bear on its 'value') envisaged at point of contract of loan is not fully or partly recovered (Intrinsic Value Loss) when the loan liability is discharged or deemed to be discharged.

SME Loan Repayment Risk (LRR), the dependent variable of this study,can therefore be analyzed into four discrete categories based on the parameters of Defaulted Repayment (DR) and Intrinsic Value Loss (IVL)to the lender. These categories can be explained by using the following '*loan repayment risk matrix (LRRM)*' developed by the researcher for the purpose of approaching different categories of loan repayment risk.



**Figure 01: loan repayment risk matrix (LRRM)**

*Source: Author constructed*

The following table - 01 briefly describes the characteristics of the each segment of LRRM. It should be noted however that the segments in LRRM do not themselves indicate the magnitude of loss that will be resulted by corresponding credit risk. For example, a loan in segment - 03, ‘discounted repayment’ might be more disadvantageous in terms of monetary loss than those in segment, ‘Loan Impairment’ as those in segment-03 might be say larger in amount than the loan/s in segement-03.

On the other hand, Borrowers’ Demographics, a independent variables of this research is proxied by gender, civil status, size of family (number of dependents), age and age group, ethnicity, education and mobility. Another independent variable is Ownership Information which, in this study, is represented by the nature of ownership of the enterprises that is, whether the business is of sole proprietorship or of partnership or of any other type.

**Table 1:  
Description of Repayment Risk Categories**

Segement - 01	Ideal Repayment	These are ‘repayment risk free loans’ in the sense that there would be no contractual default in repayment and thereby no IVL to the lender. Loans of this type are those generally found settled in par with the terms of the loan agreement.
Segement - 02	Surcharged-repayment	These types of loans are riskier as compared to the segment-01 in the sense that there would be a DR of loan on the part of the borrower but causing no IVL to the lender or the IVL caused to the lender due to such default/s would be compensated through surcharges imposed on defaulter. Loans of this type are those generally, at least once, classified as non- performing but later are recovered by the Banks with surcharges attached to it which will compensate the IVL.
Segement - 03	Discounted - repayment	These types of loans are riskier than those falling in segment-01 and 02 in the sense that there would be no DR of loan on the part of the borrower but IVL to the lender could not be fully or partially compensated through surcharges imposed on defaulter. This may be because of reasons that for example the ‘lender does not have right to impose such surcharges’ on the borrower. Loans of this type are those generally affected by some mistakes or defaults or unexpected developments from the part of the lender which ultimately deprive the right of the lender to claim damages over any IVL
Segement - 04	Loan Impairment	These are ‘repayment riskiest loans’ as compared to the segment-01, 02 and 03 in the sense that there would be a DR of loan on the part of the borrower and the IVL to the lender due to such default/s could not be fully or partially compensated through surcharges imposed on defaulter due to bankruptcy of the borrower .

*Gender*; Women are also able to budget well their income at the household level and it is expected that women who are involved in credit schemes are more likely to repay their loans successfully than men (Papias and Ganesan, 2008).

*Civil status*; is expected to increase the capacity of the MSME borrower as the spouse will provide a support to the business and therefore may be expected to improve the performance of the business and thereby enhancing creditworthiness of the borrower

*Family Size*; The size of household has an ambiguous expectation (Papias and Ganesan, 2008). In one hand, it is hypothesised that as household size increases, income earning capacity also increases given that the number of dependent members remains constant. On the other hand the increase in the number of households' members who are dependent would reduce the income earning capacity and thereby becoming credit unworthy (Zeller, 1995). Therefore though Size of the borrower's family is an important indication of the capacity of borrower with more dependents attached to his maintenance may negatively impact on the business as borrower may often draft from the business capital and retained earnings thereby negatively affecting business prospects and credit worthiness.

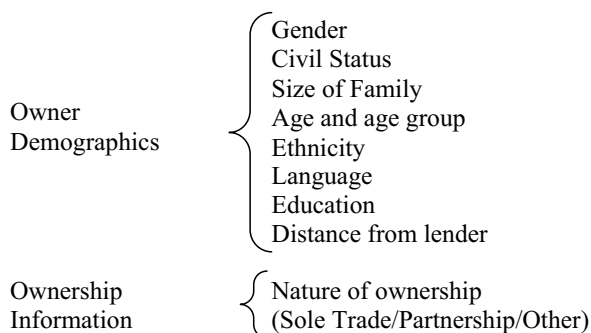
*Age*; Age is expected to increase his productivity and thus to exert creditworthiness in the face of lenders (Gershon et al., 1988). In the other words, age is translated into an experience of the borrower in the economic activities being financed (Papias and Ganesan, 2008).

*Ethnicity*; Ethnic background of the borrower is expected to influence the attitude and morale towards the repayment of a loan.

*Education*; Education level or qualification of the owner of borrowing MSME is expected to impact his knowledge, skill and attitude thereby impacting on the business success. The number of years of formal schooling is an indicator of human capital, which affects positively efficiency (Gershon et al., 1988). In addition to

this, educated farmer are expected to adopt new production technologies that increase returns from agricultural production (Arene, 1992 and Njoku, 1997). For these reasons, education would be an indicator of creditworthiness, and would increase repayment capacity of the borrowers (Papias and Ganesan, 2008).

*Mobility*; Mobility has been included as demographic information and measured by the distance between the lender and enterprise location. When there prevail more distance between borrower and lender, less coordination and monitoring of the performance of loan would be possible. This will bear an impact on the credit repayment behavior of the borrower.



**Figure 02: Summary of Research Variables**

The objective of the analysis is therefore would be to investigate whether owners' demographics and ownership information of borrowing MSMEs determine 'the repayment risk segment' that it takes in LRRM.

The Borrowers and loan characteristics, the independent variables are mostly of discrete category. Therefore, Chi-Square Test, an appropriate non-parametric test for the investigations with data of this nature, is employed to examine the relationship between dependent and independent variables and where the independent variables take continuous values (distance between borrower and lender), the relationship is tested with one-way analysis of variance (ANOVA) with post hoc comparison using Turkey's honestly significant difference (HSD) test. Data analysis has been performed using SPSS (version 15.0)

Data was collected from randomly selected 62 SMEs that borrowed from commercial banks in Trincomalee District of Sri Lanka. The sample of 62 SMEs constituted to nearly 10% of total MSME borrowers from the Bank studied and the samples were drawn proportional to the size of each segment in LRRM during the period of 10 years from the year 2000. Due to unavailability of information about the loan falling in the segment -03, ‘Discounted –repayment’, that segment has been excluded from the scope of this study. Thus, as provided in Table 02, the sample represents 24 enterprises in segment -01, ‘ideal repayment’ and 18 organizations in segment -02, ‘Surcharged- repayment’ and 20 enterprises in segment -04, ‘loan impairment’ and zero number of enterprise in segment-03, ‘Discounted –repayment’.

## Results and Discussions

Except for identifying the relationship between the distance of the borrowing SME from lending institution and the repayment risk, the relationship between repayment risk and all such other independent valuables as Borrowers’ Gender, Age, Education, Ethnicity, Language, Civil Status, Family Size and Ownership has been tested using Chi-Square, that belong to the family of univariate analysis. The results obtained are summarized in the Table 04 and proceeding section of this paper seeks to interpret the statistics with the assistance of cross tabulation of research data.

**Table 02:**  
**Loan Repayment Risk categories when reduced into three segments**

Risk Categories	Corresponding segment/s in LRRM	Sample number of MSMEs
Ideal Repayment	Segment -01	24
Surcharged Repayment	Segment -02	18
Loan Impairment	Segment -04	20
	Total	62

However, due to the limitation in the sample size corresponding to other three segments in the LRRM which have been included for this study, when performing Chi-Square Test, where the expected count less than 5 is not zero which is an essential test assumption, the Loan Repayment Risk categories that make up the sample were reduced into two segments as in the Table 03 below so that the said test assumption is not violated.

**Table 03:**  
**Loan Repayment Risk categories when reduced into two segments**

Risk Categories	Corresponding segment/s in LRRM	Sample number of MSMEs
Ideal Repayment	Segment -01	24
Risky Repayment	Segment -02 & Segment -04	38
	Total	62

**Table 04: Results**

	Pearson Chi- Square $\chi^2$	Asymp. Sig. (2-sided)	Fisher's Exact Test Sig. (2 sided)	<i>F</i>	Sig
Gender	6.649	.010**	.009		
Borrowers' Age Group	9.885	.007**			
Borrowers' Education	6.318	.042*			
Ethnicity	5.274	.072			
Language	5.194	.023*	.025		
Civil Status	1.360	.243			
Family Size					
number of dependents >1	0.654	.419			
number of dependents >2	0.654	.419			
number of dependents >3	0.944	.331			
number of dependents >4	1.305	.253			
Ownership	9.663	.008**			
Distance				4.580	.014*

\*Significance at  $p < 0.05$  percent

\*\* Significance at  $p < 0.01$  percent

### **Borrowers' Gender**

The relationship between Borrowers' gender and LRR has been analyzed with LRR grouped into two segments, the Ideal Repayment and Risky Repayment. The following cross tabulation was obtained with the data.

there was still one cell which has expected count less than 5 which therefore required the reference of Fisher's Exact Test statistics to establish the significance of the relationship. As Fisher's Exact Test statistics (0.009 (2 sided) and 0.008 (1-sided)) was also below the alpha value of 0.05 the relationship between the variables can be

**Table 05:  
Cross Tabulation -Borrowers' Gender**

Loan Repayment Risk Segments		Female	Male	Total
Ideal Repayment	Count	0	24	24
	% within the Segment	.0%	100.0%	100.0%
	% within Gender	.0%	45.3%	38.7%
Risky Repayment	Count	9	29	38
	% within the Segments	23.7%	76.3%	100.0%
	% within Gender	100.0%	54.7%	61.3%
Total		9	53	62

Accordingly, SME loan repayment risk significantly correlates with gender of the borrowers at Pearson Chi-Square of 6.649 with p-value of 0.01 which is below 0.05 alpha value. ( $\chi^2 = 6.649, p = 0.01 < 0.05$ , alpha). It is noted that

confidently stated to be statistically significant. This finding indicates that female led MSME borrowers are most likely to become into Risky Repayment Segments than into Ideal Repayment in LRRM.

## Borrowers’ Age

The relationship between Borrowers’ age and LRR is examined where LRR is grouped into three segments; the Ideal repayment, Surcharged repayment and Loan Impairment. It was found that 26.1% of borrowers within the age group of 40 and below fall within Ideal Repayment Segment whereas Segments -02 and Segments -04 respectively incorporate 17.4% and 56.5% of 40 and below age group. Of those within above 40 age group, 46.2%, 35.9% and 17.9 % becomes respectively into Ideal Repayment, Surcharged Repayment and Loan Impairment segments.

However, it is found that there exists no significant difference in the mean age of the borrowers in different segments of LRRM when loan repayment risk was analyzed by two segments; that is, Ideal repayment and other using independent-group t-test, ( $t_{(df=60)} = 1.477, p=0.145 > 0.05$ ). Similarly, the same conclusion was obtained when the difference in the mean age of the borrowers in all four segments of LRRM is examined using One-way ANOVA between groups, ( $F_{(df=2,59)} = 2.387, p=0.101 > 0.05$ ).

**Table 06:**  
**Cross Tabulation -Borrowers’ Age**

Loan Repayment Risk Segments		Age Group -01 (Age ≤ 40)	Age Group -02 Age > 41	Total
Ideal repayment	Count	6	18	24
	% within the Segment	25.0%	75.0%	100.0%
	% within Age Group	26.1%	46.2%	38.7%
Surcharged repayment	Count	4	14	18
	% within the Segment	22.2%	77.8%	100.0%
	% within Age Group	17.4%	35.9%	29.0%
Loan Impairment	Count	13	7	20
	% within the Segment	65.0%	35.0%	100.0%
	% within Age Group	56.5%	17.9%	32.3%
Total		23	39	62

Borrowers’ Age significantly associates with LRR when the borrowers were categorized into two age groups; those aged less than and equal to 40 and those aged more than 41. As provided in Chi-Square table below, the correlation is significant at Pearson Chi-Square of 9.885 and p-value of 0.007 ( $\chi^2 = 9.885, p=0.007 < 0.01, \alpha$ ). These statistics indicate that those of ‘40 and below age group’ are more likely to become into Segment- 02 and Segment- 04 of LRRM than into Segment- 01. Borrowers within Ideal Repayment segment are most likely to be of ‘above 41 age group’.

## Borrowers’ Education

The relationship between Borrowers’ education qualification and LRR has been tested having LRR grouped into two segments, the ideal repayment and risky repayment. Borrowers’ educational level was measured through the level of completion of formal education. Thus, borrowers in each risk segment were analyzed into three discrete categories of educational level which are ‘Below Ordinary level (O/L)’, ‘O/L’ and ‘Advanced Level (A/L) and Above’. The following cross tabulation was obtained with the data used for analysis.

**Table 07:  
Cross Tabulation -Borrowers' Education**

Risk Segments		Below O/L	OL	A/L and above	Total
Ideal repayment	Count	8	3	13	24
	% within the Segment	33.3%	12.5%	54.2%	100.0%
	% within Education Qualification	44.4%	15.8%	52.0%	38.7%
Risky repayment	Count	10	16	12	38
	% within the Segment	26.3%	42.1%	31.6%	100.0%
	% within Education Qualification	55.6%	84.2%	48.0%	61.3%
Total		18	19	25	62

Accordingly it was found that 54.2% of the borrowers in ideal repayment segment possess Advanced Level (A/L) qualification and more. At the same time 55.6% of the borrowers with educational qualification below ordinary level (O/L) fall into other segments which are riskier than ideal repayment segment in LRRM. Educational qualification significantly correlates with LRR at Pearson Chi-Square of 6.318 with p-value of 0.042 ( $x^2 = 6.318$ ,  $p=0.042 < 0.05$ , alpha).

This implies that the more the education qualification possessed by the owners of MSMEs the less would be the loan repayment risk and viz.

### **Borrowers' Civil Status and Ethnicity**

Borrowers' civil status has been found to have not significantly associated with LRR where LRR was again grouped into two segments, the ideal repayment and other segments in LRRM ( $x^2 = 1.360$ ,  $p=0.243 > 0.05$ , alpha).

Borrowers' ethnicity and LRR is not significant at alpha level of 0.05 ( $x^2 = 5.274$ ,  $p=0.072 > 0.05$ , alpha). For this purpose, borrowers were analyzed into three different ethnic groups of the district under study; 'Sinhalese', 'Tamils' and 'Muslims and Others' and LRR was grouped into two segments, the Ideal repayment and Risky repayment.

### **Borrowers' Native Language**

The relationship between Borrowers' language and LRR has been tested having LRR grouped into two segments, the ideal repayment and risky repayment. Language diversity of borrowers was studied into two discrete categories of 'Language predominantly spoken in the district' and 'Language other than predominantly spoken in the district' and the following cross tabulation was obtained with the data used for analysis.

**Table 08:  
Cross Tabulation -Borrowers' Native Language**

Risk Segments		Language Predominantly spoken in the district	Language other than predominantly spoken in the district	Total
Ideal repayment	Count	21	3	24
	% within the Segment	87.5%	12.5%	100.0%
	% within Language	47.7%	16.7%	38.7%
Risky repayment	Count	23	15	38
	% within the Segment	60.5%	39.5%	100.0%
	% within Language	52.3%	83.3%	61.3%
Total		44	18	62

Accordingly, it was found that 87.5% of the MSME borrowers in ideal repayment segment speak language predominantly spoken in the district as their native language where as in Trincomalee district 83.3% of those MSME borrowers having ‘language other than predominantly spoken in the district’ as their native language have fallen into Risky repayment. It is noted that within Risky repayment segment 60.5% of MSME borrowers are of Speaking the language predominantly spoken in the district and it is 87.5% within idea repayment segment. It is noted that the languages spoken in Trincomalee district are Tamil and Sinhala.

Language differences significantly correlates with LRR at Pearson Chi-Square of 5.194 with p-value of 0.023 ( $\chi^2 = 5.194, p=0.023 < 0.05, \alpha$ ). This implies that lending for MSMEs with owner who speaks a language other than that is predominantly spoken in the respective district may be more riskier than for MSMEs with owner who speaks a language that is predominantly spoken in the respective district and viz.

### **Borrowers' Family size**

The relationship between Borrowers' Family size and LRR (categorized into two segments, the ideal repayment and other segments in LRRM) is also not significant even as borrowers' family size was analyzed in four dimensions which are ‘Borrowers having one or no child and Borrowers having more than a child’ ( $\chi^2 = 0.654,$

$p=0.419 > 0.05, \alpha$ ), ‘Borrowers having two or less than two children and Borrowers having more than two children’ ( $\chi^2 = 0.654, p=0.419 > 0.05, \alpha$ ), ‘Borrowers having three or less than three number of children and Borrowers having more than three children’ ( $\chi^2 = 0.944, p=0.331 > 0.05, \alpha$ ) and ‘Borrowers having four or less than four number of children and Borrowers having more than four children’ ( $\chi^2 = 1.305, p=0.253 > 0.05, \alpha$ ).

### **Mobility**

Mobility has been included as demographic information and measured by the distance in Km between the lender and enterprise location. ANOVA with post-hoc comparison revealed that there is significant differences in the mean distance of the MSME borrowers falling in different segments of the LRRM. [ $F(df=2,51) = 4.580, p=.014 < 0.01$ ]. Tukey HSD test result is summarized in the table below.



**Table 09:  
Tukey HSD test result for mobility differences**

Loan Repayment Risk Segments (I)	Loan Repayment Risk Segments Compared (J)	Mean Difference (I-J)	Std. Error	Sig.
Ideal repayment	Surcharged repayment	-30.84722*	10.19342	.010
	Loan Impairment	-13.70833	9.89790	.355
Surcharged repayment	Ideal repayment	30.84722*	10.19342	.010
	Loan Impairment	17.13889	10.62130	.248
Loan Impairment	Ideal repayment	13.70833	9.89790	.355
	Surcharged repayment	-17.13889	10.62130	.248

### Ownership Information

The relationship between nature of ownership and LRR has been tested having LRR grouped into three segments, the ideal repayment, surcharged repayment and loan impairment. Nature of ownership of MSMEs under study was studied into three discrete categories of sole-trade, partnership and company and other. It is noted that no MSME under this study was registered as company and the following cross tabulation was obtained with the data used for analysis.

Surcharged repayment segment and 45% in Loan Impairment group. It was also found that within proprietorship MSMEs 45.5% of the MSMEs are in Ideal repayment segment and it is 34.1% for Surcharged repayment and 20.5% in the Loan Impairment. Similarly, within partnership MSMEs 61.1% of the MSMEs are identified within the Loan Impairment segment and it is 16.7% and 22.2% for Surcharged repayment and 20.5% in ideal repayment respectively.

Ownership information significantly correlates with LRR at Pearson Chi-Square of 9.663 with p-value of 0.008 ( $\chi^2 = 9.663, p=0.008 < 0.01$ ,

**Table 10:  
Cross Tabulation – Ownership Information**

Risk Segments		Sole-proprietorship	Partnership	Total
Ideal repayment	Count	20	4	24
	% within the Segment	83.3%	16.7%	100.0%
	% within Type of Ownership	45.5%	22.2%	38.7%
Surcharged repayment	Count	15	3	18
	% within the Segment	83.3%	16.7%	100.0%
	% within Type of Ownership	34.1%	16.7%	29.0%
Loan Impairment	Count	9	11	20
	% within the Segment	45.0%	55.0%	100.0%
	% within Type of Ownership	20.5%	61.1%	32.3%
Total		44	18	62

Accordingly, it was found that 83.3% of the MSMEs in ideal repayment segment are of sole-proprietorship and it is again 8.3% within

alpha). This implies that lending for MSMEs with sole- proprietorship is less riskier than for Partnership viz.

## Conclusion

Credit Repayment Risk can be broadly approached using the Loan Repayment Risk Matrix (LRRM) introduced in this paper. Empirical analysis has been guided by this framework and has revealed that owners' gender, age, education, language and mobility and ownership information are significantly correlating with loan default risk of MSMEs while statistically significant relationship is not confirmed with respect to civil status, ethnicity and family size. Therefore empirical analysis can be summarized as that MSMEs with female owners and or with the owners of '40 and below age group' and or with education qualification below Ordinary level and or with owner who speaks a language other than that is predominantly spoken in the respective district and or relatively far-distanced from the lender and or of partnership in ownership may carry relatively higher risk in credit repayment.

Therefore, the owners' demographics and ownership information of MSME have explanatory power over credit repayment behavior of MSME in Trincomalee district and hence could be considered for assessing the credit worthiness of MSME applications for credit or in designing recovery measures thereof. This research is recommended to be replicated based on Loan Repayment Risk Matrix in other districts of the country and elsewhere in the globe with increased number of sample analyzed with multivariate models.

## References

- Altman, E.I., Sabato, G. and Wilson, N. (2008), 'Value of qualitative information in SME risk management', *Journal of Financial Services Research*, Vol. 28 (1/3)
- Antwi, S, Mills, AEF, Mills, AG and Zhao, X, (2012), 'Risk factors of loan default payment in Ghana: a case study of Akuapem Rural Bank', *International Journal of Academic Research in Accounting, Finance and Management Sciences*, Vol. 2, No. 4.
- Arene, C.J. (1992), 'Loan repayment and technical assistance among smallholder maize farmers in Nigeria', *African Review of Money Finance and Banking, A supplement of Savings and Development Journal*, Vol. 1, pp. 64-72.
- Berger, A.N. Udell, G.F. (2006), 'A more complete conceptual framework for SME finance', *Journal of Banking and Finance*.
- Central Bank of Sri Lanka, Financial System Stability Review, 2012 [http://www.cbsl.gov.lk/pics\\_n\\_docs/10\\_pub/\\_docs/efr/financial\\_system\\_stability\\_review/fssr\\_2012e.pdf](http://www.cbsl.gov.lk/pics_n_docs/10_pub/_docs/efr/financial_system_stability_review/fssr_2012e.pdf)
- Christman, D.E. (2000), 'Multiple realities: characteristics of loan defaulters at a two-year public institution', *Community College Review*, 27(4), 16.
- Coravos, A.R. 2010, Measuring the Likelihood of Small Business Loan Default: Community Development Financial Institutions (CDFIs) and the use of Credit-Scoring to Minimize Default Risk, Economic Hons Thesis, Duke University, Durham, North Carolina.
- Gershon, F., Onchan, T. and Raparla, T. (1988), 'Collateral, guarantees and rural credit in developing countries: evidence from Asia', *Agricultural Economics*, Vol. 2, pp. 231-45.
- Greene, L.L. 1989, 'An economic analysis of student loan default', *Educational Evaluation and Policy Analysis*, 11(1), 61.

- Harikumar, S. (1991), 'Utilization and repayment of agricultural loans of regional rural banks: a case study', *Agricultural Banker*, October/December, pp. 13-16.
- Harrast, S.A. (2004), 'Undergraduate borrowing: a study of debtor students and their ability to retire undergraduate loans', *NASFAA Journal of Student Financial Aid*, 34(1), 21-37.
- Herr, E. Burt, L. 2004, 'Predicting student loan default for the University of Texas at Austin', *NASFAA Journal of Student Financial Aid*, 2, pp. 27-49.
- Hillman, W.M. (2012), 'College on credit: a multi-level analysis of student loan default', *University of Utah*, Salt Lake City
- Knapp, L.G. Seaks, T.G. (1992), 'An Analysis of the Probability of Default on Federally Guaranteed Student Loans', *The Review of Economics and Statistics*, Vol.74, No. 3, pp. 404-411.
- McCann, F. McIndoe-Calder, T. (2012), 'Determinants of SME Loan Default: The Importance of Borrower-Level Heterogeneity' Resaech Technical Paper, Central Bank of Ireland.
- Nikhade, D.M. Shinde, P.S. and Nighot, S.M. (1994), 'Crop loan repayment behaviour in cotton growers', *Agricultural Banker*, October/December, pp. 13-16.
- Njoku, J.E. (1997), 'Determinants of loan repayment under the special emergency loan scheme (SEALS) in Niger: a case study in Imo state', *African Review of Money Finance and Banking*, Vol. 1, pp. 39-51.
- Oni, O.A. Oladele, O.I. and Oyewole, I.K. (2005), 'Analysis of factors influencing farmers in Ogom state Nigeria', *Dept of Agricultural Economics, University of Ibadan Nigeria*.
- Pandy, U.K. Muralidharan, M.A. (1979), 'An Application of Discriminant Function In Agricultural Finance', *Indian Journal of Agricultural Economics*.
- Papias, M.M. Ganesan, P. (2008), 'Repayment behaviour in credit and savings cooperative societies empirical and theoretical evidence from rural Rwanda', *International Journal of Social Economics*, Vol. 36, No. 5.
- Podgursky, M. Ehlert, M. Monroe, R. Watson, D. and Wittstruck, J. (2002), 'Student loan defaults and enrollment persistence' *Journal of Student Financial Aid*, Vol.32, No.3, pp.27-42.
- Rambabu, P.D. Eswaran, Y.P. (1994), 'Factors influencing attitude of the farmers towards farm credit', *Agricultural Banker*, October/December, pp. 25.
- Steiner, M. Teszler, N. (2005), 'Multivariate analysis of student loan defaulters at Texas', *A&M University*.Austin, TX. January.
- Wilms, W.W. Moore, R.W. Bolus, R.E. (1987), 'Whose fault is default? a study of the impact of student characteristics and institutional practices on guaranteed student loan default rates in California', *Educational Evaluation and Policy Analysis*, Vol. 9, No. 1, pp 41-54.
- Woo, J.H. (2002), 'Factors Affecting the Probability of Default: Student Loans in California', *Journal of Student Financial Aid*, Vol. 32, No. 2, pp. 5-23.
- Zeller, M. (1995), 'The demand for financial services by rural households – conceptual framework and empirical findings', *Quarterly Journal of International Agriculture*, Vol. 34, No. 2, pp. 149-70.

# A STUDY OF STUDENTS' PERSPECTIVES ON THE ADOPTION OF LMS AT UNIVERSITY OF KELANIYA.

**Seiyathu Mohammathu Murshitha**

*Department of Management and Information Technology, South Eastern University of Sri Lanka  
murshitha@seu.ac.lk*

**A.P. Ruwan Wickramarachchi**

*Department of Industrial Management, University of Kelaniya  
ruwan@kln.ac.lk*

## ABSTRACT

*In the knowledge era, the adoption of Learning Management System (LMS) has become a requirement at Universities as it is enhancing the teaching and learning environment. Although the success of LMS adoption in Universities can be initiated by lecturer acceptance and use, it survives in the long run because of students' continuous acceptance and use. The objective of this study is to study students' perspectives on the adoption of LMS in blended learning environment. A survey is conducted among 50 undergraduate students who use LMS extensively at the Department of Industrial Management, University of Kelaniya in order to fulfill the objective. The conduct of this study involves quantitative approach. The result of the study indicates students' perspectives in terms of students' attitude towards LMS, self efficiency, experience and interaction with lecturers and other classmates play a significant role in determining students' LMS adoption.*

**Keywords:** *Blended learning, E-learning, and Learning Management System,*

## Introduction

The use of Information Communication Technology (ICT) is a vital prerequisite for the development of a knowledge-based economy. Universities are undergoing paradigmatic shifts as they make greater use of information and communications technologies. This has resulted

in the use and adoption of e-learning, which has appeared as an essential tool to impart knowledge in the university as well as corporate sectors.

E-learning systems are adopted by some educational and technical training institutions to support distance learning (pure exclusive e-learning), whilst others use e-learning system to supplement more traditional ways of teaching (blended learning). For distance learning, e-learning systems can be fully used to build a virtual learning environment wherein all coursework is conducted exclusively online (Rainer et al., 2007). On the other hand, blended learning environment integrates instructional delivery in a face-to-face context with online learning, either synchronously or asynchronously (Gribbins et al., 2007). Thus, blended learning is defined as a combination (blend) of e-learning and face-to-face classroom learning environments (Graham, 2006; Wu and Hwang, 2010).

Among the e-learning tools on the market, LMSs are viewed as the most basic and reliable e-learning tool in blended learning environments, and they are often the starting point of any Web-based learning program (Kakasevski et al., 2008). Examples of LMS are Blackboard, WebCT, eCollege, Moodle, Desire2Learn, and ANGEL etc. An LMS not only provides academic institutions with efficient means to train and teach individuals, but also enables them to efficiently codify and share their academic knowledge (Al Busaidi, 2012).

The usage of the LMS has become a requirement at Universities. Most of the Universities have developed their own LMS portal for the use of their own lecturers and students and expect lecturers and students to use these technologies for teaching and learning in an effective way. Although LMS survives via lecturers' and students' use, the adoption of LMS is initiated by lecturers' acceptance and use, which in turns initiates and promotes students' utilization of LMS in classes. As well as learners' continuous acceptance and use is significant for the success of LMS deployment. Thus examining the success factors of LMS deployment is essential for its continuous use. This study investigates the students' perspectives on the adoption of LMS in blended learning environment.

## **Review of Literature**

Tertiary education, to be effective must connect students as dynamic members in their learning. Attaining this effectiveness indicates providing students' opportunities for interaction in means that can encourage modification and improvement in the student's formation or creation of knowledge. Tertiary education intends to persuade students to develop into independent enduring learners, proficient in problem solving and analytical thinking, and to shift them from being reactive receivers of information and knowledge to being proactive, eager learners and information inventors. In addition, tertiary education is aimed at constructing significant learning affiliations between students and teachers, and students and their peers. It involves persuading teamwork in learning as well as alliance in learning; the proper use of technology for teaching recommends grand chances for the encouragement of inventive and collaborative e-learning atmospheres.

University students are becoming more diverse and demand for e-learning based courses is increasing (Papp, 2000; Volery and Lord, 2000). Students need to have time management, discipline, and computer skills in order to be

successful in the e-learning era (Selim, 2007). Student earlier IT familiarity with computer and attitude towards e-learning is vital to e-learning accomplishment. A number of students' perspectives influence students' adoption of LMS.

Al-Busaidi (2012) concluded that learners' characteristics such as computer anxiety, technology experience and personal innovativeness are significant factors for learners' perceived ease of use of LMS, whereas technology experience is a significant factor for its actual use. Guo and Stevens, (2011) investigated the factors influencing perceived usefulness of wikis for group collaborative learning by first year students. The study found that wiki use was influenced by the student's prior or expertise with wikis, with their perceived usefulness of wikis and the ease of access to the wikis. The students' overall attitude towards wikis was largely influenced by the extent to which they saw wikis as helping with their assignment work, and their intension to use wikis in the future was driven by their perception of wiki's usefulness.

Ayub et al., (2010) identified students' technology competencies and attitudes toward the usage of LMS as the factors that influence students use of LMS in teaching and learning. Al-Busaidi (2009) examined several learners' characteristics in terms of self efficacy, attitude toward e-learning, e-learning experience, computer anxiety and personal innovativeness. These characteristics influence learners' acceptance of LMS.

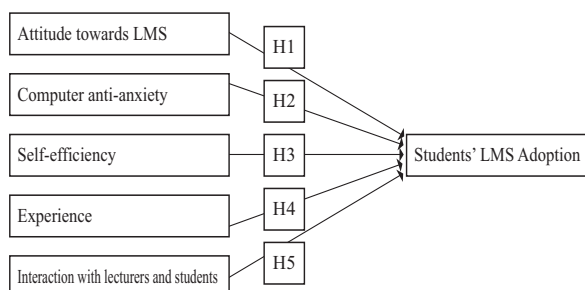
According to Ozkan et al., (2009), learner perspectives includes learner attitude towards LMS, learner's computer anxiety, self efficiency, enjoyable experience and interaction with other students and teacher, and these factors influence students' adoption of LMS.

This study examines students' perspectives in terms of attitude towards LMS, computer anti-anxiety, self efficiency, experience and

interaction with lecturers and other students and these factors influence the students’ LMS adoption (see Figure 1)

## Research Framework

The framework was conceptualized based on the work of Al- Busaidi (2012), Al- Busaidi (2009), Abbad et al., (2009), Sun et al., (2008), Ozkan et al., (2008), Wan et al., (2007), Pituch and Lee (2006), Arbaugh and Duray, (2002), Arbaugh, (2000), Wang and Newlin, (2002), Piccoli et al., (2001), Webster and Hackley (1997), and Sumner and Hostetler (1999).



**Figure 1 Research Framework**

**Students’ attitude towards LMS:** The definition of student attitude is students’ “impression of participating in e-Learning activities through computer usage” (Sun et al.,2008). Students’ attitude towards LMS is an important factor for their acceptance of LMS. According to Ozkan et al., (2008) learner attitudes toward computers will positively influence perceived e-learner satisfaction from LMS. Much research indicates that learner attitude towards computers or IT is an important factor in e-Learning satisfaction (Arbaugh, 2002; Arbaugh and Duray, 2002; Hong, 2002; Piccoli et al., 2001). A more positive attitude toward IT, for example, when students are not afraid of the complexity of using computers, will result in more satisfied and effective learners in an e-Learning environment (Piccoli et al., 2001).

**Computer anti-anxiety:** Computer anxiety can be a critical factor for learners’ acceptance of LMS. Users’ anxiety is different from attitude

which represents beliefs and feelings toward computers (Heissen et al., 1987). Computer anxiety is defined as the fear or apprehension felt by individuals when they used computers, or when they considered the possibility of computer utilization (Simonson et al., 1987, p. 238). Thus, computer anxiety can negatively impact learners’ acceptance and use of LMS. Several empirical studies found a significant negative effect of users’ computer anxiety on satisfaction of e-learning (Sun et al., 2008), and usage of LMS (Al-Busaidi, 2009). A fear of computers will negatively impact the e-learning environment and, consequently, the user’s perceived satisfaction (Piccoli et al., 2001). Learners with high computer anxiety will probably not accept and use LMS and will not be satisfied with it. They may consider it difficult and not useful.

**Self efficiency:** Computer self-efficacy refers to self-assessment of the ability to apply computer skills to accomplish tasks (Compeau et al., 1995). Bandura (1986, p. 391) defined self-efficacy as people’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. The higher the learners’ computer self-efficacy, the more likely they are to use to become satisfied with it. In the e-learning context, self-efficacy is interpreted as a student’s self-confidence in his or her ability to perform certain learning tasks using a learning management system (LMS). A student who has a strong sense of his capability in dealing with an LMS may have a more positive perception of its ease of use and usefulness and is likely to be more willing to accept and use the system. Wang and Newlin (2002), from research on 122 students, conclude that students with higher self-efficacy are more inclined to adopt network-based learning and earn significantly better final grades.

**Experience:** Learners’ experience with the use of technology plays a role in the effective use of technology. An individual’s experience with the use of technology is the individual’s exposure to the technology (e.g., LMS) and the skills and

abilities that he or she gains through using a technology (Thompson et al., 2006). Learners' technology experience has a major impact on learning processes and, consequently, learning outcomes (Wan et al., 2007). Learners' experience is important for learners' perceived ease of use and perceived usefulness of LMS (Pituch and Lee, 2006). In addition, the current level of computer skills and extent of use of computing skills in teaching are important for acceptance of ICT in education (Sumner and Hostetler, 1999). The more technology experience a learner has, the more accustomed the learner will be to ICT in education and will perceive it as easy and useful and use it. Moreover, long-term technology experience indicates that learners are satisfied with the technology.

**Interaction with lecturers and other students:**

The key elements of learning processes are the interactions among students themselves, the interactions between faculty and students, and the collaboration in learning that results from these interactions. Interaction in an e-learning environment not only involves learners with the instructor, but also learners with other learners (Moore, 1989). A major source of developments in e-learning has come via technologies that promote increased learner interaction. Interactions can be either synchronous or asynchronous (Abbad et al., 2009). Thus interaction with learners and lecturers in an e-learning environment is a very important factor for learners' acceptance, use, and satisfaction with LMS in blended learning. The frequency, quality, and promptness of interaction in an e-learning environment might affect the learner's satisfaction and learning success (Sun et al., 2008). Hence, classmates' interaction through the LMS enhances the learner's perception of usefulness of LMS stimulates learner use and satisfaction.

Based on the preceding discussion, the following hypotheses were formulated

H1: Students' attitude towards LMS is significantly related with their LMS adoption.

H2: Students' computer anti-anxiety is significantly related with their LMS adoption

H3: Student' self efficiency is significantly related with their LMS adoption

H4: Students' experience in using the LMS is significantly related with their LMS adoption

H5: Students' interaction with lecturers and other classmates is significantly related with their LMS adoption

**Research Methodology**

The conduct of this study is using quantitative approach. Department of Industrial Management, University of Kelaniya is involved in the study. Findings of the study are then used to test the formulated hypotheses. In order to test hypotheses, self-administered questionnaire is disseminated to the LMS adopters. A stratified sampling technique is adopted in order to assure that respondents are well responded. A total of 50 questionnaires are distributed and all of them are returned and usable. Table 1 summarizes the demographic profile and descriptive statistics of the respondents.

**Table 1:  
Demographic profile and descriptive  
statistics of surveyed students**

Item	Frequency	Percentage
Gender		
Male	19	38
Female	31	62
Age or Level		
20-22 (Level 2)	24	48
23-25 (Level 3)	26	52
PC ownership		
Yes	42	84
No	08	16
Laptop ownership		
Yes	47	94
No	03	06
Often of LMS use		
Regular	15	30
Just-to download	35	70

A survey instrument is developed in order to specify the students’ perspective factors within each category. The students’ attitude towards LMS constructs are self developed based on the work of Venkatesh and Davis (1996) and Rogers’ (2003). To capture students’ computer anti anxiety the measure is self developed based on the work of Al- Busaidi (2009,2012). Students’ self efficiency construct is self developed based on the work of Wang and Newlin (2002). Students’ experience measure is self developed based on the work of Ozkan et al., (2008). To measure students’ interaction with lecturers and other classmates, the construct is adopted from the work of Ozkan et al., (2008). All items used a five-point Likert-type scale of potential responses: strongly agree, agree, neutral, disagree, and strongly disagree. Statistical software package SPSS version 16.0 is used to analyze the data.

The study employed correlation and regression analysis. According to Alreck and Settle (1995), when the objective of the study is to test the degree and significance between two continuous variables from interval or ratio scales, the appropriate techniques is either correlation or regression analysis. According to Bryman and Cramer, (2001) Correlation entails the provision of a yardstick whereby the intensity of strengths of a relationship can be measured. However correlation analysis gauges only the degree to which two variables are related or move together but there is no assumption that one is causing or affecting the other (Alreck and Settle, 1995). Therefore, to measure the degree and direction of influence the independent variable on the dependant variable, the regression analysis is also applied in this study.

## Findings and Discussion

Students’ perspectives that are examined in this study consist of students’ attitude towards LMS, computer anti-anxiety, self efficiency, experience and interaction with lecturers and other students. As shown in Table 2, the correlation analysis between the aforementioned variables (except students’ computer anti-anxiety) against students’

LMS adoption produced significant positive correlations. Finally regression analysis (see Table 3) using the enter method is also executed separately between students’ perspective variables and their LMS adoption.

**Table 2:**  
**Correlation matrix between students’ perspectives and students’ adoption of LMS**

Students’ Perspectives	Correlation	P Value
Attitude towards LMS	0.681**	0.000
Computer anti-anxiety	0.227	0.113
Self efficiency	0.329*	0.020
Experience	0.652**	0.000
Interaction with learners and students	0.487**	0.000

Students’ attitude towards LMS has significant positive relationship with their LMS adoption ( $r=0.681$ ,  $p=0.000 < \alpha = 0.05$ ). This indicates that, students’ attitude towards LMS positively affect their adoption of LMS. Further, based on the regression analysis (see Table 3), it is discovered that students’ attitude towards LMS solely explains 46.4% variation in their LMS adoption i.e.  $R^2 = 0.464$ , with  $F = 41.474$ , and  $p = 0.000$ . Therefore H1 is well supported and further supports previous studies by Piccoli et al., (2001) Arbaugh, (2000), Arbaugh and Duray, (2002), Hong, (2002), and Ozkan et al., (2008).

**Table 3:**  
**Summary of regression analysis between students’ perspective variables and their adoption of LMS**

Students’ Perspectives	B	R <sup>2</sup>	Adjusted R <sup>2</sup>	F	P
Attitude towards LMS	0.785	0.464	0.452	41.474	0.000
Computer anti-anxiety	0.187	0.051	0.032	2.601	0.113
Self efficiency	0.283	0.108	0.089	5.809	0.020
Experience	0.491	0.425	0.413	35.436	0.000
Interaction with learners and students	0.392	0.237	0.221	14.912	0.000



Results of the correlation analysis unveiled that there exist positive correlation between students' computer anti-anxiety and their LMS adoption. The value of Pearson's  $r = 0.227$ ,  $p = 0.113$ . Consequently, based on the regression analysis, it is noted that the value of  $R^2 = 0.051$  denoting that computer anti-anxiety explains 5% of the variation on LMS adoption (see Table 3). The finding also implied that the formulated hypothesis H2 is supported and further support previous studies by Heissen et al., 1987, Piccoli et al., 2001, Sun et al., 2008 and Al-Busaidi, 2009.

In the e-learning context, self-efficacy is interpreted as a student's self-confidence in his or her ability to perform certain learning tasks using a learning management system (LMS). This study at hands hypothesizes that self efficiency is significantly related to LMS adoption. Results of the correlation analysis (see Table 2) indicates that the value of Pearson's  $r = 0.329$ ,  $p = 0.020 < \alpha = 0.05$ . This value suggests that correlation exists between students' self efficiency and their LMS adoption.

Further results of the regression analysis unveiled that the value of  $R^2 = 0.108$ , with  $F = 5.809$  and  $p = 0.020$  (see Table 3), thus students' self efficiency explains 10.8% of the variation in LMS adoption and evidently support the hypothesis H3. Apparently, positive moderate relationship between self efficiency and LMS adoption also confirmed. Hence, support and strengthen findings by Wang and Newlin (2002).

As shown in Table 2, result of the correlation analysis between experience and LMS adoption indicates strong positive relationship. The value of Pearson's  $r = 0.652$ . Based on the results of the regression analysis as displayed in Table 3, students' experience explains 42.5% variations in their LMS adoption with  $F = 35.436$  and  $p = 0.000$ . This finding entails that H4 is substantially supported and thus consistent with the findings of Sumner and Hostetler (1999), Pituch and Lee (2006) and Wan et al. (2007).

Correlation analysis between students' interaction with lecturers and other students and students' LMS adoption yields Pearson's  $r = 0.487$ , and hence it can be confirmed that positive significant relationship exists between the aforesaid two variables. Results of regression analysis indicate that the interaction with lecturers and students explains 23.7% variation in LMS adoption with  $F = 14.912$  and  $p = 0.000$ . Nevertheless, the result has further strengthened finding by Sun et al., (2008).

## Conclusion

In an LMS adopting environment, especially in the context of Department of Industrial Management, university of Kelaniya, it is not really known on the status of students' perspectives on their LMS adoption. In Sri Lankan context, perspectives such as students' attitude towards LMS, computer anti-anxiety, self efficiency, experience and interaction with lecturers and other classmates remain unknown until the venturing of this study. Students' perspectives including the aforesaid factors play a significant role in determining their LMS adoption. Results and findings of this study have provided empirical evidence regarding the important aspect of students' perspectives that would significantly contribute towards students' LMS adoption.

Universities should support LMS deployment through improving learners' perspectives such as attitude towards LMS, experience, interaction with lecturers and other students, self efficiency and computer anti-anxiety

Students' attitude is the students' impression of participating in e-learning activities through computer usage, thus using LMS environment. Respondents of this study have agreed that their attitude towards LMS is encouraging and gladdening, and positively inclined towards creating an environment for LMS adoption. This is because all most all the students perceive that using the LMS would enhance their learning task in numerous ways. This is consistent with

Technology Acceptance Model or TAM (Davis, 1989; Venkatesh and Davis, 1996). According to this model, beliefs that a new application of technology is useful and easy to use influence the users' attitudes toward the technology and thereby their decision to use the technology. This study has provided empirical evidence in supporting TAM that perceived usefulness is a driver of individuals' LMS adoption via influencing their attitude. Among the five students' perspective dimensions, this dimension scores the highest rating from respondents. Without doubt, Students' attitude toward LMS explains about 46.4% of the variation of their LMS adoption.

Computer anti-anxiety is different from attitude which represents beliefs and feelings toward computers. Generally respondents have agreed that computer anti-anxiety is found to be positively correlated to LMS adoption. This is because; the students do not feel any difficulties in using the LMS. Thus the system quality features such as easy interface, easy structure, easy navigation, easy access etc. which make them not to feel any difficulties and to use LMS for their learning task. Indeed, findings of this study have certainly confirmed that computer anti-anxiety is found to be positively correlated to LMS adoption.

In this study, students' self efficiency is found to be strong predictor to their LMS adoption. This is, as the respondents are confident enough to use all the contents of LMS; and have a more positive perception of its ease of use and usefulness and is likely to be more willing to accept and use the LMS.

In term of experience, the respondents of this study indicates positive stance and their experience solely explains 42.5% variations on LMS adoption. The fact behind this is that 52 % of respondents are using LMS for three years and 48% of respondents are using LMS for two years. Thus, all respondent have enough experience with LMS and enjoy using LMS for their learning purposes.

In term of interaction with lecturers and other students, respondents of this study indicate positive stance and these motivating them in adopting the LMS. This is because the respondents of this study believe that the LMS makes the communication easier with lecturers and classmates. Hence, students' interaction through the LMS enhances the learner's perception of easiness and usefulness of LMS stimulates learner use and satisfaction.

This study confirms some findings of previous studies of Al- Busaidi (2012), Al- Busaidi (2009), Abbad et al., (2009), Sun et al., (2008), Ozkan et al., (2008), Wan et al., (2007), Pituch and Lee (2006), Arbaugh, (2002), Arbaugh et al., (2002), Wang and Newlin, (2002), Piccoli et al., (2001), Webster and Hackley (1997) and Sumner and Hostetler (1999).

The above mentioned studies had been done in foreign countries thus in the Middle East, and in Malaysia and Oman and such knowledge is lacking in Sri Lankan context. Hence, this study has provided valuable insights for students and universities in Sri Lankan perspectives.

## Limitations and Future Research

This study has limitations. First, the sample is collected from the Department of Industrial Management, university of Kelaniya, more researches can be conducted at several department, and in different universities to evaluate the findings that would be appropriate to generalize the findings. Second future research might also examine the other critical factors ( i.e. lecturers' performance, LMS characteristics, and university support) influencing the success of universities' LMS adoption in detail. Also, the study assesses LMS adoption from students' perspective and further research may evaluate it from lecturers' perspective.

## References

- Abbad, M.M., Morris, D. and Nahlik, C. (2009), "Factors Affecting Student Adoption of E-Learning Systems in Jordan" *International Review of Research in Open and Distance Learning*, Vol. 10, Number 2. ISSN: 1492-3831
- Al-Busaidi, K.A. (2009), "The Impact of Learning Management System Characteristics and User Characteristics on the Acceptance of E-Learning" *International Journal of Global Management Studies* Vol. 1, No. 2, pp. 75–91.
- Al-Busaidi, K.A. (2012), "Learners' Perspective on Critical Factors to LMS Success in Blended Learning: An Empirical Investigation." *Communications of the Association for Information Systems*: Vol. 30, Article2.
- Alreck, P.L. and Settle, R.B. (1995), "The survey research handbook." 2<sup>nd</sup> edition. Chicago: Irwin.
- Arbaugh, J. B., and Duray, R. (2002), "Technological and structural characteristics, student learning and satisfaction with web-based courses – An exploratory study of two on-line MBA programs." *Management Learning*, Vol. 33, No. 3, pp. 331–347.
- Arbaugh, J.B. (2000), "Virtual Classroom Characteristics and Student Satisfaction with Internet-Based MBA Courses" *Journal of Management Education* Vol. 24, No. 1, pp. 32-54.
- Ayub, A.F.M., Tarmizi R.A., Jaafar, W M.W., Ali, W.Z.W. and Luan, W.S. (2010), "Factors influencing students' use of a LMS portal: Perspective from Higher education students." *International Journal of Education and Information Technology*. Issue 2, Volume 4, 2010.
- Bryman, A. and Cramer, D. (2001), "Quantitative data analysis with SPSS Release 10 for Windows: A Guide for Social Scientists. New York: Routledge.
- Compeau, R., Deborah, A., Higgins, A. and Christopher. (1995), "Computer Self-Efficacy: Development of a Measure and Initial Test" *MIS Quarterly*, Vol. 19 No. 2, pp. 189-211.
- Graham, C.R. (2006), "Chapter 1: Blended Learning System: Definition, Current Trends, Future Directions" in Bonk, C.J. and C.R. Graham (eds.) *Handbook of Blended Learning*, San Francisco, CA: Pfeiffer.
- Gribbins, M.L., Hadidi, R., Urbaczewski, A. and Vician, C. (2007), "Technology-Enhanced Learning in Blended Learning Environments: A Report on Standard Practices" *Communications of the Association for Information Systems* (20) Article 46, pp. 741–759.
- Guo Z., and Stevens, K.J. (2011), "Factors influencing perceived usefulness of wikis for group collaborative learning by first year students" *Australasian Journal of Educational Technology* Vol. 27, No. 2, pp. 221-242.
- Heissen, R.K., Jr., Glass, C.R., & Knight, L.A. (1987), "Assessing computer anxiety: development and validation of the computer attitude rating scale. *Computer in Human Behavior*, Vol. 3, No. 1, pp. 49–59.
- Hong, K.S. (2002), "Relationships between students' and instructional variables with satisfaction and learning from a Web-based course", *Internet and Higher Education*, Vol. 5, pp. 267–281
- Kakasevski, M., Sime A., and Slavcho C. (2008), "Evaluating Usability in Learning Management System Moodle." *Proceedings of the ITI 2008 30<sup>th</sup> International conference on IT interfaces*, June 23- 26, Cavtat, Croatia.
- Moore, M.G. (1989), "Three types of interaction", *The American Journal of Distance Education* Vol. 3, No. 2, pp. 1-6.
- Ozkan S., Koseler R., Baykal N. (2009), "Evaluating Learning Management System: Hexagonal e-learning Assessment Model." *Transforming Government: People, Process and Policy*, Vol. 3 No. 2, pp. 111-130, Emerald Group Publishing Limited
- Papp, R. (2000), "Critical success factors for distance learning" Paper presented at the Americas Conference on Information Systems, Long Beach, CA, USA.

- Piccoli, G., Ahmad, R., & Ives, B. (2001), "Web-based virtual learning environments: a research framework and a preliminary assessment of effectiveness in basic IT skill training." *MIS Quarterly*, Vol. 25, No. 4, pp. 401–426.
- Pituch, K. and Y. Lee (2006), "The Influence of System Characteristics on E-Learning Use" *Computers & Education* Vol. 47, No. 2, pp. 222–244.
- Rainer, R.K., E. Turban, and R.E. Potter (2007), "Introduction to Information Systems: Supporting and Transforming Business" Hoboken, NJ.: John Wiley & Sons, Inc.
- Rogers, M. E. (2003), *Diffusion of innovations* (5th ed.). New York: The Free Press.
- Selim, H.M. (2007), "Critical Success Factors for e-learning acceptance: confirmatory factor models." *Computers & Education* 49 (2007) pp. 369-413.
- Sumner, M. and D. Hostetler (1999) "Factors Influencing the Adoption of Technology in Teaching", *The Journal of Computer Information Systems* (40)1, p. 81.
- Sun, P.C., Tsai, R.S., Finger, G., Chen, Y.-Y. and Yeh, D. (2008), "What drives a successful elearning? An empirical investigation of the critical factors influencing learner satisfaction", *Computers & Education*, Vol. 50 No. 4, pp. 1183-1202.
- Thompson, R., Compeau, R. Deborah, and Higgins, C. (2006), "Intentions to Use Information Technologies: An Integrative Model" *Journal of Organizational and End User Computing*, Vol. 8, No. 3, pp. 25-47.
- Venkatesh, V. and Davis, F. D. (2000), "A theoretical extension of technology acceptance model: Four longitudinal field studies" *Management Science*, Vol. 46, pp. 186–204.
- Volery, T., and Lord, D. (2000), "Critical success factors in online education." *The International Journal of Educational Management*, Vol. 14, No. 5, pp. 216–223.
- Wan, Z., Y. Fang, and H. Neufeld (2007), "The Role of Information Technology in Technology-Mediated Learning: A Review of the Past for the Future", *Journal of Information Systems Education* Vol. 18, No. 2, pp. 183-192.
- Wang, A.Y. and Newlin, M. H. (2002) "Predictors of web student performance: The role of self-efficacy and reasons for taking an on-line class" *Computers in Human Behavior*, Vol. 18 No. 2, pp. 151-163.
- Webster, J. and Hackley, P. (1997), "Teaching Effectiveness in Technology-Mediated Distance Learning." *Academy of Management Journal* Vol. 40 No. 6, pp. 1282–1309.
- Wu, W.C, Hwang, L.Y. (2010), "The Effectiveness of e-Learning for Blended Courses in Colleges" *International Journal of Electronic Business Management*, Vol. 8, No. 4, pp. 312-322 (2010)

# INTERNATIONAL TEA MARKETING AND NEED FOR REVIVING SRI LANKAN TEA INDUSTRY

**Mohamed Ismail Mujahid Hilal**

*Senior Lecturer, Faculty of Management & Commerce  
South Eastern University of Sri Lanka*

**Kaldeen Mohamed Mubarak**

*Senior Lecturer, Faculty of Management & Commerce  
South Eastern University of Sri Lanka*

## ABSTRACT

*The objective of this paper is to analyze present trend of Sri Lankan tea industry and to identify problems in international marketing of tea. Qualitative methodology was adopted in this study. Checklist was prepared and researchers interviewed twenty six experts from tea exporting and marketing companies in Sri Lanka. Any strategy that will enhance the competitiveness in terms of sustaining competitive advantage globally is held up by high cost of production. Therefore, it is recommended that Sri Lanka needs to follow one of the best international entry modes to market tea internationally by having international organizations in tea marketing and exporting companies. This will help the industry improve the profitability and thus, protect people working in the plantation and Sri Lanka will get economic benefits. It is favorable for Sri Lanka having properly designed product, promotion, pricing and distribution strategies in accordance with the needs of international tea market are imperative for Sri Lankan tea industry to face the marketing challenges prevailing in the international tea market, which will assist Sri Lankan tea industry in competing intensively with other tea exporting or re exporting countries. Sri Lankan government may also extend massive support to the industry to convert export companies into international marketing oriented firms.*

**Keywords:** *International marketing, tea, Sri Lanka, exports*

## Introduction and Significant of the Study

The business environment is said to be more competitive with dynamic changes of customers in their preferences. At this juncture, export performances of countries are also seriously considered in order to fulfill the different needs of customers in all businesses in all countries (Eusebio *et al.*, 2007). International tea market, which comprises Sri Lanka, Kenya, China, India, Malawi, and Vietnam as major producers and exporters, are more dynamic and competitive in the vigorous international business environment. In the global tea market, although Sri Lanka is having considerable amount of income and employment generation from the tea industry, Sri Lankan competitiveness is substantially falling and thereby it is extremely difficult for Sri Lanka to have and maintain competitive advantage. The main reason for not having competitive advantage is lower productivity and high cost of production (Dulekha, 2008). In fact, in 1999, Sri Lankan tea had 21 percent international market share which was only 18.18 percent in 2008 but Kenya was having 23.34 percent export share internationally in the same year.

While considering the present situation of the tea industry of Sri Lanka, a strategy that will enhance the competitiveness in terms of sustaining competitive advantage globally is held up by high cost of production. Hence, the alternative approach is to convert exports into fully international marketing. Thus, the objective

of this paper is to analyze present trend of Sri Lankan tea industry and to identify problems in international marketing of tea that should be addressed with proper planning. There for this paper has been prepared in the following line. Firstly the introduction and significance of the study is precisely given. Secondly, an analysis is done with secondary data from various sources on international tea market explaining the position of Sri Lankan tea in the international market. Thirdly, review of related literature is given which explain how the industry competitiveness is declining in the international tea market. Fourthly, research methodology adopted for this study is elaborated. Qualitative data analysis and findings are given fifthly. The conclusions and recommendations are provided at the end of this paper.

## **Analysis of Sri Lankan Tea Industry and International Market**

Sri Lanka has secured an eminent place in the tea production and export in the world among the tea producing countries. Presently, Sri Lanka is the second world exporter of tea and maintaining distinguished image among the country markets. Sri Lanka exports 94 percent of it tea production to the world markets. Further, it generates more than one million employments in the country directly and indirectly. The tea industry contributes 15 percent to the foreign exchange earning of the country. Although it is having considerable foreign exchange earnings, the country will have economic benefits when the industry is maintaining sustainable competitive advantage over other tea producing and exporting countries.

China and India are the major countries with the largest tea production when compare with other producing nations. These two countries are major producers and consumers of tea in the world.

Sri Lanka is the fourth largest tea producing country in the world. Kenya is the third largest producer in the world and China and India are

the first and the second largest tea producers respectively. When observing Turkey, Indonesia and Vietnam, their production of tea is in the increasing trend in the global market. This indicates that these countries are emerging as competitors to the major producers in the international market.

## **Sri Lanka's Tea Export Markets**

Sri Lanka is exporting tea to various countries in the world. While major importing countries are consuming Sri Lankan tea and some of major countries that import Sri Lankan tea re export to various countries as value added tea for which the demand is growing to a large extent internationally. Some of Sri Lanka's major markets include Russia, United Arabic Emirates, Syria, Turkey and CIS. Major re exporting countries are United Kingdom, USA and Germany.

According to the statistical database of the Food and Agricultural Organization, major country markets for tea in the international market are the Russian Federation, United Kingdom and United Arab Emirates and USA in the world. Sri Lanka is exporting to Russian Federation only 26.8 percent (Calculated based on the Sri Lanka Tea Board Statistics) of total tea exported to that country and other rest of the tea is being exported other major producers specially by Kenya. United Kingdom is also one of the major tea consuming countries in the world. This country's tea need mostly fulfilled by Kenya. This unpleasant situation also stresses the urgent need for competitive strategy to uplift the tea industry of Sri Lanka.

When Pakistan is taken into consideration, it is one of the major tea consuming countries in the world and it is one of lucrative markets for Sri Lankan tea. In fact, the market size of the Pakistan tea is 160 – 170 million Kilogram annually. Tea import of Pakistan is also drastically increasing annually. Interesting point is that the import from Sri Lanka is falling from 3640 MT to 702 MT in 2007 with market share of merely 0.66 percent (SLTB, 2007). In

contrast, the Kenya's market share in Pakistan was increasing from 53.93 percent to 65.85 percent in 2007 (SLTB, 2007). This shows that Sri Lanka has lost its market in Pakistan as well. It is due to the fact that the escalated price of Sri Lankan tea derived from increased cost of production.

Sri Lanka is exporting most of the tea as bulk and not in the form of value addition. Therefore, it is extremely difficult for Sri Lankan tea industry to compete with other major tea exporters in the world. For instant, Kenya, India, China, Vietnam, Malawi and other tea producing countries are exporting bulk as well as value added tea at a lower prices comparing with Sri Lanka. Hence, the competition among exporting countries is taking place on price not on quality. This is one of the foremost reasons of declining in competitiveness of Sri Lankan tea in the global market.

Having a look at the export trend of major tea exporters enables us to gain insights into the international tea market and competition. Sri Lanka is facing rigorous competition from Kenya, Vietnam and Indonesia because Kenya captured most of the market since 2004 to date due to the popularity of the CTC (cut, tear and curl) tea it produces and has been capturing many markets due to the higher demand for CTC tea at low price. Sri Lanka is producing orthodox tea which is higher price when compare with other orthodox tea producers such as Vietnam and Indonesia of which the price is cheaper than Sri Lankan orthodox tea (Dulekha, 2008). Although the competitive activities of Vietnam and Indonesia are insignificant for Sri Lankan tea industry, they are emerging as competitors for Sri Lankan tea industry in the international market.

According to Food and Agricultural Organization's statistics, tea export of Sri Lanka has been falling and Kenya is surpassing Sri Lanka after 2004. Further it is noted that Malawi, Argentina, Vietnam and Tanzania are developing as emerging competitors for Sri

Lankan tea. Probably, these countries will compete with Sri Lanka effectively and efficiently in future.

### **Re-Exports of Tea**

Sri Lankan tea industry is facing competition from countries which are re exporting to major country markets. These countries are United Kingdom, German, Russian Federation, United States of America, France, Netherlands and Belgium. These countries are importing tea in bulk form from major producer countries and converting it as value added tea which has increasing demand internationally and it gives healthy profits than the tea growing nations. All most all the nations are exporting tea as primary commodity to these re exporting countries. The major pitfall of this operation is that the country which re exports tea as value added tea earns large margins than tea producing countries (Fonseka, 1997).

United Kingdom is one of the major tea importer in the world with per capita consumption of tea is 2.17 Kg per year. Further, tea is one of the leading beverages with 35 percent share in the beverage market. Sri Lanka is losing this huge market for many years and most of the tea needs are fulfilled by Kenya and the United Kingdom exports 20 percent of tea to the European Union, Canada, USA and Japan (SLTB, 2007).

The problem for Sri Lanka in re exporting of tea by other countries is that re exporting countries are exporting the value added tea under their own brand in which the origin of tea is not mentioned. Likewise, even in Sri Lanka, the multinational companies are exporting packeted tea and instant tea or in bulk under the distributors' brand name, which is not giving any competitive advantage for Sri Lankan tea.

### **Increasing Cost of Production of Sri Lankan Tea**

The unit value (\$/Tonne) of exported tea from Sri Lanka is higher than the other countries' unit value. It is noted that according to the FAO

statistics, the unit value of exported tea from Kenya was US \$ / Tone 1867 meanwhile the unit value of the Sri Lankan tea was 2865 US \$ / Tone. This trend of unit value indicates that the competitiveness of Sri Lankan Tea is declining during the past many years. The main reason for the decline in competitiveness is price competition.

In addition, we can see the increased cost of production of Sri Lankan tea. The following table gives the unit cost of production per kilogram of made tea produced in Sri Lanka.

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Cost (SL Rs/Kg)	100.82	105.88	113.39	121.97	126.72	133.09	149.13	161.98	210.75	231.49

Source: Agriculture and Environment Statistics Division, Department of Census and Statistics, Sri Lanka

It is observed that the cost per kilogram of tea in Sri Lanka drastically increased to SLR 231.49 per Kg. This was also one of the reasons for increasing the unit value of the exported tea from Sri Lanka.

## Review of Literature

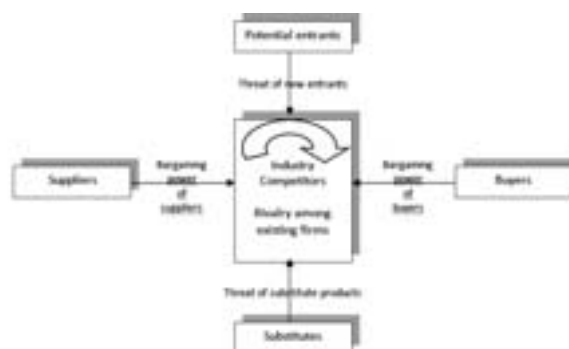
### Competitive Environment of Sri Lankan Tea Industry

The industry environment comprises the economic factors such as customers, competitors, suppliers, buyers, and potential substitutes which are directly relevant to a specific industry (Pitts and Lei, 2007). In order to analyze the industrial environment Porter developed a model called Five Forces Model (Figure 1). The five forces in the competitive environment have impact on the industry attractiveness which determines the potential profitability of the industry.

#### Industry competitors

Thirty four countries are producing tea in the world in which Sri Lanka, Kenya, India, China, Indonesia and Vietnam are major producers in the world. The tea industry is experiencing harsh competition in which Kenya, Sri Lanka, India, China and Indonesia are the major rivals

in the market. Due to the lower cost producer, the market leader Kenya is having high growth rate comparing with Sri Lanka. Kenya had 25.64 percent growth in production of tea from 1998 to 2007 but comparatively Sri Lanka had only 8.98 percent growth in production in the same period. Further, these six countries represent 84.21 percent (Calculated based on the ITC Report) of total tea export of the world. The differentiation strategy is not pursued increasingly in Sri Lanka. It is because of the fact that 60 percent of tea exported from Sri Lanka is in the form of bulk another 40 percent are exported as tea packets and tea bags to various countries under distributors label. Since the demand for value added tea is in increasing trend, the value added tea exported from Sri Lanka is not in significant quantity to accomplish the requirements of the foreign markets. Another important point is to stress here is that considerable quantity of tea is being exported to international tea processing firms to add value and to be sold by them under their own brand. Exit barriers arise in the industry due to the huge investment in machinery and other assets which cannot be reused if the industry is shutdown (Fonseka, 1997). As a consequence, exit barriers are also likely to be discouraged.



Source: Adapted from Porter, M.E (1980). Competitive Strategy: Techniques for Analyzing Industries and competitors

Figure 1: Porter’s five forces model of industry attractiveness

#### Threat of new entrance

Although some new countries entered into the tea industry in the past decades, some of the major producing countries are manufacturing tea



at lower cost when compared to Sri Lanka. This causes threats to the new entrance. In addition to that, some of the eminent brands in the world tea market bring premium prices and thereby the firm earns larger margins. In fact multinational companies are having well known brand with more than hundred years of survival in the market. For example, Ty-phoo Tea Ltd. is marketing tea under the different brand names such as Ridgways, Lift, Glengettie, Fresh Brew, Melrose's for consumers with varied tastes and different requirements. Similarly, Lipton, Tetley and PG Tips are also marketing value added tea at premium prices. Further, the agro climatic conditions and the duration of yield are also encouraging barriers to new entrance. Thus, it could be stated that the threat of new entrance is positive in the tea industry.

#### ***Threat of substitutes***

Despite the tea is the cheapest beverage next to water, tea has enormous substitutes in the beverage market. These are milk, carbonated soft drink, fruit juice, coffee, alcohol and other drink. Even if the demand for tea is increasing in the international market due to the health benefits contained in it, the consumption of soft drinks have not fallen to that extend of significant level. Also most of the young people leisurely want carbonated soft drink not tea. Hence it can be concluded that the threat of substitutes is high.

#### ***Power of buyers***

Since the standardized or undifferentiated product is sold at auction, the price is determined at the auction itself as a result of that the bargaining power of buyers has been raised in the tea industry (Ali *et al.*, 1997). Further it has been identified that ultimate consumers need value for money so that most of the developed countries' consumers demand for quality tea from overseas retailers. Then, the overseas retailers will demand premium quality tea for gaining brand loyalty from their customers (Outschoorn, 2000). In this way the buyers exert more influences on the industry.

#### ***Power of suppliers***

Suppliers are exerting power on industry and have impact on profitability. It is obvious that tea industry has to depend on many foreign and local suppliers such as companies importing agro chemicals, fertilizers, tea chests and packaging materials which are imported from Singapore, India, Indonesia and Russia and also transport association has leverage on the industry due to the transport form tea factory to Colombo Auction (Fonseka, 1997).

Analysis of competitive forces shows that these five forces are high in the tea industry. This will have impact on the attractiveness and profitability of the industry. Therefore it is essential to formulate strategy for the tea industry to overcome competition in the industry and to gain competitive advantage in the international tea market.

#### **Competitive Advantage for Sri Lankan Tea Industry**

The nature of industrial competition has been changed by global competitiveness, reduced product life cycle, growing technological advancements and changing customer requirements so that the price (cost) will not be sole factor for competitive advantage (Beal and Lockamy, 1999). Competitive advantage is vital for Sri Lankan tea industry because it is required for Sri Lankan tea industry to formulate and implement strategy that gives sustainable competitive advantage. Sri Lankan tea industry should have distinctive competence which enables the industry to differentiate itself from competitors and create competitive advantage. These distinctive competences include innovative product design, low cost manufacturing, superior quality and superior distribution, which Sri Lanka should have to build up competitive advantage in the tea industry for an extended period (Pitts and Lei, 2007). It has been further accentuated that Sri Lankan tea industry will face uncertainty in future if it has no strategic ideas for developing the basis for competitive

advantage which is important to boost the performance and to face the increasing competition in the global tea industry (Ariyawardena, 2003).

Considering the situation of Sri Lankan tea industry, achieving sustainable competitive advantage with competitive strategies is extremely difficult. Because the competitive advantage is not a matter of fact to be achieved immediately and it cannot easily be identified by firms. It is a journey for an organization but not a destination and most of the organizations are having problems in finding where the journey is in the competitive environments due to its changing and unpredictable style (Chaharbaghi and Lynch, 1999).

Competitive advantage can be defined as a outperforming of an industry that produce products with giving more value to the customers than competitors (Porter, 1985). Here it has been emphasized that industry's competitiveness in the international market owing to the national condition. It is the diamond of competitive advantage which comprises factor conditions, demand, related and supporting industries, firm strategy, structure and rivalry and externally government influences. When all these national conditions are positively giving strong support for the manufactures, the industry will experience competitive advantage globally. Competitive advantage should be identified and achieved on the basis of attributes which others cannot replicate but it is imitated globally due to the inability of firms to have patent for their innovation (Kanmpully and Duddy, 1999).

The diamond of competitive advantage model can be applied to the Sri Lankan Tea industry to understand the global competitiveness of it. Because the model suggests that nations' basic factors determine the achievement of competitive advantage internationally. In fact the industry is facing problem of higher cost of production when compared with other tea producing nations. The

cost of production for one kilogram made tea in Sri Lanka was SLRs 100.82 in 1998 but it was SLRs 231.49 in 2008 (See Table 5) and hence the factor condition is not supportive as Sri Lanka's labour cost is high. Meanwhile, the demand condition for Sri Lankan tea is conducive to the competitive advantage. It is because of the fact that Sri Lanka tea is having higher demand abroad and its quality level is also higher. Firm strategy, structure and rivalry are also deciding factors of competition in view of how the firms are established and managed. In the case of Sri Lankan tea industry, the increased productivity and innovation have to be encouraged to achieve global competitive advantage. In Sri Lanka, the support given by the government is also not enough for the industry. The government should also be able to provide ample and strong support for the industry in order to build up competitive advantage globally. Export promotion programs should be provided by the government to tea producing firms with the view to increase export performance by improved capabilities, resources and strategies which will pave the way for overall competitiveness (Francis et al., 2004).

All businesses are succeeding due to some advantages over their competitors, which mean that they should have competitive advantages. Any firms that have competitive advantage in the industry put forward some strategies such as innovation, improved processes, higher quality, lower cost and marketing for achieving their business objectives (Rijamampiania et al., 2003). Sri Lankan tea industry does not possess innovative ideas to market tea products internationally and it has no lower cost production as well due to the increased cost of factor condition. Therefore Sri Lanka should devise a specific strategy in terms of gaining competitive advantage over other tea producing nations like Kenya.

The industry of Sri Lanka could be innovative in producing and marketing tea products in accordance with the requirements of foreign

markets, which will enable the industry to gain competitive advantage in global market. It is because of the fact that sustainable world class performance cannot be achieved when there is an imbalance between the firm's competitive strategies and requirements of the market (Beal and Lockamy, 1999). There are five sources of innovation from which competitive advantage could be achieved through. They are the new technologies, the modification of the demand or a new demand, the occurrence of a new segment, the changes in the costs or the availability of means of production and the changes in the regulation (Passemar and Kleiner, 2000).

The tea industry can locate its sources of innovation for competitive advantage in the modification of the demand or a new demand and in the new segment for tea. Because, value added tea is having growing demand in the international tea market. Although Sri Lanka has introduced value added tea to different international markets, the quantity and the extend of value addition is not considered to fulfill the present requirement of the global market. Because the choice of strategy and ability to perform the specific strategy are weakly associated with core resources of value added tea producing firms and thus Sri Lankan tea producing firms have to enhance the core resources to achieve the competitive advantage (Ariyawardana and Bailey, 2002). However, there is a good demand for specialty (White, green and other value added) tea and there is decline in sale of black tea presently and it is further highlighted that the white tea is a new trend in international markets owing to its more health advantages than green tea (Gourmet Retailer, 2005). When the export of tea from Sri Lanka is examined, only small portion of green tea is being exported to major markets. The relationship among the exporters, importers and other members in the supply chain will also create competitive advantage which is extremely difficult to be reproduced by competitors in tea industry (Kasturiratne and Poole, 2006).

## Generic Strategies to Build Competitive Advantage

Despite there are many ways for competitive strategies, Porter has identified three generic strategies which can be used as sources of competitive advantage for Sri Lankan tea industry. This is shown in the Figure 2.

### *Cost leadership strategy*

Low-cost leadership strategy requires producing tea product at lower cost and prices it at lower level than the competitors' price as a result of which the industry will gain competitive advantage but in the case of Sri Lankan tea industry, achieving lower cost leadership is not possible due to the high cost of production. The reason for the higher cost of production because

		Competitive Advantage	
		Defined by Cost	Defined by Distinctiveness
Target Market	Industry wide (Broad)	Low-cost leadership	Differentiation
	Specific Niche or Segment (Narrow)	Cost-based Focus	Differentiation - based focus

*Source:* Adopted from porter, M.E. (1998) The competitive advantage: creating and sustaining superior performance with a new introduction

**Figure 2: Three generic strategies**

of the high wage, lower productivity and lower yields when compare with other major producers (Outschoorn, 2000). Sri Lankan tea industry will be able to convince the competitors not to compete on price if they have the cost leadership strategy. Thus, Kenya and some other major tea producing countries are having lower cost of production and maintaining competitive advantage over Sri Lankan tea industry and capturing the global tea market. To achieve the cost advantages, firms has to put more efforts on controlling production and marketing costs by reducing various costs including R & D and other distribution and promotional costs (Prajogo, 2007). Sri Lankan tea industry is not in a position to bring down the costs incurred for tea products because it is in need of carrying out

marketing research activities abroad and has to invest on improving the product and promoting them to international arena.

### ***Differentiation strategy***

Differentiation strategy involves giving consumers products with different attributes which differentiate the product from competitors' offerings. This strategy is a source of competitive advantage in the way of delivering distinct products which are attributed by some different features such as quality and innovation, consumers will pay premium prices for the product due to the additional value to customers (Prajogo, 2007). Since Sri Lanka is having higher cost of production, it is better for Sri Lankan tea industry to adopt differentiation strategy for gaining differential advantage. Also the quality and other features of Ceylon tea are encouraging this type of strategy. In Sri Lanka, tea is manufactured in six different agro climatic regions with varied specialty tea suitable to different consumer tastes and lifestyle (Dulekha, 2008). This can also be used as one of the differentiation strategies on which the competitive advantage is based. Despite there are many sources of competitive advantages based on the differentiation, strategies based on high quality will definitely increase the market share (Pitts and Lei, 2007).

### ***Focus strategies***

This is the third generic strategy. It targets narrow segment or regional markets for a product. Due to this focus strategy firm can attract new customers or attract repeat purchases. Firms can pursue this strategy either adopting a differentiation – based focus or adopting cost – based focus. As far as Sri Lanka is concerned, the cost based focus strategy cannot be adopted due to the increasing cost of production but it is possible to take up differentiation based focus. For this reason, Sri Lanka tea industry can follow differentiation based focus strategy by identifying niche markets for specialty tea.

Sri Lanka can maintain competitive advantage only when they are having value added tea products with differentiation strategy. If not, it is extremely difficult for the industry to sustain competitive advantage over other competitors like Kenya, India, China and Indonesia.

### **Research Problem**

Sri Lanka is the fourth largest producer among the major producers namely China, India, Kenya, Indonesia, Vietnam and Malawi. The Kenya is the market leader in the international tea market and it has been capturing most of the market since 2004. The most important problem faced by Sri Lankan tea industry is that bulk tea exported to various tea processing multinational companies in the world and it is processed as value added tea and re exported to major markets under the multinational companies' brand. Consequently, Sri Lanka is losing globally its image as Ceylon tea. Although researchers Dulekha (2008), Fonseka (1997), Ariyawardena (2003) Outschoorn (2000) suggested that differentiation strategy is an important strategy for the industry. According to the literature, high cost of production and unfavorable factor condition obstructed differentiation strategy and these led the industry to less competitiveness in the global market. Hence, Sri Lankan tea industry may attempt to engage in international marketing rather than putting efforts on exporting tea to the world markets. It is also pertinent to point out that re exporting countries are exporting the value added tea under their own brand in which the origin of tea is not mentioned. Likewise, even in Sri Lanka, the multinational companies are exporting packeted tea and instant tea or in bulk under the distributors' brand name, which is not giving any competitive advantage for Sri Lankan tea. It is, therefore, healthier to understand and list out the problems faced by the Sri Lankan tea industry with regard to international marketing of tea. This will help formulate international marketing strategies for Sri Lankan tea in the international market.

## **Research Methodology**

Qualitative methodology was adopted for this research. Primary and secondary data were used for this study. Secondary data were obtained from Sri Lanka Tea Board Annual Reports, Food and Agricultural Organization's database and International Tea Committee Annual Reports. A checklist was prepared and researcher met twenty six experts on tea exporting and marketing from twenty six companies in Sri Lanka. Due to executives' time constraints, researchers used telephone interviews as well. Since these experts are associated with many activities in their business, appointments were fixed. However, it took three months to complete the interviews with experts from these companies. Each interview took one and half hour to complete the interrogation duly.

Thematic analysis technique was used in this study. Qualitative information collected from the interview was recorded and transcribed by researchers with a view to familiarize with dataset enabling to generate initial codes for themes systematically. Then, similar codes which represent international marketing related problems into potential themes which production related problems, issues in export of Sri Lanka, international tea market and value added tea and marketing. These themes were used in the analysis.

## **Data Analysis and Finding**

### **Production Related Problems**

Despite the fact that tea production is increasing in the country every year by 8 per cent to 10 per cent, it is stagnant because it has increased from 300 million kilograms to 310 million kilograms.

Interviews with exporters reveal that major problem in the production of tea is increasing cost of production. It was found that reasons for increased cost of production are higher wage of labors, increased price of fuel, increased

electricity charges and high price of fertilizers. It is also noted that 70 per cent of the total cost of production is represented by labour cost. Other costs such as electricity also involved in the increased cost of production.

Though Sri Lankan government provides fertilizer on subsidy, it is not filling the requirements of tea planters. This affects the production of tea and it causes inferior quality of tea during production.

Another important issue is unfavorable climatic condition that prevails in the tea plantation areas is badly affecting the tea production and gets high moisture and high impurity which affect quality adversely. As a result, tea plantation companies are getting low yield compared to the favorable climatic periods. This also impact on the quality of tea produced and therefore, constant maintenance of quality of tea is very difficult for companies. In addition, interviewees disclosed that adverse whether condition and very old bushes in plantation areas also rooted low productivity.

Interviews with experts revealed that a number one orthodox tea producer in the world is Sri Lankan tea industry and many major markets are falling in favour of Sri Lanka orthodox tea. Further, Sri Lankan tea is produced under different climatic condition and under different elevations. Hence, the quality differs according to the elevation such as high grown, lower grown and medium grown. This is an advantage for Sri Lankan tea for having competitive advantage in the international market. The very best tea that Sri Lanka produces is high grown tea which has a beautiful golden liquor and intense powerful flavour. Another different quality tea is medium grown tea which better in flavour, aroma and colour. Another different quality tea is that low grown tea which is known as leafy grade tea. This is long leafed tea gives a slightly sweet aroma and a gentle smooth taste and usually used in blending.

### **Problems in Exports of Sri Lankan Tea**

Sri Lanka has already lost its major markets such as United Kingdom and Pakistan due to high cost of production. Interview with exporters emphasized that these two major country markets are no longer international market for Sri Lankan tea. It was also revealed that high cost of production and low productivity lead to high price and hence, bulk tea prices reached to the maximum. While Sri Lankan companies which export bulk tea are struggling in finding investment to export value added tea products to the world, the CESS which is levied by the government of Sri Lanka in order to discourage the bulk tea exports and encourage the value added tea exports from Sri Lanka. This also put additional burdens on the companies.

It is explicable from the interviews with exporters that iron filing is affecting Sri Lankan bulk tea exports. International markets are reluctant to accept tea that contained iron filing. The iron filing should not exceed the prescribed limit. Sri Lankan tea contains iron filing above the limits. Hence, it is also a biggest problem for Sri Lankan tea and it affects the export of tea.

Competition on price is another reason that affects the tea exports. Sri Lanka has high cost of production and thus, it is compulsory for the exporters to price the tea at high level. As a result, Sri Lankan tea has been pushed to the price competition. Other tea producers such as Kenya, Vietnam and other cheaper tea producing nations are utilizing this as an opportunity and export tea to country markets at low price.

Interviewees revealed that reasons for decreasing demand for the Sri Lankan tea in the world market is sky rocketing cost of production in Sri Lanka and increased production of Kenya with its virgin soil. It was exposed that Sri Lankan tea had increasing demand before 1998 and then gradually decreased due to the inability of paying high price of Sri Lankan tea and it had gone up from US \$ 2.5 to US \$ 3.8.

Sri Lanka is focusing on orthodox tea which accounted for almost 95 per cent of its tea production. Sri Lanka is principally being an exporter of bulk tea. However, there has been a gradual shift in consumption patterns with several countries switching to the use of more convenient form of the beverages such as tea bags. Hence, Sri Lanka has problems in marketing tea in the global market.

According to interviews with experts, the consumer preferences are continuously changing in the international tea markets. Now consumers want convenient products that fulfill the tea requirements easily and these consumers want more health benefits from the tea products. Hence consumers are moving from traditional tea brew to tea bags and to instant tea. Since Sri Lanka is having the highest cost of production in the tea industry, Sri Lankan tea is sold at expensive prices compared to the other origin tea. As a result the price competition arises between tea producing nations. Tea producing nations such as Vietnam, Indonesia and Kenya have lower cost of production and thereby they price their tea products at lower price.

### **International Tea Market**

As far as method of production is concerned, the orthodox method of production is good for differentiating Sri Lankan tea from other origin's tea. Although we are able to differentiate our tea from the other CTC tea, the CTC tea is more germane to the tea bag and it has more demand globally.

There are problems related to protectionism as well. This problem is mostly for value added tea. For example Russian Federation levies more tax for value added tea. Local blending and processing of tea in tea consuming countries are also problem for Sri Lankan tea in the international market. Most of the major country markets import tea from various origins and blend it in accordance with the requirements of local and global consumers. The problem is here

that they blend it not under the Sri Lankan brand but under the private brands. Thus, Sri Lankan tea's identification and its image in the global market are being vanished. This marketing strategy of other countries attributes negative effects but the blending countries generate more employments in the country. This is the reason why Russian Federation buys 20 per cent of the Sri Lankan tea production and the United Arab Emirates buy 28 million kilograms of tea out of 330 milling kilograms of tea production in Sri Lanka. On the other side this local blending activities also impact on the tea market and it become competition among the tea producers and value added tea producing global companies.

Experts reiterate that the consumer preferences changing all over the world. Changing consumer preferences in the sense, the younger generation wants specialty tea like, green, white tea etc. In most of the major markets, the value added tea has more demand. For instant, the tea bag demand is growing rapidly in the city areas of any country markets. The iced tea has more demand in the United States.

Interviews with experts revealed that the bulk tea exports to Commonwealth Independent States (CIS), Australia and Russian Federation are increasing. The specific reason for the increase of bulk tea export from Sri Lanka to CIS countries is that the bulk tea is blended locally in the country markets in line with the requirement of both domestic and international consumers and be re exported to major country markets. Through this blending process the CIS countries generate more employment domestically. It is also stated that tea exports to traditional markets such as European countries, Middle East and Pakistan have substantially declined due to the cheaper tea from other tea producing nations. These markets have been captured by the Kenya but still Russian Federation, CIS countries and Egypt and Libya are traditional markets for Sri Lankan tea.

Interviewees signified with regard to Pakistan market which is one of the major markets for

bulk tea in the world. Consumers in Pakistan are not concerned about the quality of tea. Since the price of the Sri Lankan tea is higher compared to the other origins' tea and Pakistan needs CTC tea which Sri Lanka produced only 15 per cent of total production, Pakistan is no more a major market for Sri Lanka. Contrarily, Russian Federation is more prone to quality of tea, Sri Lankan bulk tea has more demand in this market. Iran is also one of the major markets for bulk tea but they are looking at the packing quality of tea. Hence they import more bulk tea and pack it in the country itself in accordance with their quality standards. Dubai is also a major market for bulk tea. The import lager quantity of bulk tea and blend it at cheaper cost. It is pertinent to note here that all these traditional markets require high quality tea. However, Sri Lanka is struggling in constant maintaining high quality of tea due to unavoidable climatic problems and high cost of production.

With regard to the marketing of tea, interviews with experts revealed that around 70 per cent of Sri Lankan tea export companies are mostly engaged in direct exports. In other words, the marketing channels are through importers who are responsible for the distribution of tea in the country markets and rest is exporting through their agents.

### **Value added Tea and Marketing**

Sri Lankan tea industry is producing value added tea for international market. Although Russia, UK, USA and UAE are the major market for value added tea products, Sri Lanka does not tap into these major markets. Instead, Sri Lankan tea industry targets Russia, Syria, and Jordan as its major destination for tea bags. Interviews with exporters revealed that many non tea producing countries are also manufacturing tea bags and re export to various destinations, which a barrier for Sri Lankan tea bag producers. It is understandable from the expert interviews that Kenya is also using its 95 per cent of its tea for the production of teabags.

Sri Lankan value added tea marketers face severe competition from the international manufacturers of value added tea like Unilever and Tata Global Beverages. It is also very difficult to promote Sri Lankan value added tea in the international market due to lack of promotional budget. Sri Lankan tea bags are exported only 7-10 million kilograms of which very few branded tea but Unilever alone markets 100 million kilograms of Lipton tea bags globally.

It was revealed that the branding plays major role in marketing the Lipton and their investment. Unilever is marketing Lipton tea bags globally with huge promotional expenditures. Sri Lanka has taken insignificant efforts to market teabags under its own brand. Sri Lanka is facing problems in branding tea products. Unlike Lipton, Sri Lankan companies are facing problems in branding tea bags for European countries. The brand names which Sri Lankan companies own do not give proper identification and image for the Sri Lankan tea bags except few companies like Dilmah.

Tea bags are being promoted by advertisement, hoarding and billboards in many country markets. Sri Lankan companies bear 50 per cent of total cost and the rest will be borne by importing agent in some country markets. Further, Sri Lankan tea bags are promoted at supermarket chains in the country markets for which Sri Lankan companies wanted to pay US \$ 40,000. This is pricey for Sri Lankan companies and this promotional aspect is applicable in most of the European country markets. But this cannot be done by the Sri Lankan companies due to the lack of promotional budget.

Sri Lankan marketers are selling one brands in one market or different brands in the markets. It is depending on the consumer requirements i.e. taste and use of the tea. Sri Lankan tea bags producers sell different brands in different market globally. Akbar brands are marketed worldwide especially in Europe and Commonwealth Independent States. Akbar brands are offering a comprehensive range of tea

products including tea bag as major product. Further, the Akbar carries lion logo endorsed on the products which used for identification of origin of tea.

According to the expert interviews major markets for instant tea are United Kingdom, German, Canada and USA. Japan and Maldives are also becoming one of the major country markets for instant tea. Although Sri Lanka is one of the major tea producing countries in the world, Sri Lanka faces with technological problem coupled with research and development involved in instant tea production, for which substantial investment is required. Thus, insignificant quantity of instant tea is being exported from Sri Lanka and therefore, experts are of view that there is no market for Sri Lankan instant tea. Therefore, multinational companies have intensely invested in manufacturing instant tea and captured the instant tea markets globally.

## **Conclusions and Recommendations**

Sri Lanka is one of major tea producers in the world. Despite the fact that Sri Lankan tea industry has different quality of tea with different taste and aroma in accordance with agro climatic conditions prevail in the country, Sri Lankan companies are unable to market it with proper strategies through which competitive advantage could be achieved. Global consumer preferences are also changing. Thus, more convenient tea product has growing demand in the global market. Sri Lankan tea has been trapped in price competition as a consequence of high cost of production. Although Sri Lankan tea industry has best source of competitive advantage, it finds difficulties in capitalizing the advantage globally owing to the helplessness of engaging in international marketing activities. It is pertinent to note that 70 percent of companies in Sri Lankan tea industry are engaged in direct exporting of bulk tea and value added tea for distributors' brand. Hence, it is inferred that the economic benefits of tea plantations and



production hardly reach people who utterly depend on the tea industry. However, it is advisable for Sri Lankan companies to attempt engaging in international brand marketing process that enable firms to generate considerable profits and resultantly the industry becomes lucrative so that the economic benefits might reach the poor people working in the plantations.

Very few companies are doing international marketing in Sri Lanka like Dilmah, Eswaran Brother and Akbar Brothers etc. Other exporting companies too should invest to convert their exporting business into international marketing.

This study also leads to a further study measuring the international marketing orientation and marketing capabilities of firms that exports or internationally marketing Sri Lankan tea. This study based on secondary data and primary data collected from twenty six tea exporting and marketing companies. Since Sri Lanka has around two hundred tea exporters, it is required to study their needs as well to make the industry effective and efficient to a greater extent.

It is recommended that Sri Lanka needs to follow one of international entry modes that gives considerable margin in the marketing tea internationally by having international organizations created in the tea marketing companies in Sri Lanka. This will help the industry improve the profitability. It is beneficial for Sri Lanka having properly designed product, promotion, pricing and distribution strategies in accordance with the needs of international tea market are imperative for Sri Lankan tea industry to face the marketing challenges prevailing in the international tea market, which will assist Sri Lankan tea industry in competing intensively with other tea exporting or re exporting countries. Sri Lankan government may also extend massive support to the industry to convert export companies into international marketing oriented firms.

## References

- Ali R., Coudhry Y.A, Lister D.W. (1997), Sri Lanka's Tea Industry: Succeeding in the Global Market, World Bank Discussion Paper No. 368.
- Ariyawardana A., Bailey W.C. (2002), The Relationship between Core Resources and Strategies of Firms: The Case of Sri Lankan Value Added Tea Producers, *Sri Lankan Journal of Agricultural Economics*, Vol. 4, pp. 1-18.
- Ariyawardana A (2003), Sources of Competitive Advantage and Firm Performance: The Case of Sri Lankan Value-Added Tea Producers, *Asia Pacific Journal of Management*, Vol. 20, pp. 73-90.
- Beal R.M., Lockamy A. (1999), Quality Differentiation for Competitive Advantage: A Contingency Approach, *European Journal of Innovation Management*, Vol. 2, No. 2, pp. 71-81.
- Chaharbaghi K., Lynch L. (1999), Sustainable Competitive Advantage: Towards a Dynamic Resource-Based Strategy, *Management Decision*, Vol. 37, No.1, pp. 45-50.
- Fonseka A.T. (1997), Strategic Approach to Marketing of Sri Lankan Tea, *Sri Lankan Journal of Management*, Vol. 2, No. 2, pp. 155-183.
- Francis J, Colins C., Dodd (2004), Impact of Export Promotion Programs on Firm Competencies, *Strategies and Performance: The case of Canadian High Technology SMEs*, *International Marketing Review*, Vol. 21 No. 4/5, pp. 474-495.
- Kanampully. J, Duddy R. (1999), Competitive Advantage Through Anticipation, *Innovation and Relationships, Management Decision*, Vol. 37, No. 1, pp. 51-56.
- Kasturiratne D., Poole N. (2006), Creating Value for Competitive Advantage in Supply Chain

- Relationship: The Case of the Sri Lankan Tea Industry, Paper prepared for presentation at the 99<sup>th</sup> EAAE Seminar, Germany.
- Kasturiratne Dulekha (2008), An Overview of the Sri Lankan Tea Industry: An Exploratory Case Study, *The Marketing Review*, Vol. 8, Issue 4(Winter), pp. 367-381.
- Outschoorn A.D (2000), Strategies to Enhance the Competitiveness of the Tea Industry of Sri Lanka, *Sri Lankan Journal of Management*, Vol. 5, No. 1 & 2, pp. 15-47.
- Passemard D., Kleiner B.H. (2000), Competitive Advantage in Global Industries, *Management Research News*, Vol. 23, No. 7/8, pp. 111-117.
- Pitts R.A., Lei D. (2007), *Strategic Management: Building and Sustaining Competitive Advantage* (4<sup>th</sup> Edition), Delhi: Thomson, South Western.
- Porter, M. (1985), *Competitive Advantage: Creating and Sustaining Superior Performance*, The Free Press, New York, NY.
- Porter, M.E (1998), *The Competitive Advantage: Creating and Sustaining Superior Performance with a New Introduction*, The Free Press, New York.
- Poter M.E (1980), *Competitive Strategy: Techniques for Analyzing Industries and Competitors*, The Free Press, New York.
- Prajogo D.I (2007), The Relationship Between Competitive Strategies and Product Quality, *Industrial Management & Data Systems*, Vol. 107, No. 1, pp. 69-83.
- Rijamampiania R., Abert R., Yumikeo (2003), A Framework for Concentric Diversification through Sustainable Advantage, *Management Decision*, Vol. 41, No. 4, pp. 362-371.
- Rossano Eusebio, Joan Llonch Andreu and M. Pilar Lo'pez Belbeze (2007), Management Perception and Marketing Strategy in Export Performance: A Comparative Analysis in Italian and Spanish Textile-Clothing Sector, *Journal of Fashion Marketing and Management*, Vol. 11, No. 1, pp. 24-40.
- Sri Lanka Tea Board Annual Report – 2007.

# RELATIVE RISK FOR TB IN THE UNPROTECTED SMALL INDUSTRIAL ENVIRONMENT: A CASE STUDY

**Athambawa Mohamed Razmy**

*Faculty of Applied Sciences, South Eastern University of Sri Lanka.*

## ABSTRACT

*Tuberculosis is still continuing to be a major public health problem in Sri Lanka. About 8000 new cases of TB are notified every year. The incidences of Tuberculosis differ much within the country based on the environmental pollution and other factors such as occupation, nutrition and education levels and therefore the risk for tuberculosis also differs much within the divisional secretariat divisions. For this study the Sammanthurai divisional secretariat division which is having the small industries such as metal quarries and traditional brick manufacturing was selected to study the relative risk for tuberculosis. The relative risk for tuberculosis was estimated using linear logistic models. This studied area had 2.89 fold higher relative risk for tuberculosis compare to the national incidence. Within this studied division an area called J block was identified as more susceptible area for tuberculosis. Presence of higher number of metal quarries, traditional brick manufacturing industries, low level of education and low income might be the causes for this increased relative risks. An urgent measure to control dusts from these industries and providing safe work environment for the people working in these industries are vital.*

**Keywords:** *Average annual risk, Incidence of tuberculosis, Relative risk, Tuberculosis*

## Introduction

Tuberculosis (TB) is a common and in many cases lethal, infectious disease caused by various strains of mycobacteria, usually *Mycobacterium tuberculosis* (Kumar et al., 2007). This disease first attacks the lungs than other parts of the

body. This is spread through air while active TB patients cough and sneeze (Konstantinos, 2010). Most infections are asymptomatic and latent, but about one in ten latent infections eventually progresses to active disease which, if left untreated, kills more than 50% of those so infected. TB is second only to HIV/AIDS as the greatest killer worldwide due to a single infectious agent. The symptoms of TB are persistent cough, constant fatigue, weight loss, loss of appetite, fever, coughing up blood and night sweats (Steven et al., 1998). Management of early symptoms and adherence to medical treatment are main challenges in controlling TB (Sagbakken et al., 2008). In 2011, 8.7 million people fell ill with TB (WHO, 2010). TB kills nearly 2 million people annually, yet rapid diagnosis still relies on a 100-year-old method of sputum staining for acid-fast bacilli (Syhre and Chambers, 2008). Over 95% of TB deaths occurred in low- and middle-income countries (Center for disease control and prevention, 1990). Reporting of cases and deaths in developing countries is incomplete and the burden of TB can be estimated indirectly using the average annual risk of TB infection (ARI). ARI represents the probability that any person will be infected or reinfected with *Mycobacterium tuberculosis* in 1 year (Garcia et al., 1992). ARIs are calculated from tuberculin skin test surveys of representative samples of non-BCG-vaccinated persons (Cauthen et al., 1998). The ARI was the highest in Africa (1.5%-2.5%) and Asia (1.0%-2.0%) and lowest in Europe (0.012 %) (Styblo, 1989). TB is still continuing to be a major public health problem in Sri Lanka and the incidence of tuberculosis is 0.089% (Trading Economic, 2011). The majority of these patients are significantly malnourished (Metcalf, 2005). About 8000 new

cases of tuberculosis are notified every year, of which around 60% are smear-positive pulmonary TB cases. The incidence of TB differs much within the divisional secretariat (DS) divisions depending on various demographic factors and environmental pollution levels. Sammanthurai DS division in Sri Lanka is one of the vulnerable division for TB because of having small industries such as metal quarries and traditional brick manufacturing. In this DS division, the relative risks of TB was studied for two distinct areas J block and Sammanthurai town.

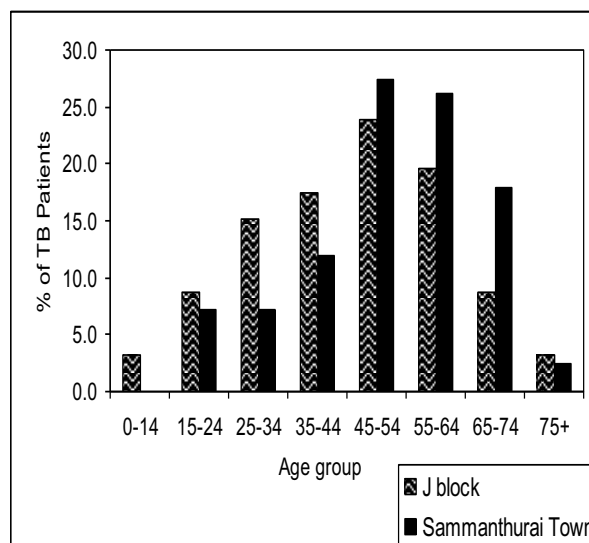
### Methodology

The J block of the Sammanthurai DS division which is believed to be more vulnerable for TB has the total population of 27,375 and the rest of the area (Sammathurai town) has the population of 41,063. 176 TB patients were identified during the study period of three years in this DS division. The relative risks were estimated using linear logistic models after logit transformations of the proportions and for interpretation the estimations were back-transformed to the original scale.

### Results and Discussion

The incidence of TB in this DS division was 0.26 % which significantly greater than the national incidence of 0.089 % ( $P < 0.000$ ). 0.34% and 0.20 % of incidences were observed in the J block and town respectively. The Sammanthurai DS division had 2.89 (95 % CI, 2.24, 3.74) folder higher relative risk for TB compare to the national incidence. The living pattern and the environmental pollution might be the reason for higher incidence. The J Block had 1.65 (95 % CI, 1.22, 2.21) folder higher relative risk for TB compare to town area. Presence of several metal quarries and brick manufacturing industries might be the reason for this increased relative risks. Figure 1 shows the percentage of TB patients under different age groups for J block and town. It was observed that 48 % of the TB patients were in the age group of 45 – 64

and the chi-square analysis showed the incidence of TB was higher in early ages in the J block ( $P = 0.032$ ).



**Figure 1: Percentage of TB patients under different age groups**

No association was found between TB and gender in both areas studied ( $P = 0.011$ ). Incidences of TB in Muslim and Tamil communities were 0.30 % and 0.08 % respectively and the chi-square analysis showed this difference is significant ( $P < 0.001$ ). It is significant to note that no TB patient had studied more than G.C.E A/L and the educational level of the J block patients were less compare to the town patients. All the observed TB patents' monthly incomes were less than Rs. 20,000.00. and the monthly income of the TB patients in the J block was significantly less compare to the town patients. 51% of the TB patients in the J block and 60% of the TB patients in the town had at least one of the bad habits such as smoking, alcoholism and beetle chewing. Occupation played a significant role in TB that 37.5 % of the patients' occupation was stone making and another 25% were famers. A serious concern is essential in this DS division for achieving TB free Sri Lanka. ARI modeling will forecast the future risk for TB in this DS division better that relative risk models but it needs more parameters such as detection rate, cure rate and relapse rates. An urgent measure to control dusts

from these industries and providing safe work environment for the people working in these industries in this DS division are vital.

## References

- Cauthen GM, Pio A, ten Dam HG. Annual risk of tuberculous infection. Geneva: World Health Organization, 1988; document no. WHO/TB/88.154.
- Center for disease control and prevention (1990), Tuberculosis in Developing Countries *Morbidity and Mortality Weekly Report* Vol. 39, No. 33, pp. 561, 567-569.
- Garcia A, Mccario J, Richarson S (1992), Modeling the Annual Risk of Tuberculosis Infection. *International Journal of Epidemiology* Vol. 26, No. 1, pp. 190 -203.
- Konstantinos A (2010), "Testing for tuberculosis". *Australian Prescriber* Vol. 33, No. 1, pp. 12–18.
- Kumar V, Abbas AK, Fausto N, Mitchell RN (2007). *Robbins Basic Pathology* (8th ed.). Saunders Elsevier: pp. 516–522.
- Metcalfe N (2005), A study of tuberculosis, malnutrition and gender in Sri Lanka. *Trans R Soc Trop Med Hyg.* Vol. 99, No. 2, pp. 115-119.
- Sagbakken M, Frich JC, Bjune GA (2008), Perception and Management of Tuberculosis Symptoms in Addis Ababa, Ethiopia. *Quality Health Research* Vol. 18, No. 10, pp. 1356-1366.
- Steven ASCH, Barbara L, Ronald A, Lillian G (1998), "Why Do Symptomatic Patients Delay Obtaining Care for Tuberculosis?" *American Journal of Respiratory and Critical Care Medicine* Vol. 157, No. 4, pp. 1244-1248.
- Styblo K. Overview and epidemiologic assessment of the current global tuberculosis situation with an emphasis on control in developing countries. *Rev Infect Dis* 1989; II(2):S339-S346.
- Sybre, M, Chambers, ST (2008), The scent of Mycobacterium tuberculosis. *Tuberculosis.* 88(4) : 317-323.
- Trading Economic (2011), Incidence of tuberculosis in Sri Lanka. <http://www.tradingeconomics.com/sri-lanka/incidence-of-tuberculosis-per-100-000-people-wb-data.html> . Accessed June,1 2013.
- World Health Organization (2010), Tuberculosis fact sheet. <http://www.who.int/mediacentre/factsheets/fs104/en/index.html>. Accessed March, 21 2010.

# AN INVESTIGATION ON THE TRANSACTION MOTIVATION AND THE SPECULATIVE MOTIVATION OF THE DEMAND FOR MONEY IN SRI LANKA

**S.N.K. Mallikahewa**

*Senior Lecturer, Department of Economics, University of Colombo, Sri Lanka.*

**H. Nadeeka De Silva**

*Assistant Lecturer, Department of Management, South Eastern University of Sri Lanka.*

## ABSTRACT

*The main objective of this study is to empirically investigate the transaction (income elasticity) and speculative motivations (interest rate elasticity) of the demand for money in the Sri Lankan context and to examine its stability. The study employed the use of co-integration test over the 1977 to 2009, to estimate long run relationship between money demand and its determinants: real income and interest rate. The study found out that money demand function is stable in Sri Lanka for the sample period. The income is the most significant factor of the demand for money, and it makes a powerful positive impact on real money demand. Interest rate is positively related with real money demand and significant, but not consistent with existing theories. Demand for Money on transaction motivation is larger than its speculative motivation in the Sri Lankan context.*

**Key words:** *Real Money Balance, Income Elasticity, Interest Elasticity, Transaction Motivation, Speculative Motivation, Co-integration Methodology*

## Introduction

The importance of the demand for money has become a prominent research topic in economics due to its role in monetary policy formulation. Income elasticity and interest elasticity of money demand affect the channels of the transmission mechanism<sup>3</sup> of monetary policy. Empirical interest in demand for money functions arises because a

stable and predictable money demand function is a pre-requisite for the use of targets for monetary aggregates as an objective of monetary policy. Interest elasticity of such functions is crucial for the relative effectiveness of monetary and fiscal policy. (McMorrow, 1998).

Among developing countries, it is accepted that interest rate is an unsatisfactory measure of the opportunity cost of holding money. First, financial markets have not well developed in the developing countries, and due to this situation, possibilities of substitution between money and other financial assets are limited. Secondly, a more practical objection is that the interest rates are often determined by the government and remain constant for long periods, and there wouldn't be sufficient variation to enable its influence on the demand for money. As a developing country, Sri Lanka has experiences of low economic growth with high inflation for a long time period. (*Central Bank Reports. Sri Lanka*). There is a research space to examine whether interest rate transmission mechanism is effective in the Sri Lankan context. For the good performance of interest rate transmission mechanism, interest rate elasticity of money demand function is crucial.

## Theoretical and empirical background

The Theory of demand for money called that the **liquidity preference theory** hypothesized by John Maynard Keynes' (1936), describes that why people hold money. Keynes postulated that

there are three purposes for holding money by adding the precautionary and asset (speculative) motives to the classical transactions motive. Keynes also took the transactions component of the demand for money to be proportional to income because like classical economist he believed that these transactions are proportional to income. (*Mishkin, 2004*).

In addition to holding money to meet current transactions, people hold money as a cushion against an unexpected need. Keynes suggested that the amount of money balances for precautionary purpose that people want to hold is determined by the level of transactions that they expect to make in the future and that these transactions are proportional to income. Therefore, *Keynes (1936)* emphasized that the demand for precautionary money balances is proportional to income.

$$M1 = MT + MP = L1(PY) = L1(Y)$$

Where,

**M1** - Money demand on both transactions-motive and the precautionary-motive

**MT** - Money demand on transactions-motive

**MP** - Money demand on precautionary-motive

**L1** - functional tendency, which fixes the quantity of money which the people willing to hold money on both transactions-motive and the precautionary-motive

**PY** - Nominal income (Y)

Keynes considered the view that money as a store of wealth and called this reason for holding money the speculative motive. Keynes analyses the factors that affect the decisions regarding how much money to hold as a store of wealth: especially interest rates.

Various financial assets except money, gain a positive interest rate plus a capital gain. According to Keynes, long term government bonds are the only alternative monetary assets for money asset. People have to make choice

between government bonds<sup>9</sup> and money. If expected return of holding money is greater than the expected return from holding bonds, individuals decide to hold their wealth in the form of money rather than bonds. The expected return in holding money is zero because in Keynes' view money is the most liquid asset and through holding that asset in hand no one can earn interest. But for the bonds have positive expected returns or negative expected returns.

If people expect interest rates to rise, expect the price of the bond to fall and therefore suffer a negative capital gain (negative expected return on bonds) that is a capital loss. In this case, people would store their wealth as money because expected return of money (zero expected return) is higher than the expected return on bonds (negative) vice versa. According to Keynes, the demand for money is negatively related to the level of interest rates. Amount of money demanded on speculative-motive is a function of interest rate.

$$M2 = L2(r)$$

Where

**M2** - Money demand on speculative-motive

**L2** - Functional tendency, which fixes the quantity of money which the people willing to hold on speculative-motive

**r** - Nominal interest rate.

$$Ms = \bar{M} = L1(Y) + L2(r)$$

People make a choice between money and bonds. The traditional money demand models hypothesize that the demand for real money balances is negatively related with the yield (interest rate) on financial assets such as treasury bills and bonds. The domestic interest rate represents the opportunity cost of holding money and public would prefer to hold more financial assets during times with higher interest rates. If agents in the market expect the nominal interest rate (the return on bonds) in the future to be lower than the current interest rate and then they

reduce their holdings of money and increase their holdings of bonds. If the interest rates fall in the future, then the price of bonds increase and the agents have capital gain on the bonds they purchased previously on lower prices. This means that the demand for money in any period depends on both the current nominal interest rate and the expected future interest rate. If agents reduce the demand for money when increase the current nominal interest rate, it means that the demand for treasury bills in the financial market would be increased.

Many studies are available in the literature which estimates money demand function, using various time series econometrics methods. In the earlier stage, the studies employed the Ordinary Least Squares (OLS) method to estimate the money demand function and the Chow test to ascertain the stability of money demand. These studies do not take into account the time series properties and Chow test is low powered when the break point is unknown. Due to these reasons, studies in the earlier stage may have suffered from the spurious regression problem. The introduction of co-integration test has solved this problem, and many studies have employed this methodology to test the presence of stable long-run money demand function. The rationale is that if money demand and its determinants are co-integrated, this implies that the money demand function is stable as the co-integrated variables will never move too far apart, and will be attracted to their long-run equilibrium relationship. (*Haghighat, 2011*).

The study done by *Hossain and Yunus, (2009)* investigates the sensitivity of money demand to interest rates on treasury bills in Bangladesh, using quarterly data for the period from quarter four in 1997 to quarter four in 2006. A standard money demand function is examined with real output and the interest rate on treasury bills. The result of the study shows that there is a well-behaved and stable money demand function. The results have proved that the demand for money is sensitive to interest rate on treasury bills and relatively longer –maturity has given better results as they expected.

The study done by *Gaurisankar (2012)* using the data of Real GDP, Real Exchange Rate Lending Rate for the period 1981 -2012 to estimate the money demand function in Suriname has proved the significant positive relationship between Real Money Demand and Real GDP. The relationship between Real Money Demand and Interest Rate has taken negative value it is not statistically significant in the study. The study has used Co-integration method to analyses the log-run relationship among the series.

The study done by *Sober Mall (2013)* using Co-integration method also shows that there exist a positive significant relationship between Money demand and real income in the long run with Pakistan experiences. The study proved a negative relationship with interest rate. The real income and real exchange rate are the most significant factors of real demand for money according to the study.

The paper done by *Hwang, (2002)* shows that there exist a long term equilibrium relationship between demand for broad money (M2) and, its determinants; real income (Y/P) and long term interest rate in Korea. According to *Hwang* the long term interest rate is a better proxy to measure the opportunity cost of holding money, than short term interest rate.

*Tahir (1995)* described that among developing countries, it is accepted that interest rate is an unsatisfactory measure of the opportunity cost of holding money. First, financial markets have not well developed in the developing countries. Due to this situation in these countries, possibilities of substitution between money and other financial assets are limited. Secondly, a more practical objection is that the interest rates are often determined by the government and remain constant for long periods. There is no sufficient variation to enable its influence on the demand for money. However, according to *Tahir's* survey of theory and evidence with reference to Arab countries, in developing countries, interest rates are tools of development strategy rather than stabilization policy. Developing countries set



their interest rates on financial assets below market equilibrium level, to stimulate investment and growth. The formulation of targets in economic and price stabilization and structural programs are constructed assuming existence of stable demand for money function. Tahir further described, Stability tests have found that the demand function is relatively stable over time. Such stability proved in the demand for money function indicates that effects in changes of money supply on other macroeconomic variables such as growth and price level are adequately predictable. Results of empirical studies on demand for money function in developing countries support this conclusion.

Mallikahewa (2014) in her study which has done using Co-integration methodology to find the effectiveness of interest rate channel of transmission mechanism of monetary policy shows a significant positive relationship between real money demand and interest rate in Sri Lankan experience. And she explains that it would be a results of existing a under developed financial market and less experiences of investments in financial assets. Sri Lankans are experienced to save money in fixed deposits with higher interest rates. It means that increase of interest rates leads increase in money supply.

**Study Questions:**

- ▲ Is the speculative component of money demand negatively linked with interest rate?

**Objective of the study:**

- ▲ To investigate the transaction motivation (income elasticity) and speculative motivations (interest rate elasticity) of the demand for money in the Sri Lankan context. The study expects the income elasticity should be positive and interest rate elasticity should be negative.

**Methods:**

The study investigates the Income elasticity and interest elasticity of money demand. Annual data

in the period of 1977 -2009 are used for the study. All the data series that used for the study are non-stationary and, integrated of order one (I(1) series). If multiple individual time-series variables are non-stationary integrated of order one (I(1) series), Cointegration test is appropriate to determine whether there is a long-term relationship among the variables. Cointegration tests indicate the presence of such stable long-term relationships exists among the variables. Study employed a Cointegration test to determine whether there is a long-term relationship among the variables.

**Data Description:**

The sources of data are the Central Bank of Sri Lanka and International Financial Statistics (IFS) of International Monetary Fund. Demand for real Money Balances (RMd2) is used as indicators for money demand and RMd2 function is estimated on the income and interest rate. Central Bank Rate (CBR) is used as an indicator of short term interest rate and real gross domestic product at (RGDP) is used as income aggregate. The description of annually time series that used for this study is contained in the following Table 01.

**Table 01**

<i>Time series of</i>	<i>Denotation</i>	<i>Units</i>	<i>Data span</i>	<i>Note</i>
<i>Demand for Real Money Balancse (RMd2)</i>	<i>RMd2</i>	<i>Rs. Millions</i>	<i>1978 - 2009</i>	<i>M2/CPI =RMd2</i>  <i>Annually</i>
<i>Real Gross domestic product (at constant price)</i>	<i>RGDP</i>	<i>Rs. Millions</i>  <i>Base(2002)</i>	<i>1978 - 2009</i>	<i>Annually</i>  <i>RGDP</i>
<i>Central bank rate</i>	<i>CBR</i>	<i>% Per Year</i>	<i>1978 - 2009</i>	<i>annually</i>

VAR method does not capture non-linear elements that existing certainly in level variables (RMd2, RGDP,) because a VAR is a linear model. The better way to respond to this problem is linearize the data by taking the logs of the levels. For this testing purpose, the original data were transformed to logarithms, and the transformation form and the new variables are

described in the Table 2.

**Table 02**

Time series of	Denotation	Units	Data span	Note
Log of Demand for Real Money Balance (RMd2)	LRMd2	Rs. Millions	1978 – 2009	Annually Log(RMd2)
Log of Real Gross domestic product	LRGDP	Rs. Millions Base(2002)	1978 – 2009	Annually Log(RGDP)
Log of Central bank rate	LCBR	% Per Year	1978 – 2009	annually

**The Model**

The long run relationship between real money demand and other related endogenous variables is implied by the following equation. Income elasticity of money demand is expected to be positive and interest elasticity of money demand would be a negative value.

$$LRMd2 = \varphi_0 + \varphi_1LRGDP - \varphi_2LCBR + \mu 3_{t-1} \tag{1}$$

Where,

**LRMd2** – Log of real money demand.

**LRGDP** – Log of real GDP

**LCBR** – Log of central Bank Rate

$\varphi_0$  – Autonomous money demand

$\varphi_1$  – Income elasticity of money demand (Expected to be positive)

$\varphi_2$  – Interest rate elasticity of money demand (Expected to be negative)

$\varphi_{t-1}$  – Deviation of money demand from the long run equilibrium in the previous year

**Hypothesis:**

Income elasticity is to be positive and interest elasticity is to be negative according to existing theories.

$$H_0, \varphi_1 \leq 0$$

$$H_1, \varphi_1 > 0$$

And

$$H_0, \varphi_2 \geq 0$$

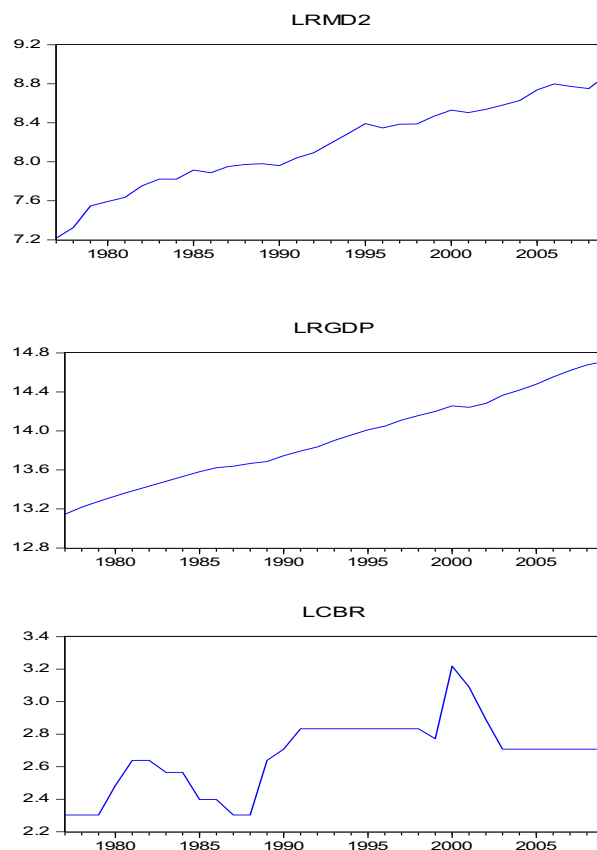
$$H_1, \varphi_2 < 0$$

**Results**

**Unit root test**

When plotting the levels and differences of the three series the implication is that the data are non-stationary in levels, but stationary in differences. (See graph 01)

**Graph 01:**



According to the Akaike information criterion (AIC) and Schwartz Bayesian criterion (SBC), the optimal lag length is selected as lag one and Stationarity of each series was tested using the Augmented Dicky Fuller (ADF) unit root test including a constant. Table 03 and table 04 report the results on 1%, 5% and 10% significant levels. According to this test, all variables are non-stationary.

**Table 03 - ADF test results (Level- Intercept)**

Variable	ADF Test statistics	Critical values 1%	Critical values 5%	Critical values 10%
LRMd2	-1.641173	-3.6576	-2.9591	-2.6181
LRGDP	0.465676	-3.6576	-2.9591	-2.6181
LCBR	-2.322567	-3.6576	-2.9591	-2.6181

**Table 04 - ADF test results (1<sup>st</sup> difference- Intercept)**

Variable	ADF Test statistics	Critical values 1%	Critical values 5%	Critical values 10%
LRMd2	-5.1448**	-3.6661	-2.9627	-2.6200
LRGDP	-3.6249*	-3.6661	-2.9627	-2.6200
LCBR	-4.131461**	-3.6752	-2.9665	-2.622

\* denotes rejection of the hypothesis at the 0.05 level, and  
 \*\* denotes rejection of the hypothesis at the 0.01 level

**Co-integration test:**

Likelihood statistics methodology is conducted to test whether there are any long run relationships among the above set of non-stationary variables. Since likelihood statistic of is 32.42 and it is larger than the critical value of 29.68, the null hypothesis is rejected at the 5% significance level. This test confirmed that the variables are cointegrated and there is one cointegrating equation in the system. (at the 0.05 significant level)(see table 05)

**Table 05**

Hyphothes ized No of CE(s)	Eigen value	Likelihood Ratio	5 Percent Critical value	1 Percent Critical value
None *	0.559636	32.42862	29.68	35.65
At most 1	0.195056	7.003853	15.41	20.04
At most 2	0.008908	0.277385	3.76	6.65

\* denotes rejection of the hypothesis at the 0.05 level

**Estimated Long Run Model; (Money Demand function)**

The long run equilibrium equation of money demand (LRMd2), which is estimated by the cointegration methodology, is given below. T values are given in the parentheses below.

$$LRMd2 = -4.22 + 0.86LRGDP + 0.16LCBR + \mu 3_{t-1} \quad (2)$$

[-24.8124] [-2.79160]

**Conclusion**

In the long run model of money demand, interest rate (CBR) is positively related to real money balances (RMD2). It means that interest rate elasticity of money demand is greater than zero and this coefficient is significant but inconsistent with the hypothesis. When the policy rate is increased, people would prefer to keep their money as savings and time deposits considering liquidity of money for transactions. They would not be attracted to financial assets such as bonds. The less developed financial market would be the reason for this inefficiency.

The elasticity of Real Gross Domestic Product (RGDP) is statistically highly significant and consistent in the long run money demand model. The estimated results show that the RGDP makes a powerful positive impact on the Real money demand. In the Sri Lankan context, demand for money is highly depended on transaction purpose.

## References

- Gaurishankar, S. (2012), “The Money Demand Function in Suriname”. 44<sup>th</sup> Annual Monetary Studies Conference, Paramaribo, Suriname.
- Haghighat, J. (2011), “Real Money Demand, Income, and Interest Rates in Iran: Is there a Long- Run Stable Relation?” *World Journal of Social Sciences* Vol. 1. No. 2. May 2011 pp. 95-107
- Hossain, A. A. & Younus, S. (2009), “Interest Rate and the Demand for Money in Bangladesh: An Empirical Investigation with Quarterly Data, 1997 Q4 - 2006 Q4”. *The IUP Journal of Monetary Economics*.
- Hwang, J.K. (2002), “The Demand for Money in Korea: Evidence from the Co integration test”. *International Advance in Economic Research*.
- Keynes, J.M. (1936), “The general Theory of Employment, Interest and Money”, eBook No.0300071h.html Col Choat colc@gutenberg.net.au
- Mall, S. (2013), “Estimating a Function of Real Demand for Money in Pakistan: An Application of Bounds Testing Approach to Cointegration”. *International Journal of Computer Applications*, Vol. 79, No. 5.
- Mallikahewa, S.N.K (2014), “Effectiveness of Interest Rate Channel in the Transmission Mechanism of Monetary Policy in Sri Lanka”. Unpublished Monograph. Sri Lanka
- Mishkin, F.S.(2004), “Can Inflation Targeting work in Emerging Market Countries”. Graduate School of Business. Columbia University, and NBER.
- Mishkin, F.S. (2008), “Exchange Rate Pass-Through and Monetary Policy.” The Norges Bank Conference on Monetary Policy, Oslo, Norway.
- Rao, B.B & Singh, R., (2006), “Demand for Money in India: 1953-2003”. 128.118.178.162/eps/mac/papers/0510/0510002.pdf
- Tahir, J. (1995), “Recent Development in Demand for Money Issues: Survey of Theory Evidence with Reference to Arab Countries”.

# FACTORS AFFECTING COMPETITIVE RIVALRY OF RICE SHOP OWNERS: MULTIPLE REGRESSION ANALYSIS

**MBM. Ismail**

*Senior Lecturer, Department of Management, Faculty of Management and Commerce  
South Eastern University of Sri Lanka*

## ABSTRACT

*In today's globalised business World, business firms toil hard for to respond to business competition. Responding to business competition needs to know factors determining competition or rivalry. This study tries to determine factors affecting the competitive rivalry and to know the relationship among factors affecting competitive rivalry and competitive rivalry. Researcher selected 127 rice shop owners using a convenient sampling technique. Results showed that values of Cronbach alpha, items of factors are higher than 0.6. Values of KMO for items are higher than 0.5. It is concluded that values of R, R square and adjusted R square that are greater than 0.953, 0.908 and 0.905 respectively showing that there is a high strength of association between among identified factors such as threats of new entry, power of suppliers, threats of substitutes, power of buyer and competitive rivalry of rice shop owners. F statistics confirm that all factors are related with competitive rivalry. But, T test confirm that all factors except threats of new entry are with competitive rivalry.*

**Keywords:** *Competitive Rivalry, Multiple Regression Analysis, Rice Shop.*

## Introduction

Wikipedia (2013) defined competition is the rivalry among sellers trying to achieve such goals as increasing profits, market share, and sales volume by varying the elements of the marketing mix such as price, product, distribution, and promotion. In this globalised arena, business firms toil hard for to respond to

business competition. Responding to business competition needs to know factors determining competition or rivalry. Kadamb (2013) stated that the marketing environment surrounds and impacts upon the organization. Marketing experts cascades three key perspectives of the marketing environment such as macro-environment, micro-environment and internal environment. Of which, micro environment includes suppliers that deal directly or indirectly, customers and other local stakeholders. Porter (1980) designed a model called Porter's five forces model using micro environmental forces. Porter's five forces model is made up by identification of 5 fundamental competitive forces such as barriers to entry, threat of substitutes, bargaining power of buyers, bargaining power of suppliers and rivalry among the existing players. Rivalry is determined by all other four factors such as barriers to entry, threat of substitutes, bargaining power of buyers and bargaining power of suppliers. Rivalry is found almost in every business. On that basis, rivalry is inevitable among rice selling business. According to Department of Agriculture (2013), rice is the preferred staple food in Sri Lanka and different varieties are produced to suit local requirements. Approximately 60 percent of consumption is made up of long grain white rice. Approximately 30 percent of consumption is made up of short grain white rice. Approximately 10 percent of consumption is parboiled red rice and other local varieties. A small portion consists of imported basmati rice varieties from India and Pakistan. Assuming a population of 21 million people, Sri Lanka's annual per capita rice consumption is close to 100 Kgs. Rice shops are the intermediaries for selling rice to consumers for consumption. Competition is unavoidable today's ever changing and complex business

environment. Rice shop businessmen and entrepreneurs are facing the problems of competitors' rivalry. Therefore, rice shops try hard to sustain their business by maintaining competitive advantage over the other rice shops.

## Statement of the problem

Researcher conducted a discussion with 20 rice shop owners. Of them, 5 owners indicated that emerging new rice shops are emerging and threatening them. Another 5 rice shop owners indicated that rice producers (rice suppliers) are bargaining more with them. Another 5 rice shop owners stated that there are substitute door to door rice sellers who are the threat for them. The remaining 5 rice shop owners quoted that rice buyers are bargaining with them. These statements are contradictory from one another. But, all are contributing to rivalry in industry. Porter (1980) found that there is relationship between threats of new entry, power of suppliers, threats of substitutes & power of buyer and competitive rivalry. Numbers of previous related studies confirm that rivalry is determined by customer, supplier, new entrant and substitutes. Specifically speaking, Porter (1991); Miller and Dess (1993); Porter (1980); and (1994); , and (2008); Ferrier and Lee (2002); Ramaswamy (2001); (1999) studied about competitors' rivalry and factors affecting competitive rivalry. This idea has been also highlighted by studies. Porter (1980) stated that five forces model is a very elaborate concept for evaluating company's competitive position. This model is often used in strategic planning and probably one of the most commonly used business strategy tools. Department of Agriculture (2013) stated that the current policy of the Government of Sri Lanka (GoSL) intends maintaining self-sufficiency in rice production and consumption. The GoSL guarantees a minimum price to farmers via the Paddy Marketing Board and, in addition, also maintains a maximum retail price for consumers. It could be stated that when self- sufficiency is created rice will be supplied to enough level and

be available to consumers in all rice shops. There would be competition among rice shops for maintaining existing customers and attracting new customer. According to Department of Agriculture (2013), the GoSL further subsidizes up to 95 percent of the cost of fertilizer and provides irrigation water free-of-charge through the country's reservoir system. Farmers are required to grow only rice on paddy lands. This will further increase the production of paddy that would be later sold via rice shops for the final consumption. This will still strengthen the competition among rice shops. These dilemmas would create owners of rice shops for knowing what factors results in competitive rivalry among them. Each and every rice shop owner has to have insight and knowledge about competition among existing rice shops in the industry.

## Research question and objectives

Discussion among rice shop owners, empirical evidences and figures & Statistics of Department of Agriculture (2013) revealed that research problem exist on competitive rivalry among rice shop owners. Based on these, this study attempts to raise the following two research questions. They are: what factors determine the competitive rivalry? and whether factors affecting competitive rivalry are related with competitive rivalry?. The above research questions are translated into research objectives. They are: to determine factors affecting the competitive rivalry and to know the relationship among factors affecting competitive rivalry and competitive rivalry

## Motivations of this study

This study motivated researcher for various reasons. First, competitive rivalry is determined by four forces in Porter's model that is used as a strategic business tool. Business manager are in need of seeking factors affecting competitive rivalry. Second, this study is useful to determine the competitive advantage over the competitors.

Competitive rivalry determines the direction of one business where the business will develop an edge over rival firms. This study is useful to determine the industry context in which the firm operates and to analyze attractiveness of an industry structure. Third, knowing the factors determining competitive rivalry is useful for making investment decision. For example, Porter has simplified the construct of rivalry into measures that can easily be understood by all. Analyzing factors determining competitive rivalry is useful to develop a broad and sophisticated analysis of competitive position that can be then used when creating strategy, plans, or making investment decisions about your business or organization. Porter (1980) indicated that and his model has proven its usefulness in numerous situations. It describes the relationship between firms and the driving forces that control this relationship. It is a more local relationship and the firm may exercise a degree of influence. It is one of the strategic tools used by business managers. Fourth, this study might improve paddy production. Rice shop owners can get feedback from consumers that can be submitted with paddy producers who in turn produce to meet the needs and wants of consumers. Fifth, this study can promote to reduce rice imports from other countries. Department of Agriculture (2013) indicated that paddy rice production in Sri Lanka for 2011/2012 recorded an all time high of 4.869 million metric tons. Record rice production has boosted consumption and rice stocks as well as helped the country become a surplus producer. When South Eastern Region of Sri Lanka gets self-sufficiency in paddy production rice imports might be discouraged in Sri Lanka. Or else, imports might be limited to small quantities of specialties such as Basmati. Sixth, this study might help to save foreign exchanges when reducing rice imports. About 20,000 metric tons per year has been the total import quantity for 2010, 2011 and estimated for 2012 and 2013. In 2011, Sri Lanka donated 7500 metric tons of rice to the World Food Program highlighting a shift from a rice deficit nation to that of a rice surplus nation.

## Previous studies

Ismail (2010) studied about product mix and sales maximization of rice mill entrepreneurs in Ampara Coastal Area, Eastern Province of Sri Lanka. This study was conducted among rice mill entrepreneurs. This was from the perspective of marketing and entrepreneurship. This was adopted a survey study. Porter (1991) reviewed the progress of the strategy field towards developing a truly dynamic theory of strategy. This study then reviewed three promising streams of research that address the longitudinal problem. These still fall short of exposing the true origins of competitive success. This study expresses that there are still shortage for knowing and clearly determining the factors for competitive success. Previous studies tested the generalisation and accuracy of Porter's model. For example, Miller and Dess (1993) assessed Porter's (1980) model in terms of its generalisability, accuracy and simplicity. The Porter (1980) model of generic strategies is evaluated in terms of simplicity, accuracy (*i.e.*, predictive and explanatory power), and generalizability, through an empirical analysis. Results lead to one of the conclusions *i.e.* Porter's framework could be improved and strategies described by Porter are possibly more contingent than generic. Huff and Robinson (1994) studied about the impact of lead time and years of competitive rivalry on pioneer market share advantages. Research has established that for surviving brands, market pioneers have a higher average market share than later entrants. Increasing the years of competitive rivalry should help a later entrant slowly deduct the pioneer's market share advantage. Hema and Anura (2008) studied about resource management in dyadic competitive rivalry in relation to the effects of resource bundling and deployment.

## Constructs and Measures

This study follows a research concepts and measures developed by Porter (1980). This same is adopted by researcher in this study. Adopting Porter (1980), this study considers bargaining power of suppliers that is measured by moderate number of suppliers, supplier is large, similar products, able to substitute and neutral supplier power; bargaining power of buyer that is measured by few large players, very large orders, homogenous product, extreme price sensitivity, ability to substitute and high buyer power. Threats of new entrant is measured by not too expensive to enter into the industry, experience needed but training is easily available, some economies of scale, some cost benefits is in business for sometimes, no technology protection, low barriers to entry and new entry is quiet easy. Threats of substitutes are measured by some cross product substitution, ability to import substitutes and some substitution. Competitive rivalry is measured by many competitors, commodity products, low switching costs and high cost of leaving market.

## Research Methodology

### Population and sample

Population size of rice shop owners is not clear so far. There are no proper records about rice shop owners. So, researcher could not select a sample size in this study using probability sampling method. This study uses a non-probability sampling method for sample selection. Considering this situation, researcher selected 127 rice shop owners using a convenient sampling technique.

### Data collection

Data were collected using questionnaire. Questionnaires were scaled on a five point-likert scale. Data were collected during 2013 using undergraduates of Faculty of Management and Commerce, South Eastern University of Sri Lanka. 200 questionnaires were delivered for data collection. 127 questionnaires were in usable status. Response rate was around 64%.

## Data analysis

Factor analysis (Principal Component Analysis) was conducted using SPSS with collected data.

## Results and discussion of findings

### Reliability

Cronbach alpha is most widely used method for checking the reliability of scale. It may be mentioned that its value varies from 0 to 1 but, satisfactory value is required to be more than 0.6 for the scale to be reliable (Ismail and Velnampy, 2013a & b); Malhorta, 2002; Cronbach, 1951). In this study, researcher use Cronbach alpha scale as a measure of reliability. Threats of new entry have 7 items such not too expensive to enter into the industry, experience needed but training is easily available, some economies of scale, some cost benefits is in business for sometimes, no technology protection, low barriers to entry and new entry is quiet easy. Power of suppliers has 5 items such as moderate number of suppliers, supplier is large, similar products, able to substitute and neutral supplier power. Threats of substitutes have 3 items such as some cross product substitution, ability to import substitutes and some substitution. Power of buyer has 6 items such as few large players, very large orders, homogenous product, extreme price sensitivity, ability to substitute and high buyer power. Competitive rivalry has 4 items such as very many competitors, commodity products, low switching costs and high cost of leaving market. Values of Cronbach alpha are 0.874, 0.789, 0.654, 0.865 and 0.783 respectively.

### Communalities and testing the sufficiency of sample size

Researcher tested collected data for appropriateness for factor analysis. Appropriateness of factor analysis is dependent upon the sample size. In this connection, MacCallum, Windaman, Zhang and Hong (1999) have advocated that if all communalities are above 0.6 relatively small samples (less than



100) may be perfectly appropriate. Ismail and Velnampy (2013a) studied about determinants of employee satisfaction in public health service organizations in eastern province of Sri Lanka. Ismail and Velnampy (2013b) studied about determinants of corporate performance in public health service organizations in eastern province of Sri Lanka. In these studies, authors considered a sample of 100 employees. This present study also adopts this same rule. Items of threats of new entry (0.998, 0.946, 0.960, 0.929, 0.998, 0.946 & 0.846), power of suppliers (0.947, 0.863, 0.856, 0.874 & 0.944), threats of substitutes (0.922 & 0.922), power of buyer (0.935, 0.918, 0.922, 0.923, 0.820 & 0.822), competitive rivalry (0.963, 0.965, 0.963 & 0.963) are all greater than 0.6 which shows that sample size is enough to run factor analysis.

**Keyzer-Meyer-Oklin (KMO) and Bartlet’s test of sphericity**

Measure of Keyzer-Meyer-Oklin (KMO) is another method for to show the appropriateness of data for factor analysis. KMO statistics varies between 0 and 1. Keyzer (1974) recommended that values greater than 0.5 are acceptable; between 0.5 to 0.7 are moderate; between 0.7 to 0.8 are good; between 0.8 to 0.9 are superior (Field, 2000). Bartlet’s test of sphericity is the final statistical test applied in this study for verifying its appropriateness (Bartlet, 1950). In this study, values of KMO for items of threats of new entry, power of suppliers, threats of substitutes, power of buyer, competitive rivalry are 0.771, 0.653 & 0.500, 0.777 & 0.531 respectively. These values indicate sample taken to process factor analysis is statistically significant. In addition to KMO, Chi- square values for these factors are 1171.3, 473.884,

155.696, 725.563 & 492.501 respectively. These values confirm test is statistically significant when significance value is less than significance level. Significance value is 0.000 at 5% level of significance. These values indicate that data are statistically significant for factor analysis.

**Factor analysis**

After examining the reliability of the scale and test appropriateness of data as above, researchers carry out factor analysis to determine factors affecting competitive rivalry of rice shop owners and to find out the relationship between competitive rivalry and factors affecting competitive rivalry of rice shop owners. For achieving these objectives, researcher employs principal component analysis (PCA) that is followed by the varimax rotation. Varimax rotation is mostly used in factor analysis (Hema and Anura, 1993). In this study, threats of new entry and power of suppliers have a couple of components. Threats of substitutes have a single component. Powers of buyer and competitive rivalry have also a couple of components. These factors explain around 95%, 90% & 92%, 89% & 96% of the total variation respectively.

**Regression analysis**

**Strength of association**

Value of R, R square and adjusted R square is 0.953, 0.908 and 0.905 respectively. There is a high strength of association between threats of new entry, power of suppliers, threats of substitutes, power of buyer and competitive rivalry of rice shop owners. Their signs are positive. This means when threats of new entry, power of suppliers, threats of substitutes & power of buyer go up competitive rivalry

**Table 1: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.953	.908	.905	.71139

a. Predictors: (Constant), Buyerpowercomponent12, Threatsofnewentrantcomponent12, Supplierpowercomponent12, Threatsofsubstitutescomponent11

also goes up. Model summary is shown in Table 1.

**Sum of Squares and Mean Sum of Squares**

SS Total is the total variation in competitive rivalry explained by both threats of new entry, power of suppliers, threats of substitutes & power of buyer go up and other variables. Value of SS Total is 674.450. SS Total is the sum of SS Regression and SS Residual. Degrees of freedom is referred by Df. Df regression is 4 refers to that there are 4 independent variables such as threats of new entry, power of suppliers, threats of substitutes & power of buyer in this model. Df residual is obtained by 127 – 1 - 1 equals 122. Df Total 126. Mean Square regression is the mean variation explained by threats of new entry, power of suppliers, threats of substitutes & power of buyer. Value of MS Reg is 153.177. Mean Square residual or error is the mean variation explained by other variables. Value of MS Reg is 0.506.

**F statistics and hypothesis testing**

Researcher develops both null and alternatives.

1. Null hypothesis: There is no relationship between threats of new entry, power of suppliers, threats of substitutes & power of buyer and competitive rivalry.
2. Alternative hypothesis: There is relationship between threats of new entry, power of suppliers, threats of substitutes & power of buyer and competitive rivalry.

F statistics is the ratio between MS regression divided by MS residual. Value of F statistics is 302.675. Sig. value refers to that probability of  $T_{SCAL}$  falls in critical region is 0.000. It means that  $T_{SCAL}$  have no chance to fall in the critical region. This means there are much more chance to fall in the acceptance region. So, researcher rejects null and accepts alternative. Accepting alternative hypothesis means there is relationship between threats of new entry, power of suppliers, threats of substitutes & power of buyer and competitive rivalry. Related statistics are shown in ANOVA Table 2.

**Table 2: ANOVA<sup>b</sup>**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	612.709	4	153.177	302.675	.000 <sup>a</sup>
	Residual	61.742	122	.506		
	Total	674.450	126			

a. Predictors: (Constant), Buyerpowercomponent12, Threatsofnewentrantcomponent12, Supplierpowercomponent12, Threatsofsubstitutescomponent11

b. Dependent Variable: Competitiverivalrycomponent12

**Estimated or predicted value formula**

B is referred to as non- standardized regression coefficient. In this study, non- standardized beta coefficient for threats of new entrant, supplier power, threats of substitutes and buyer power are 0.000, 0.307, -0.615 and 0.866 respectively. a s referred to as constant. Value of a is -.046. Estimated or predicted value of  $Y_i$ (competitive rivalry) is calculated by the following formulae.  $Y_i = -.046 + .000$  threats of new entrant + 0.307 supplier power + (-0.615) threats of substitutes + 0.866 buyer power. When threats of new entry, power of suppliers, threats of substitutes and power of buyer increase by one unit competitive rivalry remains unchanged, rises by 0.307, falls by 0.866 and rises by 0.866.

**T statistics and hypotheses**

T statistics is used to test relationship between threats of new entry, power of suppliers, threats of substitutes & power of buyer and competitive rivalry. T statistics is derived when b is divided by SEb. Values of T statistics for threats of new entry, power of suppliers, threats of substitutes & power of buyer are -.008, 4.789, -9.811 & 15.434 respectively.

1. Null hypotheses: There are no relationships between threats of new entry, power of suppliers, threats of substitutes & power of buyer and competitive rivalry.
2. Alternative hypotheses: There are relationships between threats of new entry, power of suppliers, threats of substitutes & power of buyer and competitive rivalry.

Sig. values refer to the probability of  $TS_{CAL}$  falling in critical region are 0.993, 0.000, 0.000 & 0.000. It refers to that  $TS_{CAL}$  have no chance to fall in the critical region. This means there are much more chances to fall in the acceptance region. So, accepts null ad rejects alternative for threats of new entry and competitive rivalry. So, threats of new entry are not related with competitive rivalry. Vice versa, researcher rejects null and accepts alternatives for power of suppliers, threats of substitutes & power of buyer and competitive rivalry. Power of suppliers, threats of substitutes and power of buyer are related with competitive rivalry. Related statistics are shown in coefficient Table 3.

**Table 3: Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.046	.275		-.166	.869
Threatsofnewentrantcomponent12	.000	.013	.000	-.008	.993
Supplierpowercomponent12	.307	.064	.327	4.789	.000
Threatsofsubstitutescomponent11	-.615	.063	-.741	-9.811	.000
Buyerpowercomponent12	.866	.056	1.295	15.434	.000

a. Dependent Variable: Competitiverivalrycomponent12

## Conclusions

Results showed that values of Cronbach alpha for items of threats of new entry, power of supplier, threats of substitutes, power of buyer and competitive rivalry are 0.874, 0.789, 0.654, 0.865 and 0.783 respectively. This shows that items used in this study have high reliability. Communalities for all items range between 0.820 to 0.988 which are greater than 0.6. This shows that there is sufficient sample size. Values of KMO for items of threats of new entry, power of suppliers, threats of substitutes, power of buyer, competitive rivalry are 0.771, 0.653 & 0.500, 0.777 & 0.531 respectively. These values indicate sample taken to process factor analysis is statistically significant. Conclusion revealed that threats of new entry and power of suppliers that have a couple of components, threats of substitutes that has a single component & powers of buyer and competitive rivalry that have also a couple of components explain around 95%, 90% & 92%, 89% & 96% of the total variation respectively. Since value of R, R square and adjusted R square is 0.953, 0.908 and 0.905 respectively there is a high strength of association between threats of new entry, power of suppliers, threats of substitutes, power of buyer and competitive rivalry of rice shop owners. Value of F statistics is 302.675. Sig. value refers to that probability of  $TS_{CAL}$  falls in critical region is 0.000. This means there is relationship between threats of new entry, power of suppliers, threats of substitutes & power of buyer and competitive rivalry. Estimated or predicted value of  $Y_i$  (competitive rivalry) is:  $Y_i = -.046 + .000$  threats of new entrant +  $0.307$  supplier power +  $(-0.615)$  threats of substitutes +  $0.866$  buyer power. When threats of new entry, power of suppliers, threats of substitutes and power of buyer increase by one unit competitive rivalry remains unchanged, rises by  $0.307$ , falls by  $0.866$  and rises by  $0.866$ . Values of T statistics for threats of new entry, power of suppliers, threats of substitutes & power of buyer are  $-0.008$ ,  $4.789$ ,  $-9.811$  &  $15.434$  respectively. Sig. values refer to the probability of  $TS_{CAL}$

falling in critical region are 0.993, 0.000, 0.000 & 0.000. Threats of new entry are not related with competitive rivalry. Power of suppliers, threats of substitutes and power of buyer are related with competitive rivalry.

## Scope for future research

Methodologically, sample size has not been taken into account using sample size formulae. So, research can be conducted to eliminate this limitation. There are many home based, women-based and door to door rice sellers who were not into account in this study. Future researches could be carried out removing deficiencies of these.

## References

- Argyres, N. and McGahan, A. M. (2002), "An interview with Michael Porter" *Academic Management Perspective*, Vol. 16, No. 2, pp. 43-52
- Bartlet, M. S. (1950), "Test of significance in factor analysis", *British Journal of statistical psychology*, Vol. 3, pp. 77- 85
- Cronbach, L. J. (1951), "Coefficient Alpha and the Internet Structure of the Tests, *Psychometrika*", Vol. 6, No. 3, pp. 297–334.
- Department of Agriculture (2013), "Rice", Paddy rice production. Retrieved from <http://www.agridept.gov.lk/index.php/en/crop-recommendations/808> . Accessed on: 22/ 10/ 2013.
- Ferrier, W. J. and Lee, H. (2002), "Competitive rivalry", *Journal of Managerial Issues*, Vol. 14, No. 2, pp. 162-180.
- Field, A. (2000), "Discovering statistics using SPSS for windows", London, Sage Publication
- Kadamb, A. (2013), "How to Prepare a Marketing Environmental Analysis ", Retrieved from <http://marketingteacher.com/lesson-store/lesson-marketing-environment.html>. Retrieved on 19- Aug, 2013.

- Hema, W. and Anura, D. Z. (1993), "A factor analytical study of the determinants of success in Manufacturing SMEs", School of Accounting and Finance, University of Wollongong, Australia. Retrieved August, 28, 2008. Accessed from: <http://www.app.lese.edu.au>.
- Huff, L. C. and Robinson, W. T. (1994), "The impact of lead time and years of competitive rivalry on pioneer market share advantages, Management Science, Vol. 40 No. 10, pp. 1370-1377
- Ismail, M.B.M. (2010), "Product Mix and Sales Maximization of Rice Mill Entrepreneurs in Ampara Coastal Area, Eastern Province of Sri Lanka", Journal of Management, Vol. 6, Iss. 1, pp. 13-27.
- Ismail, M.B.M. and Velnampy, T. (2013), "Determinants of Employee Satisfaction (ES) in Public Health Service Organizations (PHSO) in Eastern Province of Sri Lanka: A Pilot Study", European Journal of Business and Management, Vol. 5, Iss. 21, pp. 62-71
- Ismail, M.B.M. and Velnampy, T. (2013), "Determinants of Corporate Performance (CP) in Public Health Service Organizations (PHSO) in Eastern Province of Sri Lanka: A Use of Balanced Score Card (BSC)", Industrial Engineering Letters, Vol. 3, Iss. 8, pp. 1-9.
- Kaizer, H. F. (1974), "An Index of factorial simplicity", Psychometrika, Vol. 39, pp. 31-36
- Koh, H.C. (1996), "Testing hypotheses of entrepreneurial characteristics: A study of Hong Kong MBA students", Journal of Managerial Psychology, Vol. 11, Iss: 3, pp.12-25
- MacCallum, R. C., Windaman, K. F., Zhang, S. and Hong, S. (1999), "Sample size factor analysis", Psychological Methods, Vol. 4, pp. 84-99
- Malhorta, N. K. (2006), "Marketing Research: An Applied Orientation", 3<sup>rd</sup> edition, New Delhi, India, Pearson Education Asia.
- Miller, A. and Dess, G. G. (1993), "Assessing Porter's (1980) model in terms of its generalisability, accuracy and simplicity", Journal of Management Studies, Vol. 30, pp. 553-585.
- Porter, M. E. (1979), "How Competitive Forces Shape Strategy", Harvard Business Review, Free Press, U.S.A.
- Porter, M. E. (1980), "The five competitive forces that shape strategy", Harvard Business Review, Free Press, U.S.A.
- Porter, M. E. (1991), "Towards a dynamic theory of strategy", Strategic Management Journal, Vol. 12, pp. 95-117.
- Ramaswamy, K. (2001), "Organizational ownership, competitive intensity, and firm performance: an empirical study of the Indian manufacturing sector", Strategic Management Journal, Vol. 22, Iss. 10, pp. 989-998.
- Shepherd, D. A. (1999), "Venture Capitalists' Assessment of New Venture Survival", Management Science, Vol. 45, No. 5, pp. 621-632
- Sirmon, D. G., Gove, S. and Hitt, M. A. (2008), "Resource management in dyadic competitive rivalry in relation to the effects of resource bundling and deployment", Academic Management Journal, Vol. 51, No. 5, pp. 919-935
- Stephenson, J. (2013), "25 common characteristics of successful entrepreneurs", Accessed from: <http://www.entrepreneur.com/article/200730> . Accessed: October 21, 2013.
- Wikipedia (2013), "business competition", Web definitions, Accessed from [http://en.wikipedia.org/wiki/Business\\_competition](http://en.wikipedia.org/wiki/Business_competition). Accessed on: 10/ 22/ 2013.

# THE IMPACT OF TELECOMMUNICATION GROWTH ON THE SERVICE SECTOR: A COINTEGRATION ANALYSIS

**Dhanushka Thamarapani**

*Economics Department, Clark University, USA.*

*dthamarapani@clarku.edu.*

## ABSTRACT

*Using annual time series data of Sri Lanka this study examines the impact of telecommunication sector growth on the service sector growth. The methodology employed consists of the bivariate and multivariate cointegration approach to establish the long run equilibrium relationship and causality testing is employed to detect the direction of this relationship. The current study is the first of its kind to use annual secondary data to examine the long run relationship between telecommunications sector and service sector in Sri Lanka. I find statistical evidence for a positive long run equilibrium relationship between telecommunication sector growth and service sector growth which confirmed the research hypothesis. Finally, the possibility of one-way link between telecommunications sector growth and service sector growth was established through causality test. Based on these findings the current study emphasizes the need to target long term growth strategies in the telecommunication service sector for Sri Lanka.*

**Keywords:** *Telecommunication, Telephone Density Rate, Economic Growth, Sri Lanka*

## Introduction

Assessing the impact of telecommunication sector growth on economic growth has been addressed over the past decade in many countries owing to the rapid increase technological innovations. The link with technology opens telecommunication sector to innumerable avenues since new technology (ex. 3G, 3.5G high speed packed access (HSPA) technology) would translate to new development potentials. For

example, there is emphasis on mobile commerce (M-Commerce) which would facilitate Small and Medium Scale Enterprises (SMEs) as a communication tool which uses network that provides access to direct marketing business.

Service sector has drawn a similar attention being the highest contributor to the overall GDP over the past years. Furthermore, within the service sector, telecommunication seems to be performing well. For example, the mobile phones subscribers' base has reached almost 17.2 million and it is revealed that the telephone density, the number of connections (both fixed and mobile connections) for every 100 persons, is 100.79 (Central Bank of Sri Lanka (2010) that implies the number of connections has surpassed the population. The waiting lists have plummeted and the expensive down payments are substituted by "easy installment" schemes. All of which indicate of how telecommunications has managed to become a household necessity.

Thus being a country which is now experiencing an over the average growth in the telecommunications sector as compared to other countries in the region, telecommunication sector is still under developed in Sri Lanka. Economists around the world have paid special attention to examining the relationship as well as the direction of the relationship between the telecommunication sector growth and economic growth.

According to Waverman, Meschi and Fuss (2005) at the beginning telecommunications promoted economic growth by cutting down transaction cost of individuals and firms. Röller and Waverman (2001) estimated the impact of investment in telecommunication infrastructure

on GDP in the OECD countries and revealed a significant positive relationship between the two variables. Although the telephone penetration rates were quite low during 1970s and there was no usage of mobile phones, gradually the importance of telecommunications sector reached the developing world. Chakraborty and Nandi (2003) reveals that there is bi-directional causation and a long run equilibrium relationship. However, the frequent findings of positive correlation between these two variables were challenged by Straub et al (2008) with the finding of no significant link between infrastructure stock and economic growth.

Many cross country studies have examined the relationship between telecommunications infrastructure growth and economic growth and some of these studies have included Sri Lanka in their sample (for example, Fink et al.(2002), Torero et al.(2002)) However there is a gap of a country specific study especially with regard to the telecommunication sector's impact on the service sector. When Sri Lanka is included in a general sample the country specific features of the Sri Lankan telecommunications sector is dampened through averaging and generalization. Therefore it urges the need of conducting a study paying attention to the market behavior specific to Sri Lanka.

The remainder of the paper is organized as follows. Section two discusses the literature, followed by a summary of the telecommunications policy in Sri Lanka. Section four puts forth the model followed by the discussion of results. Section six concludes.

## **Literature Review**

Considering the research that has been done so far it is evident that most of the studies tend to analyze the impact of telecommunication sector on the economic growth as a whole. The most common used methodology is the Annual Production Function. For example, Röller and Waverman (2001) demonstrate that

telecommunications infrastructure significantly and positively affects economic growth using annual time series and cross sectional data for 21 OECD countries. Several more recent papers extended this analysis to the developing countries which yield consistent results (for example, Yoo (2002), Belaïd (2003); Waverman et al (2005)). The latter also reveals that mobile phones in less developed economies are playing the same role that fixed lines played in the richer economies in the 1970s and 1980s. Therefore mobile phones are substitutes for fixed lines in developing countries and complements fixed lines in developed countries.

Employing similar methodology Torero et al. (2002) reveal a positive causal link between infrastructure and GDP in which the sample includes Sri Lanka. An extension of this study is attempted by Sridhar and Sridhar (2004) through the introduction of the mobile phone sector and concludes that the impact of telecommunication penetration on total output is significantly lower for developing countries than that reported for OECD countries in Röller and Waverman (2001) thus dismissing the convergence hypothesis as suggested by Mankiw et al. (1992).

In contrast, the work of Beil et al. (2003) based on investment and GDP data for USA, indicates that investment in the telecommunications industry is caused by, but does not cause, economic activity by employing Granger-Sims causality tests. In contrast Chakraborty and Nandi (2003) establish bi-directional causation and a long run equilibrium relationship between GDP and Telephone Density Rate (TDR). However they only account for the fixed lines thus overlooking the contribution of the mobile phone sector. There are other studies that have concentrated on similar topic using datasets from different parts of the world (for example, Madden and Savage (1997) – Central and Eastern Europe; Seethepalli et al. (2008), Straub et al. (2008) – East Asia; Fink et al. (2002) - 86 developing countries) although there is debate on the exact sign and magnitude of the correlation.

Some studies analyzing the impact of infrastructure as a whole on economic growth (Calderón and Servén (2004); Canning and Pedroni (2004)) conclude that infrastructure stock positively affects economic growth while Canning (1999) highlights the effect of network externalities. There are some studies that look at specific countries (ex. Narayana (2008) and Vijayamohan (2008)). In the case of Sri Lanka, although telecommunications infrastructure remains underprovided this sector is nonetheless one of the fastest growing and technological improvements are occurring at a rapid rate (de Mel & Wijayasiri (2008)). However there is still the absence of studies looking at the exact contribution of telecommunication sector. According to Munnell (1992) there is potential for policy implications in this sector. Thus the present study attempts to fill the gap in the available literature by examining the long run effect of growth in telecommunications sector (which accounts for both fixed and mobile telephony) on the growth of the service sector which has not been addressed with respect to Sri Lanka.

## **The Evolution of the Telecommunications Policy in Sri Lanka**

Fixed telephony has shouldered the development of the telecommunications industry since economic liberalization in 1977. Despite the growth the waiting periods were long; the transmission quality was poor and the high initial cost resulted in inadequate access to telecommunications. The situation gradually changed with the introduction of reforms as well as competition. Instead of owning a traditional fixed wire line, now the customer has the option to choose from wireless local loop (WLL) operators as well as code division multiple access (CDMA) phones or even mobile phones with distinctive features like 3G and video conferencing. The customers were given a better service and consequently the industry grew at a rapid scale drawing attention for professional

intervention. Such interventions resulted in establishing regulatory bodies and opening up of the industry to accommodate competition. The gradual growth of the service sector has now reached its climax being the highest contributor to the overall GDP. Within the service sector the performance of the telecommunications has dramatically improved. Figure 1 is a simultaneous look at the growths in these two sectors. The tele-mobile density rate (TMDR) is the number of fixed lines and mobile phones per 100 persons<sup>4</sup>. The underprovision of telephone service was continuously prevalent that in 1996 only 50 percent of the expressed demand was catered by the Sri Lanka Telecom (SLT) (Central Bank 1996). Nonetheless a landmark in telecommunications industry was the partial privatization of SLT by Nippon Telegraph and Telephone (NTT) in 1997 which contributed to the conspicuous growth in telecommunications. Thus by 1999 Sri Lanka had the most deregulated telecommunications sector in South Asia (Central Bank 1999). The increasing significance of telecommunications is demonstrated in the Figure 2 which compares the contribution of the transport, storage and communications sector in 1978 and 2010 in order to see the growth pattern over 30 years. At present transport, storage and communications sector is the second largest contributor to the service sector GDP.

The actual reforms in telecommunications sector began in 1980 through the de-linking of post and telecommunication services (de Mel & Wijayasiri 2008) which resulted in breaking away from the Post, Telegraph and Telephone (PTT) model. The entrance of the first private operator into the market occurred in 1989 when Celltel, a mobile operator, was licensed. However, the reforms transpired in 1991 with the Telecommunications Act No. 25 which converted then Department of Telecommunication (DoT) to Sri Lanka Telecommunication Corporation (SLT) that was owned by the government. The act of 1991 was amended in 1996 by the Sri Lanka Telecommunications Act No. 27 through which the Telecommunications Regulatory Commission



of Sri Lanka (TRC) was established. Among the plans for the future development of the industry TRC has set goals to achieve a 16 million mobile phone subscriber base by 2016 (TRC 2006). In the year of TRC's establishment, SLT was transformed into a public company as a preliminary step towards privatization (Jayasuriya & Knight-John 2002). The following year, in 1997, the government sold 35 per cent of its shareholding to NTT and another 3.5 per cent of shares were distributed among the employees of SLT. In mobile telephony the new players have been entering over the past decade. As at August 2011 there were five mobile service providers in operation: Dialog (1995), Mobitel (2002)<sup>5</sup>, Hutch (2004), Airtel (2008) and Etisalat (2009)<sup>6</sup>. Nonetheless telecommunications industry is still in need of comprehensive policies to promote its growth. Thus implementation of up to date policies has become a timely necessity in this industry.

## Research Methods

Annual data for the period of 1978 – 2010 was collected from Statistical Abstracts published by the Department of Census and Statistics as well as from the Annual Reports of the Central Bank of Sri Lanka. This study is the first of its kind to use annualsecondary data for the test of cointegration specifically between telecommu- nications sector and service sector.

The study comprises of all the variables in their growth rates form. Service sector growth ( $S_t$ ) is defined as service sector Real GDP growth. The growth in the telecommunication sector is measured by the growth in Tele-Mobile Density Rate (TMDR<sub>t</sub>) which represents the growth in number of fixed lines and mobile phones per 100 persons. Growth rates of the Real GDP of other sub sectors of the service sector, i.e. Wholesale and Retail Trade ( $W_t$ ), Banking, Insurance and Real Estate ( $B_t$ ), Ownership of Dwellings ( $Od_t$ ), Public Services ( $Pb_t$ ) and Private Services ( $Pr_t$ ) are also included to this model.

Cointegration analysis of bivariate approach (Engle & Granger 1987) and multivariate approach (Johansen 1988) are adopted in this study. A simple Cobb Douglas production function employed by Canning and Pedroni (2004) based on Barro (1990) is modified and used to highlight the impact of telecommunications infrastructure on economic growth. Thus, the aggregate output  $Y$ , at time  $t$  is produced utilizing telecommunication infrastructure capital,  $G$ , other capital,  $K$ , and labor  $L$ , such that

$$Y_t = A_t K_t^\alpha G_t^\beta L_t^{1-\alpha-\beta}, \quad (1)$$

where  $A_t$  is total factor productivity at time  $t$ . According to equation 1, the growth in telecommunications infrastructure results in achieving higher economic growth. The present study looks at the contribution to the service sector growth which is a significant component of the overall economic growth. First, time series properties of the variables are tested. Then, cointegration analysis is performed using the simple bivariate cointegration test proposed by Engle and Granger in 1987. Thus service sector growth rate ( $S_t$ ) is regressed on growth in Tele-Mobile Density Rate (TMDR<sub>t</sub>) as follows:

$$S_t = c_t + \beta \text{TMDR}_t + e_t, \quad (2)$$

which can be alternatively expressed as :

$$e_t = S_t - c_t - \beta \text{TMDR}_t. \quad (3)$$

According to Engle Granger Approach, Augmented Dickey Fuller (ADF) test on the residual ( $e_t$ ) is performed to find out whether the linear combination of these two variables are stationary. If the null hypothesis is rejected, then the linear combination of the service sector growth ( $S_t$ ) and TMDR growth (TMDR<sub>t</sub>) is stationary and therefore there exists a long run (equilibrium) relationship between these two variables.

The Error Correction Models (ECM) is used to estimate the short run dynamics between

telecommunication sector growth and service sector growth in Sri Lanka. When two variables are cointegrated, though they are in equilibrium in the long run, in the short run they may be in disequilibrium. Therefore the residual ( $e_t$ ) in equation 3 can be treated as an equilibrium error. This error term can be used to tie the short run behavior of service sector growth ( $S_t$ ) to the long run value. According to the Granger Representation Theorem (Engle and Granger (1987)) if two variables are cointegrated, then the relationship between those two can be expressed in an ECM as follows:

$$\Delta S_t = \alpha_0 + \alpha_1 \Delta TMDR_t + \alpha_2 e_{t-1} + \eta_t \quad (5)$$

where  $e_{t-1}$  is the lagged error term of equation 2. The absolute value of  $\alpha_2$  decides how quickly the equilibrium is restored. It is the speed of adjustment coefficient. If  $\alpha_2$  in equation 5 is statistically significant it could be concluded that service sector growth rate ( $S_t$ ) responds to disequilibria in the service sector growth–telecommunication sector growth relationship and the value of the coefficient  $\alpha_2$  demonstrates how much of the disequilibrium is corrected annually.

It is often possible that there may be more than one cointegrating relationship among variables. In order to capture this aspect Johansen (1988) approach is employed. As pointed out by Hassan (2003) this approach considers the vector autoregressive (VAR) model of the following form

$$X_t = \gamma + \Phi_1 X_{t-1} + \Phi_2 X_{t-2} + \dots + \Phi_k X_{t-k} + \eta_t, \quad t = 1, 2, \dots, T \quad (4)$$

where  $X_t$  is a 7 by 1 vector containing all the growth rate variables in the Model 1. “In a VAR, each variable is ‘explained’ by its own lagged values, and the lagged values of all other variables in the system” (Hendry and Juselius (2000)). This test indicates the number of cointegrating vectors,  $r$ , in the system. In the process of estimation, the  $r$  co-integrating relations are solved for the first  $r$  variables in the

$X_t$  vector as a function of the remaining  $k-r$  variables. Later this was developed to a Vector Error Correction Model (VEC) thus incorporating all the other variables in to the model in order to estimate their short run behavior. In the presence of more than one cointegrating relationship the VEC model is adopted that in the short term, deviations from the long term equilibrium is fed back on the changes in the dependent variables in order to force their movements towards the long term equilibrium (Hassan (2003)). Thus by using equation 4 the following VEC model is derived.

$$\Delta X_t = \gamma + \Gamma_1 \Delta X_{t-1} + \Gamma_2 \Delta X_{t-2} + \dots + \Gamma_{k-1} \Delta X_{t-k+1} + \Pi X_{t-k} + \eta_t, \quad t = 1, \dots, T \quad (6)$$

where  $\Delta X_t$  is the vector of first differences of the variables in growth rate model, the  $\Gamma$ s are estimated parameters,  $\eta_t$  is a vector of unanticipated movements in  $X_t$  and  $\Pi$  is the long term parameter matrix.

As the final step the direction of the relationship between telecommunication sector growth and service sector growth is established through employing Granger Causality test (Granger (1969)) with the objective of finding whether the relationship (if any) between these two variables is uni-directional or bi-directional. Hence the following formulae are derived from the standard:

$$S_t = \sum_{i=1}^k \varphi_{1i} TMDR_{t-i} + \sum_{i=1}^k \varphi_{2i} S_{t-i} + u_{1t} \quad (7)$$

$$TMDR_t = \sum_{i=1}^k \varphi_{3i} TMDR_{t-i} + \sum_{i=1}^k \varphi_{4i} S_{t-i} + u_{2t} \quad (8)$$

where the lag length was determined by the AIC & SIC criterion. The rejection of both null hypotheses would indicate bi-directional causality. If a single null hypothesis is rejected it would prove uni-direction.

## Results and Discussions

The unit root test is performed to find out the order of integration of the variables in the study. The ADF test results are summarized in Table 1. Thus all the variables are  $I(1)$  in the level form and they became stationary in its first difference.

With the results of the unit root tests reported in Table 1 it was established that service sector ( $S_t$ ) is integrated to order  $I(1)$  and that tele-mobile density rate ( $TMDR_t$ ) is integrated to order one  $I(1)$ . Testing for bivariate co-integration, the residual,  $e_t$ , yielded the results such that ADF test statistics is -4.6305 (Table 2). The large negative value of ADF statistic implies stationarity of the residual series (integrated to order zero,  $I(0)$ ). Thus  $S_t$  and  $TMDR_t$  are cointegrated. There exists a long run equilibrium relationship between service sector growth and telecommunication sector growth. Among the studies that investigate the relationship between telecommunication sector and economic growth (GDP), Canning (1999), Chakraborty and Nandi (2003) and Canning and Pedroni (2004) have also concluded that these two variables are co-integrated.

As for multivariate cointegration the results of the Johansen cointegration test indicated four cointegrating relationships within the system which was statistically significant at 5 per cent level (Table 3). Thus the rank of the  $\Pi$  matrix is 4 ( $r = 4$ ) which rejects the null hypothesis of no cointegration equation is 3.

The magnitude of the contribution of telecommunication sector growth to the service sector growth can be obtained by the general (cointegrating) regression output as summarized in Table 4. It is evident that when the growth in tele-mobile density rate ( $TMDR_t$ ) increases by 1 percent service sector growth rate ( $S_t$ ) increases by 0.0356 percent which is statistically significant at 10 per cent. The coefficients are positive implying a positive relationship between the telecommunication sector and service sector.

Having established a long run relationship between service sector growth and telecommunication sector growth the next step is to determine the short run effects. As indicated by Mohanty et al (1996) residuals from the cointegrating equation (error correction term) which represents departure from the long-run equilibrium are included in the ECM to capture the response of service sector growth to any disequilibrium created by the movement in telecommunication sector growth. Thus the error correction model (using growth rate model) yielded the results summarized in Table 5. Since the speed of adjustment coefficient at 1 per cent level it can be concluded that service sector growth responds to disequilibria in the service sector growth – telecommunication sector growth relationship. The negative sign in front of the error correction coefficient indicates that if in this year service sector growth moves away from the equilibrium in the next year it will start falling in order to come back to the equilibrium. The negative value of the speed of adjustment coefficient confirms the system is stable and signifies how quickly the equilibrium is restored.

Under the multivariate analysis the short run effects of the growth rates variables are analyzed using the VEC which translates to about 48 percent of the disequilibrium corrected each year due to changes in the service sector growth rate ( $S_t$ ) and the correction owing to the changes in tele-mobile density rate growth ( $TMDR_t$ ) is about 11 percent. Thus both ECM and VEC models confirmed the existence of the short run dynamics.

As the final step of the estimation process I run the causality tests. The Granger Causality tests the exogeneity of the impact of one variable on another Canning and Pedroni (2004). I find statistical evidence for uni-directional causation running from tele-mobile density rate ( $TMDR_t$ ) to service sector real GDP ( $S_r_t$ ) in the presence of three lags (Table 6). Though this study does not support bi-directional causation empirical evidence for bi-directional causality can be found in Chakraborty and Nandi (2003) and Canning

and Pedroni (2004), the two studies which looked at the relationship between infrastructure (including telecommunication) and economic growth.

## Summary and Conclusions

The current study is an attempt to fill the gap in the existing literature with the primary objective of investigating the impact of telecommunications on the service sector in Sri Lanka using annual secondary data over the period of 1978 to 2008. I employed bivariate and multivariate cointegration framework and the sample confirmed the research hypothesis that telecommunications sector growth positively contributes to the service sector in the long run. The bivariate cointegration test proved that there has been equilibrium relationship between these two sectors for the period of 1978 to 2008 while the multivariate cointegration framework indicated four such long run relationships in the model. Thus it can be concluded that increase in telecommunications sector growth increases the long run service sector growth.

Both ECM and VEC suggested that the short term disequilibria is corrected (to a certain extent) in the subsequent year. I find evidence that telecommunications contribute to boost the service sector which is uni-directional causation.

This study was limited to the period of 1978 to 2010 due to the absence of dependable data for the period prior to 1978. To be more precise, the GDP calculations prior to 1978 were not consistent with those of the latter years. This incompatibility in data truncated the sample to only 1978 and forward.

Results imply that growth in telecommunications services foster a source of economic growth through growth in the service sector. There is also evidence that service sector growth causes increased demand for telecommunications. However growth by itself does not guarantee the efficient provision of such services. First step towards promoting a sustainable growth in

telecommunications sector would be formulating complementary regulations aimed at encouraging healthy competition, service quality and cost effectiveness which would overcome the supply bottlenecks of telecommunications services. In addition, utilizing telecommunications to share the information of, for example, prices, job opportunities and markets would enhance the possibility of dispersing growth benefits effectively to different strata of the society. Furthermore, expanding linkage effects of telecommunications services would result in generating more income and employment and Sri Lanka can be developed as a regional communication hub. A preliminary step towards achieving this target would be organizing international communication conferences and exhibitions in the country. Finally, an important measure would be to reduce inequalities in telecommunications services among different regions so that major economic activities are not limited to few cities of the county. There is both theoretical and empirical evidence that better governance seems to engender better services. Hence this policy formulation could be used as means of capturing the benefits of the modern telecommunications technology.

As suggestions for further studies one could check the robustness of the finding by employing different methodology like production function method and growth accounting framework. Furthermore, as frequently done in literature, this study can be extended to investigate the contribution of telecommunications sector (or infrastructure as a whole) to the economic growth of Sri Lanka which would in turn facilitate more comprehensive policy formulation.

## References

- Aschauer, D (1989), Is Public Expenditure Productive?, *Journal of Monetary Economics*, Vol. 23, No. 2, pp. 177-200.
- Asteriou, D & Hall, S (2007), *Applied Econometrics: A Modern Approach*, revised edition, Palgrave Macmillan, New York.
- Barro, R (1990), Government Spending in a Simple Model of Endogenous Growth, *Journal of Political Economy*, Vol. 98, pp. 103-105.
- Beil, R, Ford, G & Jackson, J (2003), On the Relationship between Telecommunications Investment and Economic Growth in the United States, *Telepolicy Working Paper*.
- Belaïd, H (2003), Telecommunications Infrastructure and Economic Development, Simultaneous Approach: Case of Developing Countries.
- Bougheas, S, Demetriades, P & Mamuneas T (1999), Infrastructure, Specialization and Economic Growth.
- Calderón, C & Servén, L (2004), The Effects of Infrastructure Development on Growth and Income Distribution, *World Bank Policy Research Working Paper No. 3400*.
- Canning, D (1999), The Contribution of Infrastructure to Aggregate Output, *World Bank Policy Research Working Paper No. 2246*.
- Canning, D & Pedroni, P (2004), The Effect of Infrastructure on Long Run Economic Growth.
- Central Bank, (1981), (1996), (1999), (2008), *Annual Reports*, Central Bank, Colombo.
- Chakaraborty, C & Nandi, B (2003), Privatization, Telecommunications and Growth in Selected Asian Countries: An Econometric Analysis.
- De Mel, D & Wijayasiri, J (2008), Domestic Preparedness of Sri Lanka with respect to Services Trade Liberalization: A Case Study of the Telecom Sector, in *Domestic Preparedness for Services Trade Liberalization*, S Raihan (ed)
- CUTS international, Jaipur, pp. 149-177.
- Engle, R & Granger, C (1987), Co-integration and Error Correction: Representation, Estimation and Testing, *Econometrica*, Vol. 55, No. 2, pp. 251-276.
- Estache, A, Speciale, B & Veredas, D (2005), How Much Does Infrastructure Matter to Growth in Sub-Saharan Africa?.
- Fink, C, Mattoo, A & Rathindran, R (2002), An Assessment on Telecommunications Reforms in Developing Countries, *World Bank Policy Research Working Paper 2909*.
- Granger, C (1969), Investigating Causal relations by Econometric Models and Cross-Spectral Methods, *Econometrica*, Vol. 37, No. 3, pp. 424-438.
- Hassan, A (2003), Financial Integration of Stock Markets in the Gulf: A Multivariate Cointegration Analysis, *International Journal of Business*, Vol. 8, No. 3, pp. 335 -346.
- Hendry, D & Juselius, K (2000), Explaining Cointegration Analysis: Part II.
- Johansen, S (1988), Statistical Analysis of Cointegration Vectors, *Journal of Economic Dynamics and control*, Vol. 2, No. 2-3, pp. 231-254.
- Jayasuriya, S & Knight-John, M (2002), Sri Lanka's Telecommunications Industry: from Privatization to Anti-Competition?
- Madden, G & Savage, S (1997), CEE telecommunications Investment and Economic growth, *MPRA paper no. 11843*.
- Mankiw, N, Romer, D & Weil, D (1992), A Contribution to the Empirics of Economic Growth, *The Quarterly Journal of Economics*, Vol. 107, No. 2, pp. 407-437.
- Mohanty, S, Peterson, W & Smith, D (1996), Relationships between U.S. and Canadian Wheat Prices: Cointegration and Error Correction Approach, *Canadian Journal of Agricultural Economics*, Vol. 44, pp. 265-276.
- Munnell, A (1992), Policy Watch: Infrastructure Investment and Economic Growth, *Journal of Economic Perspectives*, vol. 6, no. 4, pp. 189 – 198.
- Narayana, M (2008), Telecommunication Services and Economic Growth: Evidence from India.

- Röller, L & Waverman, L (2001), Telecommunication Infrastructure and Economic Development: A Simultaneous Approach, *The American Economic Review*, Vol. 91, No. 4, pp. 909-923.
- Seethepalli, K, Bramati, M & Veredas, D (2008), How Relevant Is Infrastructure to Growth in East Asia?, *World Bank Policy Research Working Paper 4597*.
- Sridhar, K, & Sridhar, V (2004), Telecommunications Infrastructure and Economic Growth: Evidence from Developing Countries.
- Straub, S, Vellutini, C & Warlters, M (2008), Infrastructure and Economic Growth in East Asia, *World Bank Policy Research Working Paper 4589*.
- Telecommunications Regulatory Commission, (2006), *Proposed Ten Year Development Plan (2006 – 2016)*.
- Torero, M, Chowdhury, S & Bedi, A (2002), Telecommunication Infrastructure and Economic Growth: A Cross-Country Analysis.
- Vijayamohanan, P (2008), Infrastructure, Growth and Human Development in Kerala, *MPRA paper no. 7017*.
- Vuong, V (2008), Mobile Telecommunication Impact on Developing Countries' Growth.
- Waverman, L, Meschi, M & Fuss, M 2005, The Impact of Telecoms on Economic Growth in Developing Countries, *Vodafone Policy Paper Series*, No. 2, pp. 10-23.
- Yoo, S (2002), An Empirical Investigation of Telecommunications Investment and Economic Development in Developing Countries.

## Appendix

**Table 1- Unit Root Test for Levels**

Variable	ADF Test Statistic and Significance	Order of Integration
Service Sector Growth ( $S_t$ )	-4.5499***	I (1)
Telecom. Sector growth ( $TMDR_t$ )	-4.3272***	I (1)
Wholesale & Retail Trad. growth ( $W_t$ )	-4.9689***	I (1)
Banking & Finance growth ( $B_t$ )	-3.3245***	I (1)
Ownership of Dwellings growth ( $Od_t$ )	-4.1761***	I (1)
Public Services Growth ( $Pb_t$ )	-4.3349***	I (1)
Private Services Growth ( $Pr_t$ )	-3.8621***	I (1)

Note: Intercept and one lag included. The symbols \*\*\*, \*\*, \* denote statistical significance at 1% , 5% and 10% levels respectively. Time period: 1979 – 2010 (32 years)

**Table 2 – Engle Granger Cointegration test (unit root (ADF) test of the residual)**

ADF Test Statistic	-4.630483	1% Critical Value*	-3.6661
		5% Critical Value	-2.9627
		10% Critical Value	-2.6200

\*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation  
 Dependent Variable: D(SPECIFICRESID)  
 Method: Least Squares  
 Date: 08/29/11 Time: 13:48  
 Sample(adjusted): 1981 2010  
 Included observations: 30 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SPECIFICRESID(-1)	-1.408161	0.304107	-4.630483	0.0001
D(SPECIFICRESID(-1))	0.117221	0.192800	0.607992	0.5483
C	-0.009857	0.620302	-0.015891	0.9874
R-squared	0.633786	Mean dependent var		0.097764
Adjusted R-squared	0.606659	S.D. dependent var		5.415507
S.E. of regression	3.396438	Akaike info criterion		5.377971
Sum squared resid	311.4664	Schwarz criterion		5.518091
Log likelihood	-77.66957	F-statistic		23.36368
Durbin-Watson stat	1.978275	Prob(F-statistic)		0.000001

**Table 3 – Johansen Cointegration Test**

Sample: 1979 2010  
 Included Observations: 30  
 Test assumption: Linear deterministic trend in the data  
 Series: S TMDR W B OD PB PR  
 Lag interval: 1 to 1

Likelihood	5 Percent	1 Percent	Hypothesized
------------	-----------	-----------	--------------

Eigenvalue	Ratio	Critical Value	Critical Value	No. of CE(s)
0.936110	207.0635	124.24	133.57	None **
0.779483	124.5458	94.15	103.18	At most 1 **
0.623548	79.19239	68.52	76.07	At most 2 **
0.561084	49.88346	47.21	54.46	At most 3 *
0.397984	25.18005	29.68	35.65	At most 4
0.219721	9.955896	15.41	20.04	At most 5
0.080348	2.512791	3.76	6.65	At most 6

\*(\*\*) denotes rejection of the hypothesis at 5% (1%) significance level.

L.R. test indicates 4 cointegrating equation(s) at 5% significance level.

**Table 4 – Cointegrating Regression Output**

Dependent Variable: S

Method: Least Squares

Date: 08/16/11 Time: 15:33

Sample: 1979 2010

Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TMDR	0.035569	0.019620	1.812872	0.0819
W	0.362765	0.053733	6.751248	0.0000
B	0.175272	0.045625	3.841538	0.0007
OD	0.042322	0.023517	1.799657	0.0840
PB	0.146131	0.046557	3.138756	0.0043
PR	0.042817	0.059946	0.714248	0.4817
C	0.563931	0.818143	0.689282	0.4970
R-squared	0.800449	Mean dependent var		6.526622
Adjusted R-squared	0.752557	S.D. dependent var		3.395904
S.E. of regression	1.689246	Akaike info criterion		4.077082
Sum squared resid	71.33883	Schwarz criterion		4.397712
Log likelihood	-58.23331	F-statistic		16.71357
Durbin-Watson stat	2.339236	Prob(F-statistic)		0.000000

**Table 5 – Error Correction Model**

Dependent Variable: D(S)

Method: Least Squares

Date: 08/29/11 Time: 18:29

Sample(adjusted): 1980 2010

Included observations: 31 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TMDR)	0.115603	0.044077	2.622733	0.0140
ERROR(-1)	-1.258183	0.175310	-7.176912	0.0000
C	-0.061204	0.577814	-0.105923	0.9164
R-squared	0.678513	Mean dependent var		0.055591
Adjusted R-squared	0.655550	S.D. dependent var		5.478778
S.E. of regression	3.215489	Akaike info criterion		5.265601
Sum squared resid	289.5023	Schwarz criterion		5.404374
Log likelihood	-78.61682	F-statistic		29.54765
Durbin-Watson stat	1.918998	Prob(F-statistic)		0.000000

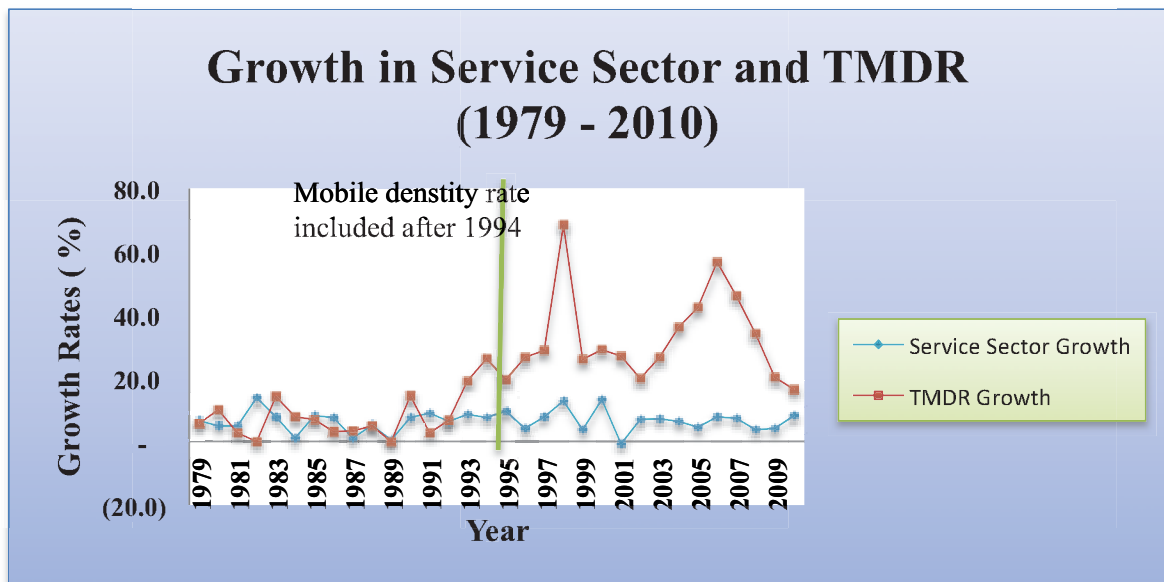


**Table 6 – Granger Causality Test**

Direction of Causality	F value	Probability	Decision
TMDR <sub>t</sub> does not Granger cause Sr <sub>t</sub>	2.4347*	0.0919	Reject
Sr <sub>t</sub> does not Granger cause TMDR <sub>t</sub>	0.2046	0.8921	Do not Reject

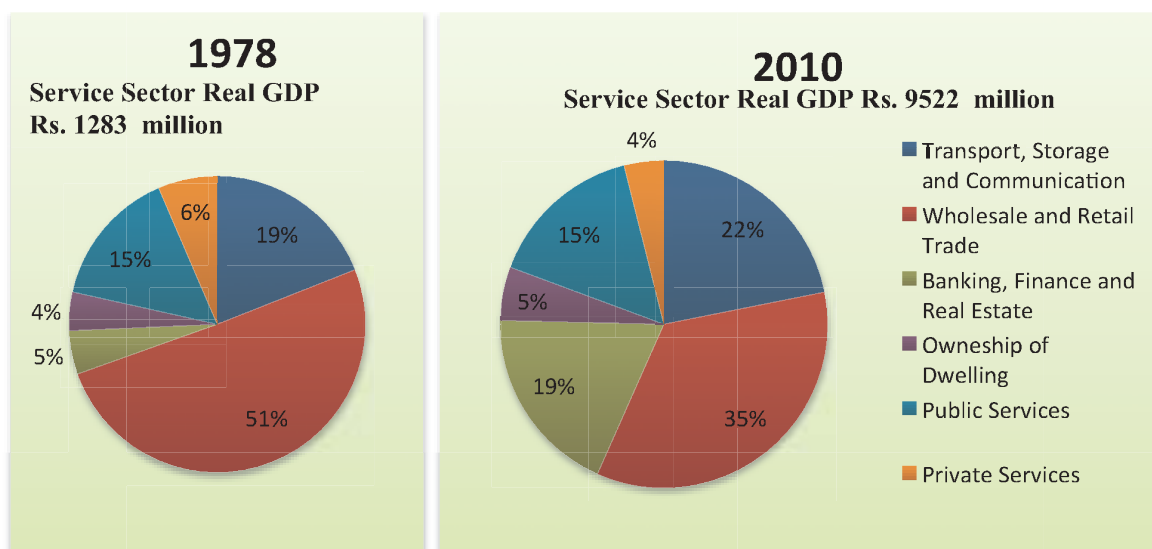
Note: (\*) denotes significance at 10 %

**Figure 1 – Growth Trend in Tele-Mobile Density Rate (TMDR) and Service Sector**



Data source: Central Bank Annual Reports various issues

**Figure 2 – Significance of the Transport, Storage and Communication Sector within the Service Sector**



Data Source : Central Bank Annual Reports (1978 and 2010)

